KUVEMPU UNIVERSITY

Syllabus for Bachelor of Computer Applications

(B.C.A – V & VI Semester)

NEP-2020

Under Graduate Board of Studies

In

COMPUTER SCIENCE

w.e.f Academic Year 2023-24 onwards

Curriculum Design / Syllabus Framing Committee

Sl. No.	Name	Designation
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6.	**Mr. Prajwal Kumar P** Assistant Professor, Department of Computer Science, Government First Grade College, Kailur – 577548.	**Member**

Programme: B.C.A

Subject: Computer Science

Curriculum Structure for B.C.A

Semester	Course No.	Theory/ Practical	Credits	Teaching Hours per week (L+T+P)	Paper Title	Marks	
						S.A.	I.A.
V	DSC13	Theory	4	4+0+0	Design & Analysis of Algorithms	60	40
	DSC13-Lab	Practical	2	0+0+4	Design & Analysis of Algorithms Lab	25	25
	DSC14	Theory	4	4+0+0	Statistical Computing and R Programming	60	40
	DSC14-Lab	Practical	2	0+0+4	R Programming Lab	25	25
	DSC15	Theory	4	4+0+0	Software Engineering	60	40
	DSE-E1	Theory	3	3+0+0	A: Cloud Computing B: Business Intelligence	60	40
	Voc-1	Theory	3	3+0+0	Digital Marketing	60	40
	SEC-4	Theory & Practical	2	2+0+1	Cyber Security	60	40
VI	DSC16	Theory	4	4+0+0	Artificial Intelligence and Applications	60	40
	DSC17	Theory	4	4+0+0	PHP and MySQL	60	40
	DSC17-Lab	Practical	2	0+0+4	PHP and MySQL Lab	25	25
	DSC18	Theory	4	4+0+0	Data Mining and Data Warehouse	60	40
	DSE-E2	Theory	3	3+0+0	A: Digital Image Processing B: Mobile Application Development	60	40
	Voc-2	Theory	3	3+0+0	Web Content Management System	60	40
	SEC-5	Practical	2	0+0+3	Internship/ Mini Project	60	40

Program Name	B.C.A	Semester	V
Course Title	Design and Analysis of Algorithm (Theory)		
Course Code:	DSC 13	No. of Credits=	04
Contact hours	52 Hours/4 Hours per week	Duration of SEA Exam:	2 hours
Formative Assessment Marks:	40	Summative Assessment Marks	60

Contents	52 Hrs
Introduction: What is an Algorithm? Fundamentals of Algorithmic problem solving, Fundamentals of the Analysis of Algorithm Efficiency, Analysis Framework, Measuring the input size, Units for measuring Running time, Orders of Growth, Worst-case, Best-Case and Average-case efficiencies.	10
Asymptotic Notations and Basic Efficiency classes, Informal Introduction, O-notation, Ω-notation, Θ-notation, mathematical analysis of non-recursive algorithms, mathematical analysis of recursive algorithms.	10
Brute Force & Exhaustive Search: Introduction to Brute Force approach, Selection Sort and Bubble Sort, Sequential search, Exhaustive Search- Travelling Salesman Problem and Knapsack Problem, Depth First Search, Breadth First Search.	14
Divide-and-Conquer: Introduction, Merge Sort, Quick Sort, Binary Search, Binary Tree traversals and related properties.	8
Decrease-and-Conquer: Introduction, Insertion Sort, Topological Sorting. **Greedy Technique:** Introduction, Prim's Algorithm, Kruskal's Algorithm, Dijkstra's Algorithm.	10

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment / Small Project	10 Marks
Seminar	10 Marks
Total	40 Marks

Program Name	B.C.A	Semester	V
Course Title	Design and Analysis of Algorithms Laboratory (Practical)	No. of Credits	02
Course Code	DSC 13 - Lab	Contact Hours	4 Hours/wk
Formative Assessment	25 Marks	Summative Assessment	25 Marks

Practical Content

1. Write a program to sort a list of N elements using Selection Sort Technique
2. Write a program to perform Travelling Salesman Problem.
3. Write a program to perform Knapsack Problem using Greedy Solution.
4. Write program to implement the DFS and BFS algorithm for a graph.
5. Write a program to find minimum and maximum value in an array using divide and conquer.
6. Write a test program to implement Divide and Conquer Strategy. Eg: Quick sort algorithm for sorting list of integers in ascending order.
7. Write a program to implement Merge sort algorithm for sorting a list of integers in ascending order.
8. Implement function to print In-Degree, Out-Degree and to display that adjacency matrix.
9. Write program to implement Greedy Algorithm for job sequencing with deadlines.
10. Write program to implement Dynamic Programming algorithm for the Optimal Binary Search Tree Problem.
11. Write a program that implements Prim's algorithm to generate minimum costs panning Tree.
12. Write a program that implements Kruskal's algorithm to generate minimum costs panning Tree.

Formative Assessment for Practical	
Assessment Occasion type	**Marks**
Program Writing Any One Program	10 Marks
Execution	10 Marks
viva	05 Marks
Total	**25 Marks**

References

1	Introduction to the Design and Analysis of Algorithms, Anany Levitin: 2nd Edition, 2009 Pearson.
2	Computer Algorithms C++, Ellis Horowitz, Satraj Sahnami and Rajasekaran, 2nd Edition, 2014 Universities Press.
3	Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronal L. Rivest, Clifford Stein, 3rd Edition, PHI.
4	Design and Analysis of Algorithms, S. Sridhar, Oxford (Higher Education)

Program Name	B.C.A	Semester	V
Course Title:	Statistical Computing & R Programming (Theory)		
Course Code:	DSC14	No. of Credits	04
Contact hours	52 Hours 4 Hours per week	Duration of SEA Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Contents	52 Hrs
Introduction of R programming languages: Introduction, Features of R, Data types in R: numeric, arithmetic, assignment, Operators, Data Objects in R: Arrays, Lists, vectors, Matrices and Data Frames, Factors Conditions and Loops: if, Switch, while, for, repeatloops, Strings handling in R, Calling Functions, Writing Functions,Exceptions, Date&Timings and Visibility, Packaging in R.	12
Reading and writing files: Reading Tabular Data, Commands to Extract Rows and Columns, working with CSV files: reading, writing, analysis, working with JSON Files: reading, writing, Working with XML Files: reading, writing.	12
R as a set of statistical tables: Statistics And Probability, Process of Descriptive Analysis, Average, Variance, Standard Deviation in R, Mean, Median and Mode in R, Covariance and Correlation in R, Probability distributions in R,Normal distributions, binomial distributions.	8
Statistical testing and modeling in R: Hypothesis testing in R, components of hypothesis test, testing means, testing proportions, testing categorical variables, errors and power.	8
Advanced graphics in R: Plotting commands-high level and low level, Graphics parameters list, Device drivers, Dynamic graphics, plot customization, plotting regions and margin,R Histogram, Bar chart, Pie chart, Scatter plots examples.	12

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment / Small Project	10 Marks
Seminar	10 Marks
Total	**40 Marks**

References	
1	Tilman M. Davies, "The book of R: A first course in programming and statistics", San Francisco,
2	Vishwas R. Pawgi, "Statistical computing using R software", Nirali prakashan publisher,1st edition, 2022.
3	https://www.youtube.com/watch?v=8Xb_C6CVEWE&ab_ https://www.geeksforgeeks.org/r-tutorial/ https://www.tutorialspoint.com/r/index.html

Program Name	B.C.A	Semester	V
Course Title	R Programming Lab (Practical)		
Course Code	DSC 14 - Lab	No. of Credits	02
Contact hours	04 Hours per week	Duration of SEA Exam	2 hours
Formative Assessment Marks	25	Summative Assessment Marks	25

Course Outcomes:

- Install Code and Use R Programming Language in R Studio IDE to perform basic tasks on Vectors, Matrices and Data frames. Explore fundamentals of statistical analysis in R environment.
- Describe key terminologies, concepts and techniques employed in Statistical Analysis.
- Define Calculate, Implement Probability and Probability Distributions to solve a wide variety of problems.
- Conduct and interpret a variety of Hypothesis Tests to aid Decision Making.
- Understand, analyze and Interpret Correlation, Probability and Regression to analyze the underlying relationships between different variables.

1. Write an R program for different types of data structures in R.
2. Write an R program that includes variables, constants, and data types.
3. Write an R program that includes different operators, control structures, default values for arguments, returning complex objects.
4. Write an R program for quick sort implementation.
5. Write a R program for calculating cumulative sums, and products minima,maxima
6. Write an R program for finding stationary distribution of markov chains.
7. Write an R program that includes linear algebra operations on vectors and matrices.
8. Write a R program for any visual representation of an object with creating graphs using graphic functions: Plot(), Hist(), Linechart(), Pie(), Boxplot(), Scatterplots()
9. Write an R program for with any dataset containing data frame objects, indexing and sub setting data frames, and employ manipulating and analyzing data.
10. Write a program to create an any application of Linear Regression in multivariate context for predictive purpose.

Formative Assessment for Practical	
Assessment Occasion/type	Marks
Program Writing Any One Program	10 Marks
Execution	10 Marks
Viva	05 Marks
Total	25 Marks

Program Name	B.C.A	Semester	V
Course Title	Software Engineering (Theory)		
Course Code	DSC - 15	No. of Credits	04
Contact hours	52 Hours/4 Hours per week	Duration of SEA/Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Contents	52 Hrs
OVERVIEW: Introduction, Software engineering ethics, Software process models, Process activities, Coping with change, Agile software development, Agile methods, Plan-driven and agile development.	10
REQUIREMENTS ENGINEERING: Functional and non-functional requirements, Software requirements document, Requirement's specification, Requirements engineering processes, Requirement's elicitation and analysis, Requirement's validation, Requirements management.	10
SYSTEM MODELING: Context models, Interaction models- Use case modeling, Sequence diagrams, Structural models- Class diagrams, Generalization, Aggregation, Behavioral models- Data-driven modeling, Event-driven modeling, Model-driven engineering.	10
ARCHITECTURALDESIGN: Architectural design decisions, Architectural views, Architectural patterns- Layered architecture, Repository architecture, Client–server architecture **DESIGN AND IMPLEMENTATION:** Object-oriented design using the UML- System context and interactions, Architectural design, Object class identification, Design models, Interface specification, Design patterns, Implementation issues.	12
SOFTWARETESTING: Development testing-Unit testing, Choosing unit test cases, Component testing, System testing, Test-driven development, Release testing, User testing-Alpha, Beta, Acceptance testing.	10

Formative Assessment for Theory	
Assessment Occasion type	Marks
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment / Small Project	10 Marks
Seminar	10 Marks
Total	40 Marks

Text Books:	
1	Ian Sommerville, "Software Engineering", 8th Edition, Pearson Education, 2009.
References Books:	
1	Waman S Jawadekar, "Software Engineering Principles and Practice", Tata McGraw-Hill, 2004.
2	Roger S. Pressman, "A Practitioners Approach", 7th Edition, McGraw-Hill, 2007.
3	P Jalote, "An Integrated Approach to Software Engineering", Narosa Publication.

Program Name	B.C.A	Semester	V
Course Title:	Cloud Computing (Theory)		
Course Code:	DSE - E1	No. of Credits	03
Contact hours	42 Hours /3 Hours per week	Duration of SEA Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Contents	42 Hrs
Introduction: Different Computing Paradigms- Parallel Computing, Distributed Computing, Cluster Computing, Grid Computing, Cloud Computing etc., Comparision of various Computing Technologies; Cloud Computing Basics- What is Cloud Computing? History, Characteristic Features, Advantages and Disadvantages, and Applications of Cloud Computing; Trends in Cloud Computing; Leading Cloud Platform Service Providers.	8
Cloud Architecture: Cloud Service Models- Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS), Comparision of different Service Models; Cloud Deployment Models-Public Cloud, Private Cloud, Hybrid Cloud, Community Cloud; Cloud Computing Architecture- Layered Architecture of Cloud, Virtualization- Definition, Features of Virtualization, Types of Virtualizations:- Hardware Virtualization, Server Virtualization, Application Virtualization, Pros and Cons of Virtualization, Technology Examples- Xen: Para virtualization, VMware: Full Virtualization, Microsoft Hyper-V.	10
Cloud Application Programming and the Aneka Platform: Aneka Cloud Application Platform- Framework Overview, Anatomy of the Aneka Container, Building Aneka Clouds: Infrastructure Organization, Logical Organization, Private Cloud Deployment Mode, Public Cloud Deployment Mode, Hybrid Cloud Deployment Mode.	8
Cloud Platforms in Industry: Amazon Web Services- Compute Services, Storage Services, Communication Services, Additional Services; Google AppEngine- Architecture and Core Concepts, Application Life-Cycle. **Microsoft Azure**- Azure Core Concepts: Compute, Storage, Core Infrastructure and Other Services, Windows Azure Platform Appliance.	8
Cloud Applications: Scientific Applications-Healthcare (ECG Analysis in the Cloud) Geoscience (Satellite Image Processing), Business and Consumer Applications - CRM and ERP, Social Networking, Media Applications, Multiplayer Online Gaming.	8

Formative Assessment for Theory	
Assessment Occasion type	Marks
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment / Small Project	10 Marks
Seminar	10 Marks
Total	40 Marks

Text Books:	
1	Rajkumar Buyya, Christian Vecchiola, S. Thamarai Selvi: "Mastering Cloud Computing- Foundations and Applications Programming", Elsevier, 2013.
2	Barrie Sosinsky: "Cloud Computing Bible", Wiley-India, 2010.
3	K Chandrasekaran: "Essentials of Cloud Computing", CRC Press, 2015
4	Derrick Rountree, Ileana Castrillo: "The Basics of Cloud Computing", Elsevier, 2014

Program Name	B.C.A	Semester	V
Course Title	Business Intelligence (Theory)		
Course Code:	DSE-E3	No. of Credits	03
Contact hours	42 Hours /3 Hours per week	Duration of SEA/Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Contents	42 Hrs
Information Systems Support for Decision Making: An Early Framework for Computerized Decision Support, The Concept of Decision Support Systems, A Framework for Business Intelligence, Business Analytics Overview, Brief Introduction to Big Data Analytics	8
Introduction and Definitions, Phases of the Decision Making Process, The Intelligence Phase, Design Phase, Choice Phase, Implementation Phase, Decision Support Systems Capabilities, Classification, Components	8
Basic Concepts of Neural Networks: Developing Neural Network-Based Systems, Illuminating the Black Box of ANN with Sensitivity, Support Vector Machines, And A Process-Based Approach to the Use of SVM, Nearest Neighbor Method, Sentiment Analysis Overview, Sentiment Analysis Applications, and Sentiment Analysis Process.	10
Decision Support Systems modeling: Structure of mathematical models for decision support, Certainty, Uncertainty, and Risk, Decision modeling with spreadsheets, Mathematical programming optimization, Decision Analysis with Decision Tables and Decision Trees, Multi-Criteria Decision Making With Pairwise Comparisons	8
Automated Decision Systems: The Artificial Intelligence field, Basic concepts of Expert Systems, Applications of Expert Systems, Structure of Expert Systems, Knowledge Engineering, and Development of Expert Systems.	8

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment/ Small Project	10 Marks
Seminar	10 Marks
Total	**40 Marks**

Text Books:	
1.	Ramesh Sharda, Dursun Delen, Efraim Turban, J. E. Aronson, Ting-Peng Liang, David King, "Business Intelligence and Analytics: System for Decision Support", 10th Edition, Pearson Global Edition.
2.	Data Analytics: The Ultimate Beginner's Guide to Data Analytics Paperback–12 November 2017 by Edward Allr.
Additional Reading:	
1.	https://nptel.ac.in/courses/110105078/
2.	https://www.coursera.org/courses?query=business%20intelligence

Program Name:	B.C.A	Semester	V
Course Title:	Digital Marketing (Theory)		
Course Code:	Voc-2	No. of Credits	03
Contact hours	42 Hours /3 Hours per week	Duration of SEA/Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Contents	42 Hrs
Introduction to Digital Marketing: Overview of digital marketing, Evolution of digital marketing, Importance and benefits of digital marketing, Digital marketing channels and platforms. **Digital Marketing Strategy and Planning:** Developing a digital marketing strategy, Setting goals and objectives, Budgeting and resource allocation.	8
Campaign planning and execution, Monitoring and adjusting digital marketing campaigns. **Social Media Marketing:** Overview of social media marketing, Social media platforms and their features, Creating and optimizing social media profiles, Social media content strategy, Social media advertising and analytics	8
Email Marketing: Introduction to email marketing, Building an email list, Creating effective email campaigns, Email automation and segmentation, Email marketing metrics and analytics. **Content Marketing:** Understanding content marketing, Content strategy and planning,	8
Content creation and distribution, Content promotion and amplification, Content marketing metrics and analytics. **Mobile Marketing:** Mobile marketing overview, Mobile advertising strategies, Mobile app marketing, Location-based marketing, Mobile marketing analytics.	8
Analytics and Reporting: Importance of analytics in digital marketing, Setting up web analytics tools (e.g., Google Analytics), Tracking and measuring key performance indicators(KPIs), Conversion tracking and optimization, Reporting and data visualization	10

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment / Small Project	10 Marks
Seminar	10 Marks
Total	40 Marks

References	
1	"Digital Marketing Strategy: An Integrated Approach to Online Marketing" by Simon Kingsnorth.
2	"Email Marketing Rules: How to Wear a White Hat, Shoot Straight, and Win Hearts" by Chad S. White.
3	"Content Inc.: How Entrepreneurs Use Content to Build Massive Audiences and Create Radically Successful Businesses" by Joe Pulizzi.
4	"Mobile Marketing: How Mobile Technology is Re-Outsourcing Marketing, Communications And Advertising" by Daniel Rowles.
5	"Web Analytics 2.0: The Art of Online Accountability and Science of Customer Centricity" by Avinash Kaushik.

Program Name:	B.C.A	Semester	V
Course Title:	Cyber Security (Theory)		
Course Code:	SEC-4	No. of Credits	03
Contact hours	42 Hrs (3 Hours per week	Duration of SEA/Exam	02 hrs
Formative Assessment Marks	40	Summative Assessment Marks	60

Contents	42 Hrs
Module-I. Introduction to Cyber security: Defining Cyberspace and Overview of Computer and Web-technology, Architecture of cyberspace, Communication and web technology, Internet, World wide web, Advent of internet, Internet infrastructure for data transfer and governance, Internet society, Regulation of cyberspace, Concept of cyber security, Issues and challenges of cyber security.	12
Module-II. Cyber-crime and Cyber law: Classification of cyber-crimes, Common cyber-crimes- cyber-crime targeting computers and mobiles, cyber-crime against women and children, financial frauds, social engineering attacks, malware and ransom ware attacks, zero day and zero click attacks, Cybercriminals modus-operandi, Reporting of cyber-crimes, Remedial and mitigation measures, Legal perspective of cyber-crime, IT Act 2000 and its amendments, Cyber-crime and offences, Organizations dealing with Cyber-crime and Cyber security in India.	15
Module III. Social Media Overview and Security: Introduction to Social networks, Types of Social media, Social media platforms, Social media monitoring, Hash tag, Viral content, Social media marketing, Social media privacy, Challenges, opportunities and pitfalls in online social network, Security issues related to social media, Flagging and reporting of inappropriate content, Laws regarding posting of inappropriate content, Best practices for the use of Social media.	15

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment / Small Project	10 Marks
Seminar	10 Marks
Total	40 Marks

References	
1	Cyber Crime Impact in the New Millennium, by R. C. Mishra, Author Press. Edition 2010
2	Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sumit Belapure and Nina Godbole, Wiley India Pvt. Ltd. (First Edition, 2011)
3	Security in the Digital Age: Social Media Security Threats and Vulnerabilities by Henry A. Oliver, Create Space Independent Publishing Platform. (Pearson, 13th November, 2001)

4	Cyber Laws: Intellectual Property & E-Commerce Security by Kumar K, Dominant Publishers.
5	Fundamentals of Network Security by E. Maiwald, McGraw Hill.
6	Network Security Bible, Eric Cole, Ronald Krutz, James W. Conley, 2nd Edition, Wiley India Pvt. Ltd.

Program Name	B.C.A	Semester	VI
Course Title	Artificial Intelligence and Applications (Theory)		
Course Code	DSC16	No. of Credits	04
Contact hours	52 Hours 4 Hours per week	Duration of SEA Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Contents	52 Hrs
Introduction- What is Artificial Intelligence, Foundations of AI, AI – Past, Present and Future. Intelligent Agents- Environments- Specifying the task environment, Properties of task environments, Agent based programs- Structure of Agents, Types of agents-Simple reflex agents, Model-based reflex agents, Goal-based agents, and Utility-based agents.	10
Problem Solving by Searching- Problem-Solving Agents, Well-defined problems and solutions, examples-Problems, Searching for Solutions, Uninformed Search Strategies- Breadth-first search, Uniform-cost search, Depth-first search, Depth-limited search, Iterative deepening depth-first search, Bi directional search	10
Knowledge Representation- Knowledge-Based Agents, The Wumpus World, Logic, Propositional Logic, Propositional Theorem Proving: Effective Propositional Model Checking, Agents Based on Propositional Logic, First-Order Logic-Syntax and Semantics of First-Order Logic, Using First-Order Logic, Unification and Lifting Forward Chaining, Backward Chaining	12
Learning—Forms of Learning, Supervised Learning-Artificial Neural Networks (ANN), Support Vector Machines (SVM), Unsupervised Learning Clustering, Association, Advantages and disadvantages of Unsupervised Learning, Hill Climbing Algorithm	10
Applications of AI- Natural Language Processing, Text Classification and Information Retrieval, Speech Recognition, Image processing and computer vision, Robotics	10

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment / Small Project	10 Marks
Seminar	10 Marks
Total	**40 Marks**

Text Books:	
1	Stuart Russel, Peter Norvig: Artificial Intelligence A Modern Approach, 2nd Edition,
2	Tom Mitchell, "Machine Learning", 1st Edition, McGraw-Hill, 2017
3	Elaine Rich, Kevin Knight, Shivashankar B Nair: Artificial Intelligence, Tata McGraw Hill 3rd edition, 2013

Program Name	B.C.A.	Semester	VI
Course Title	PHP and MySQL (Theory)		
Course Code	DSC 17	No. of Credits	04
Contact hours	52 Hours /4 Hours per week	Duration of SEA/ Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Contents	52 Hrs
Introduction to PHP: Introduction to PHP, History and Features, Installation & Configuration of PHP, Embedding PHP code in Web Pages, HTML and Whitespaces, Writing Comments, Sending Data to the Web Browser, Data types, Keywords, Using Variables, Constants, Expressions, Operators.	10
Programming with PHP: Conditional statements: if, if-else, switch, The ? Operator, Looping statements: while Loop, do-while Loop, for Loop **Arrays in PHP:** Introduction- What is Array?, Creating Arrays, Accessing Array elements, Types of Arrays: Indexed v/s Associative arrays, Multidimensional arrays, Creating Array, Accessing Array, Manipulating Arrays, Displaying array, Using Array Functions, Including and Requiring Files- use of Include() and Require(), Implicit and Explicit Casting in PHP.	12
Using Functions, Class- Objects, Forms in PHP: Functions in PHP, Function definition, Creating and invoking user-defined functions, Formal parameters versus Actual Parameters, Function and variable scope, Recursion, Library functions: Date and Time Functions. **Strings in PHP:** What is String?, Creating and Declaring String, String Functions.	10
Class & Objects in PHP: What is Class & Object, Creating and accessing a Class & Object, Object properties, object methods, Overloading, inheritance, Constructor and Destructor. **Form Handling:** Creating HTML Form, Handling HTML Form data in PHP.	8
Database handling using PHP with MySQL: Introduction to MySQL: Database terms, Data Types, Using MySQL Client and Using phpMyAdmin, MySQL Commands, PHP MySQL Functions: Connecting to MySQL and Selecting the Database, Executing Simple Queries, Retrieving Query Results.	12

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment / Small Project	10 Marks
Seminar	10 Marks
Total	**40 Marks**

Text Books:	
1	PHP & MySQL for Dynamic Web Sites-Fourth Edition By Larry Ullman.
2	Learning PHP, MySQL and JavaScript By Robin Nixon –O ' REILLY Publications
3	Programming PHP By Rasmus Lerdorf, Kevin Tatroe, Peter MacIntyre.

Program Name	B.C.A	Semester	VI
Course Title:	PHP and MySQL Lab		
Course Code:	DSC 17 - Lab	No. of Credits	02
Contact hours	04 Hours per week	Duration of SEA Exam	2 hours
Formative Assessment Marks:	25	Summative Assessment Marks	25

Practical Assignments for PHP Programming

Sl. No.	Title of the Experiment
1	Write a PHP script to swap two numbers.
2	Write a PHP script to find the factorial of a number.
3	Write a PHP script to reverse a given number and calculate its sum.
4	Write a PHP script to generate a Fibonacci series using Recursive function.
5	Write a PHP script to implement constructor and destructor.
6	Write a PHP script to implement form handling using get method.
7	Write a PHP script to implement form handling using post method.
8	Write a PHP script that receives form input by the method post to check the number is prime or not.
9	Write a PHP script that receives string as a form input.
10	Write a PHP script to compute addition of two matrices as a form input.
11	Write a PHP script to show the functionality of date and time function.
12	Write a PHP program to upload a file.
13	Write a PHP script to implement database creation.
14	Develop a PHP program to design a college admission form using MYSQL database.

Formative Assessment for Practical	
Assessment Occasion type	**Marks**
Program Writing Any One Program	10 Marks
Execution	10 Marks
viva	05 Marks
Total	**25 Marks**

Program Name:	B.C.A	Semester	VI
Course Title:	**Data Mining and Data Warehouse (Theory)**		
Course Code:	**DSC 18**	No. of Credits:	03
Contact hours	**42 Hours / 3 Hours per week**	Duration of SEA/Exam	**2 Hours**
Formative Assessment Marks:	40	Summative Assessment Marks	60

Contents	42 Hrs
Data Mining: Introduction, Data Mining Definitions, Knowledge Discovery in Databases (KDD) Vs. Data Mining, DBMS Vs. Data Mining, Data Mining techniques, Problems, Issues and Challenges in DM, DM Applications.	8
Data Warehouse: Introduction, Definition, Multidimensional Data Model, Data Cleaning, Data Integration and transformation, Data reduction, Discretization.	8
Mining Frequent Patterns: Basic Concept – Frequent Item Set Mining Methods – Apriori and Frequent Pattern Growth (FP-Growth) algorithms-Mining Association Rules.	8
Classification: Basic Concepts, Issues, And Algorithms: Decision Tree Induction, Bayes Classification Methods, Rule-Based Classification, Lazy Learners (or Learning from your Neighbours), k-Nearest Neighbour, Prediction, Accuracy-Precision and Recall	10
Clustering: Cluster Analysis, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid-Based Methods, Evaluation of Clustering	8

Formative Assessment for Theory	
Assessment Occasion type	**Marks**
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment / Small Project	10 Marks
Seminar	10 Marks
Total	**40 Marks**

Text Books:	
1	Jiawei Han and Micheline Kamber –"Data Mining Concepts and Techniques", Second Edition Elsevier Publications.
2	Pang-Ning Tan, Michael Steinbach, Vipin Kumar: Introduction to Data Mining, Pearson Education, 2012.
3	Arun K Pujari- "Data Mining Techniques", 4th Edition, Universities Press.
4	K.P.Soman, Shyam Diwakar, V.Ajay: Insight into Data Mining – Theory and Practice, PHI.

Program Name	B.C.A	Semester	VI
Course Title:	Project Lab		
Course Code:	DSC 19 - Lab	No. of Credits	02
Contact hours	04 Hours per week	Duration of SEA Exam	03 hours
Formative Assessment Marks:	25	Summative Assessment Marks	25

Guidelines: -

1. The project is of 4 Hours per week for one (Semester VI) Semester duration.
2. The synopsis approval will be given by the project Guides.
3. The Project work should be a group of not more than five members.
4. The project labs will focus on survey, planning, designing, coding and testing of the project.

Report

The project proposal should include the following:

- Title
- Introduction
- Literature survey
- Objectives
- Design Details of modules and process logic
- Development/Implementation stages
- Testing Report
- Results

(Any Other Components as per project requirements can be added by Project guide.)

Internal Assessment for Theory	
Assessment Occasion type	**Marks**
Internal, Attendance, documentation, development work, Report	25 Marks
Total	**25 Marks**

Summative Assessment for Theory	
Assessment Occasion type	**Marks**
Demo – Presentation	05 Marks
Report	15 Marks
Viva	05 Marks
Total	**25 Marks**

Program Name	B.C.A	Semester	VI
Course Title	Digital Image Processing (Theory)		
Course Code	DSE - E1	No. of Credits	03
Contact hours	42 Hours / 3 Hours per week	Duration of SEA Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Contents :	42 Hrs
DIGITAL IMAGE FUNDAMENTALS: Steps in Digital Image Processing – Components –Image Sensing and Acquisition – Image Sampling and Quantization – Relationships between pixels - Color image fundamentals - RGB, HSI models.	8
IMAGE ENHANCEMENT: Introduction, Definition, Multidimensional Data Model, Data Cleaning, Data Integration and transformation, Data reduction, Discretization.	8
IMAGE RESTORATION: Image Restoration - degradation model, Properties, Noise models – Mean Filters – Order Statistics – Adaptive filters.	8
IMAGE SEGMENTATION: Edge detection, Edge linking via Hough transform – Thresholding - Region based segmentation – Region growing – Region splitting and merging – Morphological processing- erosion and dilation.	10
IMAGE COMPRESSION AND RECOGNITION: Need for data compression, Boundary representation, Boundary description, Texture - Patterns and Pattern classes - Recognition based on matching.	8

Formative Assessment for Theory	
Assessment Occasion/ type	**Marks**
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment / Small Project	10 Marks
Seminar	10 Marks
Total	40 Marks

Text Books:	
1	Rafael C. Gonza Lez and Richard E. Woods: 4th Edition, Pearson Publications.
2	Understanding Digital Image Processing, Vipin Tyagi, 1st Edition, CRC Press.

Program Name	B.C.A	Semester	VI
Course Title	Mobile Application Development (Theory)		
Course Code	DSE - E2	No. of Credits	03
Contact hours	42 Hours / 3 Hours per week	Duration of SEA Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Contents	42Hrs
Android OS design and Features: Android development framework, SDK features, Installing and running applications on Android Studio, Creating AVDs, Types of Android applications, Best practices in Android programming, Android tools, Building your First Android application.	8
Android Application Design Essentials: Anatomy of an Android applications, Android terminologies, Application Context, Activities, Services, Intents, Receiving and Broadcasting Intents, Android Manifest File and its common settings, Using Intent Filter, Permissions.	8
Android User Interface Design Essentials: User Interface Screen elements, Designing User Interfaces with Layouts, Drawing and Working with Animation.	8
Testing Android applications, Publishing Android application, Using Android preferences, Managing Application resources in a hierarchy, working with different types of resources.	8
Using Common Android APIs: Using Android Data and Storage APIs, Managing data Using Sqlite, Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android WebAPIs, Deploying Android Application to the World.	10

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment / Small Project	10 Marks
Seminar	10 Marks
Total	**40 Marks**

Text Books:	
1	Lauren Darcey and Shane Conder , "Android Wireless Application Development", Pearson Education, 2nd ed. (2011)
2	Reto Meier, "Professional Android2 Application Development", Wiley India Pvt Ltd.
3	Mark L Murphy, "Beginning Android", Wiley India Pvt Ltd.
4	Android Application Development All in one for Dummies by Barry Burd, Edition: I
5	Beginning Android 4 Application Development, Wei-Meng Lee, Wiley India(Wrox), 2013.

Program Name	B.C.A	Semester	VI
Course Title	Web Content Management System (Theory)		
Course Code:	Voc - 1	No. of Credits	03
Contact hours	42 Hours /3 Hours per week	Duration of SEA/ Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Contents	42 Hrs
Unit 1: Web Content Development and Management, Content Types and Formats, Norms and Guidelines of Content Development, Creating Digital Graphics, Audio Production and Editing.	8
Unit 2: Web Hosting and Managing Multimedia Content, Creating and Maintaining a WikiSite, Presentation Software Part I, Presentation Software Part II, Screen casting Tools and Techniques	8
Unit 3: Planning and Developing Dynamic Web Content Sites, Website Design Using CSS Creating and Maintaining a WikiSite, Creating and Managing a Blog Site	8
Unit 4: E- Publication Concept, E- Pub Tools, Simulation and Virtual Reality Applications, Introduction to Moodle, Creating a New Course, uploading new Course	10
Unit 5: Create and Add Assessment, Add and Enroll User and Discussion Forum, Content Management System: Joomla.	8

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment / Small Project	10 Marks
Seminar	10 Marks
Total	**40 Marks**

Text Books:	
1	Web Content Management: Systems, Features, and Best Practices 1st Edition by Deane Barker
2	Content Management Bible (2nd Edition) 2nd Edition by Bob Boiko
3	Moodle for Learning Management System (LMS): A Practical and Visual Guidebook of Administrator and Instructor for Distance Education Paperback—October 12, 2020 by James Koo
4	Using Joomla!: Efficiently Build and Manage Custom Websites, 2nd Edition by Ross Sevenich
Additional Reading:	
https://onlinecourses.swayam2.ac.in/cec20_lb06/preview	

Program Name:	B.C.A	Semester	VI
Course Title:	Logical Reasoning (Theory)		
Course Code:	SEC - 5	No. of Credits:	03
Contact hours	42 Hrs /3 Hours per week	Duration of SEA Exam	02 hrs
Formative Assessment Marks	40	Summative Assessment Marks:	60

Contents	42 Hrs
Arithmetic Reasoning: Analytical Thinking, Syllogistic Logic, Problem solving, Number System, LCM & HCF, Logarithms, Ratio, Proportions and Variations, Partnership, Time speed and distance, work time problems;	12
Data Interpretation: Numerical Data Tables; Line Graphs, Bar Charts and Pie charts; Mix Diagrams; Geometrical Diagrams, and other forms of Data Representation	14
Lateral Thinking, Reasoning & Logic: Verbal and Non-verbal Logic, Family Tree, Linear Arrangements, Circular and Complex Arrangement, Conditionality and Grouping, Sequencing and Scheduling, Venn Diagram in Logical Reasoning	16

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Internal Assessment	10 Marks
Attendance	10 Marks
Quiz / Assignment / Small Project	10 Marks
Seminar	10 Marks
Total	**40 Marks**

Text Book	
1	R. S. Aggarwal – "A Modern Approach to Verbal and Non-Verbal Reasoning", Sultan Chand and Sons, New Delhi.
References	
1	R. S. Aggarwal – "Quantitative Aptitude", Sultan Chand and Sons, New Delhi.
2	Dr. Ravi Chopra – "Verbal and Non – Verbal Reasoning", Mac Millan India.
3	Dr. Edward De Bono– "Lateral Thinking", Penguin Books, New Delhi.

KUVEMPU UNIVERSITY

NEP-2021

CURRICULUM STRUCTURE AND SYLLABUS

Bachelor of Computer Application (Basic and Honors) Programmes
as Major and Minor Courses

And

Open Elective courses in Computer Applications

w.e.f Academic Year 2021-22 onwards

The objectives of the BCA Program

1. The primary objective of this program is to provide a foundation of computing principles and business practices for effectively using/managing information systems and enterprise software
2. It helps students analyze the requirements for system development and exposes students to business software and information systems
3. This course provides students with options to specialise in legacy application software, system software or mobile applications
4. To produce outstanding IT professionals who can apply the theoretical knowledge into practice in the real world and develop standalone live projects themselves
5. To provide opportunity for the study of modern methods of information processing and its applications.
6. To develop among students the programming techniques and the problem-solving skills through programming
7. To prepare students who wish to go on to further studies in computer science and related subjects.
8. To acquaint students to Work effectively with a range of current standard Office Productivity software applications

Program Outcomes: BCA (3 Years) Degree

1. **Discipline knowledge:** Acquiring knowledge on basics of Computer Science and ability to apply to design principles in the development of solutions for problems of varying complexity.
2. **Problem Solving:** Improved reasoning with strong mathematical ability to identify, formulate and analyse problems related to computer science and exhibiting a sound knowledge on data structures and algorithms.
3. **Design and Development of Solutions:** Ability to design and development of algorithmic solutions to real world problems and acquiring a minimum knowledge on statistics and optimization problems. Establishing excellent skills in applying various design strategies for solving complex problems.
4. **Programming a computer:** Exhibiting strong skills required to program a computer for various issues and problems of day to day applications with thorough knowledge on programming languages of various levels.
5. **Application Systems Knowledge:** Possessing a sound knowledge on computer application software and ability to design and develop app for application problems.
6. **Modern Tool Usage:** Identify, select and use a modern scientific and IT tool or technique for modeling, prediction, data analysis and solving problems in the area of Computer Science and making them mobile based application software.
7. **Communication:** Must have a reasonably good communication knowledge with in oral and writing.
8. **Project Management:** Practicing of existing projects and becoming independent to launch own projects by identifying a gap in solutions.
9. **Ethics on Profession, Environment and Society:** Exhibiting professional ethics to maintain the integrality in a working environment and also have concern on societal impacts due to computer-based solutions for problems.
10. **Lifelong Learning:** Should become an independent learner i.e. learn to learn ability.
11. **Motivation to take up Higher Studies:** Inspiration to continue education towards advanced studies on Computer Science.

Additional Program Outcomes: BCA Degree (Hons)

The Bachelor of Computer Application (BCA (Hons)) program enables students to attain following additional attributes besides the afore-mentioned attributes by the time of graduation.

1. Apply standard Software Engineering practices and strategies in real-time software project development.
2. Design and develop computer programs/computer based systems in the areas related to AI algorithms, networking, web design, cloud computing, IoT and data analytics.
3. Acquaint with the contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems.
4. The ability to apply the knowledge and understanding noted above to the analysis of a given information handling problem.
5. The ability to work independently on a substantial software project and as an effective team member.

Curriculum for BCA

Sem	Core Courses	Hour / Week Theory	Hour / Week Lab	DS Elective Courses	Hours / Week
1	i. Fundamentals of Computers	3			
	ii. Programming in C	3			
	iii. Mathematical Foundation	3			
	iv. LAB: Information Technology		4		
	v. LAB: C Programming		4		
2	i. Discrete Mathematical Structures	3			
	ii. Data Structures using C	3			
	iii. Object Oriented Concepts using JAVA	3			
	iv. LAB: Data Structure		4		
	v. LAB: JAVA Lab		4		
3	i. Data Base Management Systems	3			
	ii. C# and DOT NET Framework	3			
	iii. Computer Communication and Networks	3			
	iv. LAB: DBMS		4		
	v. LAB: C# and DOT NET Framework		4		
4	i. Python Programming	3			
	ii. Computer Multimedia and Animation	3			
	iii. Operating Systems Concepts	3			
	iv. LAB: Multimedia and Animation		4		
	v. LAB: Python programming		4		
5	i. Internet Technologies	3		(a) Cyber Law and Cyber Security	3
	ii. Statistical Computing and R Programming	3		(b) Cloud Computing	3
	iii. Software Engineering	3		(c) Business Intelligence	3
	iv. LAB: R Programming		4		
	v. LAB: JAVA Script, HTML and CSS		4		
	vi. Vocational 1	3			
6	i. Artificial Intelligence and Applications	3		(a) Fundamentals of DataScience	3
	ii. PHP and MySQL	3	4	(b) Mobile Application Development	3
	iii. LAB: PHP and MySQL		12		
	iv. PROJECT	3		(c) Embedded Systems	3
	v. Vocational 2				
7	i. Analysis and Design of Algorithms	3		(a) Data Compression	3
	ii. Data Mining and KnowledgeManagement	3		(b) IoT	3
	iii. LAB: Algorithms		4	(c) Data Analytics	3
	iv. LAB: Data Mining and KnowledgeManagement		4		
	v. Vocational 3				
8	i. Advanced Theory and Compiler Design	3		(a) Open Source Programming	3
	ii. Cryptography and Network Security	3	4		3
	iii. Compiler Lab		12	(b) Storage Area Networks	3
	iv. LAB: Project	3		(c) Pattern Recognition	
	v. Vocational 4			(d) Machine Learning	
		4			

TABLE I: COURSE STRUCTURE FOR BCA.

Semester	Course Code	Title of the Paper	Credit	Total Credit of GE Languages, CAE Voc, AECC, SEC	Total Credit
I	CAC01	Fundamentals of Computers	3	13	26
	CAC02	Programming in C	3		
	CAC03(a) / (b)	Mathematical Foundation	3		
	CAC01P	LAB: Information Technology	2		
	CAC02P	LAB: C Programming	2		
II	CAC04	Data Structures using C	3	13	26
	CAC05	Object Oriented Concepts using JAVA	3		
	CAC06	Discrete Mathematical Structures	3		
	CAC04P	LAB: Data Structure	2		
	CAC05P	LAB: JAVA	2		
III	CAC07	Data Base Management Systems	3	13	26
	CAC08	C# and DOT NET Framework	3		
	CAC09	Computer Communication and Networks	3		
	CAC07P	LAB: DBMS	2		
	CAC08P	LAB: C# and DOT NET Framework	2		
IV	CAC10	Python Programming	3	13	26
	CAC11	Computer Multimedia and Animation	3		
	CAC12	Operating System Concepts	3		
	CAC10P	LAB: Python programming	2		
	CAC11P	LAB: Multimedia and Animation	2		
V	CAC13	Internet Technologies	3	10	23
	CAC14	Statistical Computing and R Programming	3		
	CAC15	Software Engineering	3		
	CAC13P	LAB: JAVA Script, HTML and CSS	2		
	CAC14P	LAB: R Programming	2		
VI	CAC16	PHP and MYSQL	3	10	23
	CAC17	Artificial Intelligence and Applications	3		
	CAC16P	LAB: PHP and MYSQL	2		
	CAC17	Project Work	5		
VII	CAC18	Analysis and Design of Algorithms	3	11	21
	CAC19	Data Mining and Knowledge Management	3		
	CAC18P	LAB: Algorithms	2		
	CAC19P	LAB: Data Mining	2		
	CA101	Internship	1		
VIII	CAC20	Automata Theory and Compiler Design	3	6	20
	CAC21	Cryptography and Network Security	3		
	CAC20P	LAB: Compiler Lab	2		
	CAC01	Project Work	6		

TABLE II: CS COURSE DETAILS FOR BEA

Course Type	Course Code as referred above	Compulsory/ Elective	List of compulsory courses and list of option of elective courses. (A suggestive list)
CA	CA101, CA102, CA103, CA104, CA105, CA106, CA107, CA108, CA109, CA110, CA111, CA112, CA113, CA114, CA115, CA116, CA117, CA118, CA119, CA120, CA121	Compulsory	As Mentioned in Table I
CAE	CAE1A	Elective	Cyber Law and Cyber Security OR Business Intelligence OR Fundamentals of Data Science
	CAE2A	Elective	Fundamentals of Data Science OR Mobile Application Development OR Embedded Systems
	CAE3A	Elective	Data Communications OR Internet of Things (IoT) OR Data Analytics
	CAE4A	Elective	Open source Programming OR Storage Area Networks OR Pattern Recognition OR Machine Learning
Vocational	Vocational 1	Elective	DTP, GUI and Multimedia OR Hardware and Server Maintenance OR Web Content Management Systems OR Computer Networking OR Health Care Technologies OR Digital Marketing OR Office Automation
	Vocational 2	Elective	
	Vocational 3	Elective	
	Vocational 4	Elective	
MEC	MEC1	Compulsory	Kannada/Additional Kannada/ Sanskrit/ Environmental Learning
	MEC2	Compulsory	Sports/NCC/NSS etc
	MEC3	Compulsory	Ethics & Self Development
	MEC4	Compulsory	Professional Communication
AECC	AECC1	Compulsory	Environmental Studies
	AECC2	Compulsory	Constitution of India
Languages 1	L1-1, L1-2, L1-3, L1-4	Compulsory	Kannada/ Functional Kannada
Languages 2	L2-1, L2-2, L2-3, L2-4	Elective	English/ Hindi/ French/ Additional English/ etc

Computer Application Core Courses (CA C) for BCA (Hons)

Sl. No	Course Code	Title of the Paper
1	CAC01	Fundamentals of Computers
2	CAC02	Programming in C
3	CAC03 (a)/(b)	Mathematical Foundation/ Accountancy
4	CAC04	Discrete Mathematical Structures
5	CAC05	Object Oriented Concepts using JAVA
6	CAC06	Data Structures using C
7	CAC07	Data Base Management Systems
8	CAC08	C# and DOT NET Framework
9	CAC09	Computer Communication and Networks
10	CAC10	Python Programming
11	CAC11	Computer Multimedia and Animation
12	CAC12	Operating System Concepts
13	CAC13	Internet Technologies
14	CAC14	Statistical Computing and R Programming
15	CAC15	Software Engineering
16	CAC16	PHP and MySQL
17	CAC17	Artificial Intelligence and Applications
18	CAC18	Analysis and Design of Algorithms
19	CAC19	Data Mining and Knowledge Management
20	CAC20	Automata Theory and Compiler Design
21	CAC21	Cryptography and Network Security

Computer Application Electives (CA E) for BCA (Hons)

Sl. No.	Computer Application Electives (CA E)
1	Business Intelligence
02	Cyber Law and Cyber Security
3	Data Analytics
4	Data Compression
5	Embedded Systems
6	Fundamentals of Data Science
7	Internet of Things (IoT)
8	Machine Learning
9	Mobile Application Development
10	Open-source Programming
11	Pattern Recognition
12	Storage Area Networks

Vocational Electives

Sl. No	Vocational Electives
1	DTP, CAD and Multimedia
2	Hardware and Server Maintenance
3	Web Content Management Systems
4	Computer Networking
5	Health Care Technologies
6	Digital Marketing
7	Office Automation

Open Electives in Computer Applications:

- Office Automation
- Computer Fundamentals
- Problem Solving and C Programming Concepts
- Python Programming Concepts
- Web Designing
- Accounting Package
- E-Commerce
- Multimedia Presenting
- R Programming
- E-Content Development
- Computer Animation

Syllabus for BCA (Basic and Honors) 1st and 2nd Semesters

Semester: I

Course Code: BACC1	Course Title: Fundamentals of Computers
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03

Course Outcomes (COs):

- Introduction to computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers
- Operating systems, functions of operating systems, classification of operating system, kernel, shell, basics of Unix, shell programming, booting
- Databases, why databases are used, users, SQL, data types in SQL, introduction of queries - select, alter, update, delete, truncate, using where, and or in, not in
- Internet basics, features, applications, services, Internet service providers, domain name system, browsing, email, searching
- Web Programming basics, introduction of HTML and CSS programming
- Introduction of computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers.

Course Contents

Contents	Hours
Unit - 1	
Fundamentals of Computers: Introduction to Computers - Computer Definition, Evolution and History of Computers, Basic Organization of a Digital Computer, Number Systems – different types, conversion from one number system to another, Computer Codes - BCD, Gray Code, ASCII and Unicode, Boolean Algebra – Boolean Operators with Truth Tables, Types of Software – System Software and Utility Software, Computer Languages – Machine Level, Assembly Level & High Level Languages, Translators Programs – Assembler, Interpreter and Compiler, Planning a Computer Program - Algorithm, Flowchart and Pseudo code with Examples (at least 5 hours of teaching)	16
Unit- 2	

Introduction to Computer: Characteristics of computers. Classification of Digital Computer Systems: Microcomputers. Minicomputers. Mainframes. Super computers. Anatomy of Computer: Introduction. Functions & Components of a Computer. Central Processing Unit. Storage units. Input and output Devices. How CPU and memory works. Program execution with illustrative examples. Introduction to microcontrollers.	10
Unit-3	
Operating System Fundamentals: Operating Systems: Introduction. Functions of an operating system. Classification of Operating Systems. System programs. Application programs. Utilities. The Unix Operating System. Basic Unix commands. Microkernel Based Operating System. Booting.	08
Unit-4	
Introduction to Database Management Systems: Database. DBMS. Why Database - File system vs DBMS. Database applications. Database users. Introduction to SQL. Data types. Classification of SQL-DDL with constraints. DML. DCL. TCL.	09
Unit-5	
Internet Basics: Introduction. Features of Internet. Internet application Services of Internet. Logical and physical addresses. Internet Service Providers. Domain Name System. **Web Basics:** Introduction to web. Web browsers. http/https. URL. HTML5. CSS	09

Text Books:

1. Pradeep K. Sinha and Priti Sinha. Computer Fundamentals (Sixth Edition). BPB Publication
2. David Riley and Kenny Hunt. Computational thinking for modern solver. Chapman & Hall/CRC.

References:

1. J. Glenn Brook-shear." Computer Science: An Overview". Addition-Wesley Twelfth Edition.
2. P.C. Deswal. "How to solve it by Computer". PHI.

Course Code: CAC01F	Course Title: Information Technology Lab
Course Credits: 02	Hours/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 04

Part A:

1. Activities using Word Processor Software
2. Activities using Spreadsheets Software
3. Activities using Presentation Software
4. Activities involving Multimedia Editing (Images, Video, Audio ...)
5. Tasks involving Internet Browsing

Part B:

1. Flow charts: Installation and using of Programming software for different arithmetic tasks like sum, average, product, difference, quotient and remainder of given numbers, calculate area of Shapes (Square, Rectangle, Circle and Triangle), decision making and looping, arrays and recursion(at least 10 problems solving all concepts).

   NOTE: In addition to the ones listed above, universities can include other activities so as for the student to become proficient in using personal computers for multiple purposes for which modern computers can be put to use.

References:

1. Computational Thinking for the Modern Problem Solver, By Riley D.D. Hunt K.A. CRC press, 2014
2. Paradigms P. Lucio P. Computational Thinking, First Algorithms Then Code, Springer

Web References:

http://www.programiz.org/documentation/

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Activity – 1 from Part A	Write up on the activity/ task	8
	Demonstration of the activity/ task	10
Activity-2 from Part B	Write up on the activity/ task	8
	Demonstration of the activity/ task	10
Viva Voce based on Lab Activities		05
Practical Records		09
Total		40

Course Code: CAC03	Course Title: Programming in C
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to

- Confidently operate Desktop Computers to carry out computational tasks
- Understand working of Hardware and Software and the importance of operating systems
- Understand programming languages, number systems, peripheral devices, networking, multimedia and internet concepts
- Read, understand and trace the execution of programs written in C language
- Write the C code for a given problem
- Perform input and output operations using programs in C
- Write programs that perform operations on arrays

Course Content

Content	Hours
Unit - 1	
Introduction to C Programming: Overview of C, History and Features of C, Structure of a C Program with Examples, Creating and Executing a C Program, Compilation process in C. **C Programming Basic Concepts:** C Character Set, C tokens - keywords, identifiers, constants, and variables, Data types, Declaration & initialization of variables, Symbolic constants.	8
Unit-2	
Input and output with C: Formatted I/O functions - printf and scanf, control strings and escape sequences, output specifications with printf functions, Unformatted I/O functions to read and display single character and a string - gets(), puts(), getc and putc functions.	8
Unit-3	
C Operators & Expressions: Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment & Decrement operators, Bitwise operators, Conditional operator, Special operators, Operator Precedence and Associativity, Evaluation of arithmetic expressions, Type conversions.	13

Control Structures: Decision making Statements - Simple if, if else, nested if else, else if ladder, Switch Case, goto, break & continue statements. Looping Statements - Entry controlled and exit controlled statements- while, do-while, for loops, Nested loops.	
Unit - 4	
Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation, Two Dimensional arrays - Declaration, Initialization and Memory representation. **Pointers in C:** Understanding pointers - Declaring and initializing pointers, accessing address and value of variables using pointers, Pointers and Arrays, Pointer Arithmetic, Advantages and disadvantages of using pointers.	12
Unit 5	
User Defined Functions: Need for user defined functions, Format of C user defined functions, Components of user defined functions - return type, name, parameter list, function body, return statement and function call, Categories of user defined functions - With and without parameters and return type. **User defined data types:** Structures - Structure Definition, Advantages of Structure, declaring structure variables, accessing structure members, Structure members initialization, comparing structure variables, Array of Structures, Unions - Union definition, difference between Structures and Unions.	10

Text Books:

1. C The Complete Reference, By Herbert Schildt.
2. M.T Somashekara, D.S Guru and K.S. Manjunatha, Problem solving with C, PHI publication.
3. C Programming Language, By Brain W. Kernighan.
4. Kernighan & Ritchie, The C Programming Language (PHI)

Reference Books:

1. P. K. Sinha & Priti Sinha, Computer Fundamentals (BPB)
2. E. Balaguruswamy, Programming in ANSI C (TMH)
3. Kanetkar, Programming with ANSI and TURBO C (Pearson Education)
4. V. Rajaraman, Programming in C (PHI – EEE)
5. S. Dey and Ghoshal, Programming with C (TMH)
6. Yashavant Kanetkar, Let us C
7. P.B. Kotur, Programming in C (Sapna Book House).

Course Code: CAC02P	Course Title: C Programming Lab
Course Credits: 02	Hours/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 04

Programming LabPart A:

1. Write a C Program to read radius and find area and volume of a sphere.
2. Write a C Program to read three numbers and find the biggest of three
3. Write a C Program to demonstrate library functions in math.h (at least 5)
4. Write a C Program to read a number, find the sum of the digits, reverse the number and check it for palindrome
5. Write a C Program to read numbers from keyboard continously till the user presses 999 and to find the sum of only positive numbers
6. Write a C Program to read percentage of marks and to display appropriate grade (using switch case)
7. Write a C Program to find the roots of quadratic equation (if else ladder)
8. Write a C program to read marks scored in 3 subjects by a students and find the average of marks and result.(Demonstration of single dimensional array)
9. Write a C Program to remove Duplicate Element in a single dimensional Array
10. Program to perform addition and subtraction of 2 matrices

Part B:

1. Write a C Program to find the length of a string without using built in function
2. Write a C Program to demonstrate string functions (at least 3).
3. Write a C Program to demonstrate pointers in C
4. Write a C Program to generate n prime number by defining user defined function
5. Write a C Program to find the trace of a square matrix using function
6. Write a C Program to read, display and multiply two matrices using functions
7. Write a C Program to read a string and to find the number of alphabets, digits, vowels, consonants, spaces and special characters.
8. Write a C Program to Reverse a String using pointer
9. Write a C Program to demonstrate student structure to read & display records of n students.
10. Write a C Program to demonstrate the difference between structure & union.

Note: Student has to execute a minimum of 8 programs in each part to complete the Lab course.

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program – 1 from Part B	Flowchart / Algorithm	02
	Writing the Program	03
	Execution and Formatting	03
Program – 2 from Part B	Flowchart / Algorithm	02
	Writing the Program	03
	Execution and Formatting	03
Viva Voce based on C Programming		03
Practical Record		05
Total		40

Course Code: CACC03(a)	Course Title: Mathematical Foundation
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03

Course Outcomes (COs):

- Study and solve problems related to connectives, predicates and quantifiers under different situations.
- Develop basic knowledge of matrices and to solve equations using Cramer's rule.
- Know the concept of Eigen values.
- To develop the knowledge about derivatives and know various applications of differentiation.
- Understand the basic concepts of Mathematical reasoning, set and functions.

Content	Hours
Unit - 1	
Mathematical logic: Mathematical logic introduction-statements Connectives- negation, conjunction, disjunction- statement formulas and truth tables- conditional and bi Conditional statements- tautology contradiction- equivalence of formulas-duality law-Predicates and Quantifiers Arguments.	10
Unit - 2	
sets and Functions: power set, Venn diagram Cartesian product-relations- functions- types of functions - composition of functions.	10
Unit - 3	
Matrices and determinant: Introduction/Types of matrices-matrix operations-transpose of a matrix -determinant of matrix - inverse of a matrix- Cramer's rule	10
Unit - 4	
Matrix Algebra: finding rank of a matrix – normal form-echelon form Cayley Hamilton theorem-Eigen values.	08
Unit - 5	
Differential calculus: Functions and limits - Introduction of Algebraic Functions – Evaluation of First and Second Order Derivatives – Maxima and Minima	06

Text Books:

P. R. Vittal-Business Mathematics and Statistics, Margham Publications, Chennai.

Reference Books:

1. S. Sastry-Discrete Mathematics -New age International Limited Publishers, New Delhi.

Semester: II

Course Code: CAC04	Course Title: Data Structures using C
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):
After completing this course satisfactorily, a student will be able to

- Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms
- Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs
- Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs
- Demonstrate different methods for traversing trees
- Compare alternative implementations of data structures with respect to performance
- Describe the concept of recursion, give examples of its use
- Discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing

Course Content

Content	Hours
Unit - 1	
Introduction to data structures: Definition, Types of data structures - Primitive & Non-primitive, Linear and Non-linear. Operations on data structures. Algorithm Specification, Performance Analysis, Performance Measurements. Recursion: Definition, Types of recursion, Recursion Examples - Fibonacci numbers, GCD, Binomial coefficient nCr, Towers of Hanoi. Comparison between iterative and recursive functions.	08
Unit - 2	
Arrays: Basic Concepts - Definition, Declaration, Initialization, Operations on arrays, Types of arrays, Arrays as Abstract data types (ADT), Representation of Linear Arrays in memory, Traversing linear arrays, Inserting and deleting elements, Sorting – Selection sort, Bubble sort, Quick sort, Insertion sort, merge sort, Searching – Sequential Search, Binary search, Iterative and Recursive searching, Multidimensional arrays, Representation of multidimensional arrays, Sparse matrices.	12
Unit - 3	

Stacks: Basic Concepts – Definition and Representation of stacks; Operations on stacks; Applications of stacks; Infix, postfix and prefix notations; Conversion from infix to postfix using stack; Evaluation of postfix expression using stack; Application of stack in function calls. Queues: Basic Concepts – Definition and Representation of queues; Types of queues – Simple queues, Circular queues, Double ended queues, Priority queues; Operations on Simple queues.	10
Unit-4	
Dynamic memory allocation: Static & Dynamic memory allocation; Memory allocation and de- allocation functions – malloc calloc realloc and free. Linked list: Basic Concepts – Definition and Representation of linked list, Types of linked lists – Singly linked list, Doubly linked list, Header linked list, Circular linked list; Representation of Linked list in Memory; Operations on Singly linked lists – Traversing, Searching, Insertion, Deletion; Memory allocation; Garbage collection.	12
Unit-5	
Trees: Definition; Tree terminologies – node, root node, parent node, ancestors of a node, siblings, terminal & non-terminal nodes, degree of a node, level, edge, path, depth; Binary tree; Type of binary trees – strict binary tree, complete binary tree, binary search tree and heap tree; Array representation of binary tree; Traversal of binary tree; preorder, inorder and postorder traversal; Reconstruction of a binary tree when any two of the traversals are given.	10

Text Books

1. Ellis Horowitz and Sartaj Sahni, Fundamentals of Data Structures

References

1. Forouzan, Data structures Using C (Pearson Education)
2. Kamthane, Introduction to Data structures (Pearson Education)
3. Y. Kanitkar, Data Structures Using C (BPB)
4. Kruse, Data Structures Using C
5. Padma Reddy, Data Structure Using C
6. Sudipa Mukherjee, Data Structures using C – 1000 Problems and Solutions (McGraw-Hill Education, 2008)

Course Code: CAC04P	Course Title: Data Structures Lab
Course Credits: 02	Hours/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 03 Hours

Programming Lab

Part A

1. Write a C Program to find GCD using recursive function
2. Write a C Program to display Pascal Triangle using binomial function
3. Write a C Program to generate a Fibonacci numbers using recursive function
4. Write a C Program to implement Towers of Hanoi
5. Write a C Program to implement dynamic array, find smallest and largest element of the array.
6. Write a C Program to read the names of cities and arrange them alphabetically using bubble sort
7. Write a C Program to sort the given list using selection sort technique.
8. Write a C Program to sort the given list using insertion sort technique

Part B

1. Write a C Program to sort the given list using quick sort technique
2. Write a C Program to sort the given list using merge sort technique
3. Write a C Program to search an element using linear search technique and recursive binary search technique
4. Write a C Program to implement Stack
5. Write a C Program to convert an infix expression to postfix
6. Write a C Program to implement simple queue
7. Write a C Program to implement linear linked list
8. Write a C Program to implement traversal of a binary tree

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program 1 from Part A	Algorithm	05
	Writing the Program	10
	Execution and Formatting	05
Program 2 from Part B	Algorithm	05
	Writing the Program	05
	Execution and Formatting	05
Viva Voce based on Data structures		05
Practical Record		05
Total		40

Course Code: CAC05	Course Title: Object Oriented Programming with JAVA
Course Credits: 03	Hours / Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to

- Understand the features of Java and the architecture of JVM
- Write, compile, and execute Java programs that may include basic data types and control flow constructs and how type casting is done
- Identify classes, objects, members of a class and relationships among them needed for a specific problem and demonstrate the concepts of polymorphism and inheritance
- The students will be able to demonstrate programs based on interfaces and threads and explain the benefits of JAVA's Exceptional handling mechanism compared to other Programming Language
- Write, compile, execute Java programs that include GUIs and event driven programming and also programs based on files

Course Content

Content	Hours
Unit - 1	
Introduction to OOPS and Java: OOPS concepts and paradigm, Basics of Java programming, Data types, Variables, Operators, Control structures including selection, Looping, method Overloading, Math class, Arrays in Java.	08
Unit - 2	
Objects and Classes: Basics of objects and classes in Java, Constructors, Finalizer, Visibility modifiers, Methods and objects, Inbuilt classes like String, Character, String Buffer, File, this reference, I/O streams.	10
Unit-3	
Inheritance and Polymorphism: Inheritance in Java, Super and sub class, Overriding, Object class, Polymorphism, Dynamic binding, Generic programming, Casting objects, Instance of operator, Abstract class, Interface in Java, Package in Java, Util package.	08
Unit-4	

Multithreading in java: Thread life cycle and methods, Runnable interface, Thread synchronization, Exception handling with try catch-finally, Collections in java, Introduction to JavaBeans and Network Programming.	6
Unit - 5	
Event and GUI programming: Event handling in java, Event types- Mouse and key events, GUI Basics, Panels, Frames, Layout Managers, Flow Layout, Border Layout, Grid Layout, GUI components like Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box, Applet and its life cycle, introduction to swing.	10

Text Books

1. Programming with Java, By E Balaguruswamy – A Primer, Fourth Edition, Tata McGraw Hill Education Private Limited.
2. Core Java Volume I – Fundamentals, By Cay S. Horstmann, Prentice Hall
3. Object Oriented Programming with Java : Somashekara, M.T., Guru, D.S., Manjunatha, K.S.

Reference Books:

1. Java 2 - The Complete Reference – McGraw Hill publication
2. Java – The Complete Reference, 7th Edition, By Herbert Schildt – McGraw Hill publication.

Course Code: CAC05F	Course Title: JAVA Lab
Course Credits: 02	Hours/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 04 Hours

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to

- Implement Object Oriented programming concept using basic syntaxes of control Structures
- Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem
- Demonstrate how to achieve reusability using inheritance
- Demonstrate understanding and use of interfaces, packages, different exception handling mechanisms and concept of multithreading for robust faster and efficient application development
- Identify and describe common user interface components to design GUI in Java using Applet & AWT along with response to events

Practice Lab

1. Program to print the following triangle of numbers
   1
   1 2
   1 2 3
   1 2 3 4
   1 2 3 4 5
2. Program to simple java application to print the message "Welcome to Java"
3. Program to display the month of a year. Months of the year should be held in an array.
4. Program to find the area of rectangle
5. program to demonstrate a division by zero exception
6. Program to create a user defined exception say Pay Out of Bounds

Programming Lab

PART A: Java Fundamentals OOPs in Java

1. Program to add two integers and two float numbers. When no arguments are supplied, give a default value to calculate the sum. Use function overloading

2. Program to perform mathematical operations. Create a class called AddSub with methods to add and subtract. Create another class called MulDiv that extends from AddSub class to use the member data of the super class. MulDiv should have methods to multiply and divide. A main function should access the methods and perform the mathematical operations.
3. Program with class variable that is available for all instances of a class. Use static variable declaration. Observe the changes that occur in the object's member variable values.
4. Program to create a student class with following attributes:
Enrolment No, Name, Mark of sub1, Mark of sub2, mark of sub3, TotalMarks. Total of the three marks must be calculated only when the student passes in all three subjects. The pass mark for each subject is 50. If a candidate fails in any one of the subjects his total mark must be declared as zero. Using this condition write a constructor for this class. Write separate functions for accepting and displaying student details. In the main method create an array of n student objects and display the details.
5. In a college first year class are having the following attributes: Name of the class (BBA, BCom, BSc), Name of the staff, No of the students in the class, Array of students in the class. Define a class called first year with above attributes and define a suitable constructor. Also write a method called best Student () which process a first-year object and return the student with the highest total mark. In the main method define a first-year object and find the best student of this class.
6. Program to define a class called employee with the name and date of Appointment. Create ten employee objects as an array and sort them as per their date of appointment, ie, print them as per their seniority.

PART B: Exception Handling & GUI Programming

1. Program to catch Negative Array Size Exception. This exception is caused when the array is initialized to negative values.
2. Program which create and displays a message on the window.
3. Program to draw several shapes in the created window.
4. Program which creates a frame with two buttons father and mother. When we click the father button the name of the father, his age and designation must appear. When we click mother similar details of mother also appear.
5. Program to move any one shape according to the arrow key pressed.
6. Program to create a window when we press M or m the window displays Good Morning, A or a the window displays Good After Noon, E or e the window displays Good Evening, N or n the window displays Good Night.
7. Demonstrate the various mouse handling events using suitable example.
8. Program to create menu bar and pull-down menus.

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program – 1 from Part A		
	Writing the Program	07
	Execution and Formatting	08
Program -2 from Part B		
	Writing the Program	07
	Execution and Formatting	08
Viva Voce based on C Programming		05
Practical Record		05
Total		40

Course Code: CAC05	Course Title: Discrete Mathematical Structures
Course Credits: 03	Hours/Week: 02
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to

- To understand the basic concepts of Mathematical reasoning, set and functions.
- To understand various counting techniques and principle of inclusion and exclusions.
- Understand the concepts of various types of relations, partial ordering and
- equivalence relations.
- Apply the concepts of generating functions to solve the recurrence relations.
- Familarize the fundamental concepts of graph theory and shortest path algorithm

Course Content

Content	Hours
Unit - 1	
The Foundations: Logic and proofs: Propositional Logic: Applications of Propositional Logic, Propositional Equivalences. Predicates and Quantifiers, Nested Quantifiers, Rules of Inference. Introduction to Proofs. Proof Methods and Strategy. **Basic Structures:** Sets, Functions, Sequences, Sums, and Matrices: Sets, set operations, Functions, Sequences and Summations, matrices.	12
Unit - 2	
Counting: Basics of counting: Pigeonhole principle, Permutation and combination, Binomial Coefficient and Combination Generating Permutation and Combination. **Advanced Counting Techniques:** Applications of Recurrence Relations: Solving Linear Recurrence Relations, Divide and Conquer Algorithms and Recurrence Relations, Generating Functions, Inclusion-Exclusion, Applications of Inclusion-exclusion.	10

Unit - 3	
Induction and Recursion: Mathematical Induction, Strong Induction and Well-Ordering, Recursive Definitions and Structural Induction. Relations: Properties of relation, Composition of relation, Closer operation on relation, Equivalence relation and partition, Operation on relation, Representing relation.	12
Unit-4	
Graphs: Graphs and Graph models, Graph Terminology and Special Types of Graphs, Representing Graphs and Graph Isomorphism, Connectivity, Euler and Hamilton Paths, Shortest-Path Problems, Planar Graphs, Graph Coloring.	08

Text Book:

1. Discrete Mathematics and its Applications, Kenneth H. Rosen, Seventh Edition, 2012.

References:

1. Discrete Mathematical Structures, Bernard Kolman, Robert C. Busby, Sharon Ross, 2003.
2. Graph Theory with Applications to Engg and Comp. Sci, Narsingh Deo, PHI, 1986.
3. Discrete and Combinatorial Mathematics, Ralph P. Grimaldi, B. V. Ramanta, Pearson Education, 5 Edition.
4. Discrete Mathematical Structures, Tremblay and Manohar.

Note: The syllabi of the courses of remaining semesters shall be framed in subsequent BoS meetings.

Syllabus for Open Electives in Computer Applications:

Course Code: CAOE01	Course Title: Computer Fundamentals
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):

- Introduction to computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers
- Operating systems, functions of operating systems, classification of operating systems, kernal, shell, basics of Unix, shell programming, booting
- Databases, why databases are used, users, SQL, data types in SQL, introduction of queries - select, alter, update, delete, truncate, using where, and or in, not in
- Internet basics, features, applications, services, internet service providers, domain name system, browsing, email, searching
- Web Programming basics, introduction of HTML and CSS programming
- Introduction of computers, classification of computers, anatomy of computer constituents and architecture, microcontrollers.

Course Content

Content	Hours
Unit - I	
Fundamentals of Computers: Introduction to Computers - Computer Definition, Evolution and History of Computers, Basic Organization of a Digital Computer, Number Systems - different types, conversion from one number system to another, Computer Codes - BCD, Gray Code, ASCII and Unicode, Boolean Algebra - Boolean Operators with Truth Tables, Types of Software - System Software and Utility Software, Computer Languages - Machine Level, Assembly Level & High Level Languages, Translator Programs - Assembler, Interpreter and Compiler, Planning a Computer Program - Algorithm, Flowchart and Pseudo code with Examples. (at least 2 hours of teaching).	10
Unit-2	

Introduction to Computer: Characteristics of computers, Classification of Digital Computer Systems: Microcomputers, Minicomputers, Mainframes, Super computers. Anatomy of Computer: Introduction, Functions & Components of a Computer, Central Processing Unit, Storage units, Input and output Devices, How CPU and memory works: Program execution with illustrative examples, Introduction to microcontrollers.	10
Unit-3	
Operating System Fundamentals: Operating Systems: Introduction, Functions of an operating System, Classification of Operating Systems, System programs, Application programs, Utilities, The Unix Operating System, Basic Unix commands, Microkernal Based Operating System, Booting.	08
Unit-4	
Introduction to Database Management Systems: Database, DBMS, Why Database, File system vs DBMS, Database applications, Database users, Introduction to SQL, Data types, Classification of SQL-DDL with constraints, DML, DCL, TCL.	09
Unit-5	
Internet Basics: Introduction, Features of Internet, Internet application Services of Internet, Logical and physical addresses, Internet Service Providers, Domain Name System. **Web Basics:** Introduction to web, web browsers, http/https, URL, HTML5, CSS.	09

Text Books:

1. Pradeep K. Sinha and Priti Sinha, Computer Fundamentals (Sixth Edition), BPB Publications
2. David Kirk and Nikolay Nuss, Computational thinking for modern solver, Chapman & Hall/CRC

References:

1. J. Glenn Brookshear, "Computer Science: An Overview", Addison-Wesley, Twelfth Edition.
2. R.G. Dromey, "How to solve it by Computer", PHI.

Course Code: CADB02	Course Title: Problem Solving and C Programming Concepts
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):

- Introduction to computers: classification of computers, anatomy of computer, constituents and architecture, microcontrollers
- Operating systems: functions of operating systems, classification of operating systems, kernel, shell, basics of Unix shell programming, booting
- Databases: why databases are used, users, SQL, data types in SQL, introduction of queries - select, alter, update, delete, truncate, using where and &, in, not in
- Internet basics: features, applications, services, internet service providers, domain name system, browsing, email, searching
- Web Programming basics: introduction of HTML and CSS programming
- Introduction of computers: classification of computers, anatomy of computer, constituents and architecture, microcontrollers.

Course Content

Content	Hours
Unit – 1	
Problem Solving Techniques: Problem solving techniques – problem definition, analysis, design, debugging, testing, documentation and maintenance. Design Tools - **ALGORITHM:** definition, characteristics, advantages and disadvantages. **FLOWCHART** – definition, symbols, advantages and disadvantages. Writing an algorithm and flowchart: Area of circle, arithmetical operations, simple interest and compound interest, quadratic equation, largest of three numbers, sum of n natural numbers, factorial of number, Fibonacci series, prime number, reverse a given number, evaluation of sin(x), cos(x), exp(x), log(x) etc.	10
Unit -2	
Introduction to C Programming: Overview of C, History and Features of C, Structure of a C Program with Examples, Creating and Executing a C Program, Compilation process in C. **C Programming Basics:** Concepts, C Character Set, C tokens - keywords, identifiers, constants, and variables, Data types, Declaration & initialization of variables, Symbolic constants, Formatted I/O functions - printf and scanf.	10

Unit-3	
C Operators & Expressions: Arithmetic operators: Relational operators: Logical operators: Assignment operators: Increment & Decrement operators: Bitwise operators: Conditional operator: Special operators: Operator Precedence and Associatively: Evaluation of arithmetic expressions: Type conversion.	08
Unit-4	
Decision making, branching and looping: Decision making - if and if-else statement, nested if- else if ladder, switch statements, conditional operator, goto statement. Looping - while, do-while and for, nested for, break and continue statements. Programs on these concepts.	08
Unit-5	
Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation. Two Dimensional arrays -Declaration, Initialization and Memory representation.	07

References :

1. Computer Concepts and Programming, Padma Reddy
2. Let us C, Yashwanth Kanetkar
3. Absl C, Balaguruswamy
4. Problem solving with C, M. T. Somashekara and D. S. Guru

Course Code: C4OE03	Course Title: Office Automation
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Content

Content	Hours
Unit – 1	
Windows Desk top - GUI: Definition, Standards, Cursors, Pointers, Icons, GUI Menus, GUI-Share Data – Desktop icons and their functions: My computer, My documents, Network neighbourhood, Recycle Bin, Quick launch tool bar, System tray, Start menu, Task bar – Dialog Boxes: List Box, Spin Control Box, Slide, Drop-down list, Radio button, Check box, Text box, Task Bar - System Tray - Quick launch tool bar – Start button - Parts of Windows - Title bar: Menu bar - Scroll bar - Status bar, Maximize, Minimize, close and Resize & Moving a Window – Windows - Start Menu –Help Menu: Preview, Menu, Logoff & Shutdown – Keyboard Accelerators: Key board shortkeys or hotkeys	6p
Unit-2	
MS Word – Working with Documents: Opening & Saving files, Editing text documents, Inserting, Deleting, Cut, Copy, Paste, Undo, Redo, Find, Search, Replace, Formatting page & setting Margins, Converting files to different formats, Importing & Exporting documents, Sending files to others, Using Tool bars, Ruler, Using Scroll, using help, Formatting Documents – Setting Font styles, Font selection- style, size, colour etc, Type face – Bold, Italic, Underline, Case settings, Highlighting, Special symbols, Setting Paragraph style, Alignment, Indents, Line Space, Margins, Bullets & numbering, Setting Page style – Formatting Page, Page tab, Margins, Layout settings, Paper tray, Border & Shading, Columns, Header & footer, Setting Footnotes & endnotes – Shortcut Keys: Inserting manual page break, Column break and line break, creating bookmark & frames, Anchoring & Wrapping, Setting Document styles, Table of Contents, Index, Page Numbering, date & Time, Author etc., Creating Master Documents, Web page, Creating Tables- Table settings,	10

Borders- Alignments- Insertion- deletion- Merging- Splitting- Sorting- and Formula- Drawing - Inserting Clipart, Pictures- Files etc. Tools – Word Completion- Spell Checks- Mail merge- Templates- Printing Documents – Shortcut keys.	
Unit-3	
MS Excel: Spread Sheet & its Applications- Opening Spreadsheet- Menus - main menu- Formula Editing- Formatting- Toolbars- Using Icons- Using help- Shortcuts- Spreadsheet types- Working with Spreadsheets- opening- saving files- setting Margins- Converting files to different formats- Importing- exporting- sending files to others)- Spread sheet addressing - Rows- Columns & Cells- Referring Cells & Selecting Cells – Shortcut Keys- Entering & Deleting Data- Entering data- Cut- Copy- Paste- Undo- Redo- Filling Continuous rows- columns- highlighting values- Find- Search & replace- Inserting Data- Insert Cells- Column- rows & sheets- Symbols- Data from external files- Frames- Clipart- Pictures- Files etc- Inserting Functions- Manual Inputs- Using Formula - finding total in a column or row- Mathematical operations (Addition- Subtraction- Multiplication- Division- Exponentiation)- Using other Formulae- Formatting Spreadsheets- Formatting layout for Graphics- Clipart etc- Worksheet- Row & Column Headers- Sheet Name- Row height & Column width- Visibility - New- Column- Sheet- Security- Sheet- Formatting & style- Sheet background- Colour etc- Borders & Shading – Shortcut keys- Working with sheets – Sorting- Filtering- Validation- Consolidation- and Subtotal- Creating Charts - Drawing- Printing- Using Tools	10
Unit-4	
MS Power point: Introduction to presentation – Opening new presentation- Different presentation templates- setting backgrounds- Selecting presentation layouts- Creating a presentation - Setting Presentation style- Adding text to the Presentation- Formatting a Presentation - Adding style- Colour- gradient fills- arranging objects- Adding Header & Footer- slide background- slide layout- Adding Graphics to the Presentation- Inserting pictures- movies- tables etc into presentation- Drawing Pictures using Draw- Adding Effects to the Presentation- Setting Animation & transition effect- Printing Handouts- Delivering Presentation- Presentation views-	10
Unit-5	

Internet and Web Browsers: Definition of WebAddressing-URL-Different types of Internet Connections: Dial up connection, Broad band (ISDN, DSL, Cable), Wireless (Wi-Fi, WiMax, Satellite, Mobile) naming convention, browsers and its types, Internet browsing, searching - Search Engines - Portals - Social Networking sites- Blogs - saving a Webpage, downloading and uploading the website. Creating an email-ID, e-mail reading, saving, printing, forwarding and deleting the mails, checking the mails, viewing and running file attachments, addressing with cc and bcc.	06

References:

1. Fundamentals of computers - V.Rajaraman - Prentice- Hall of India
2. Microsoft Office 2007 Bible - John Walkenbach,Herb Tyson,Faithe Wempen,Cary N.Prague,Michael R.Groh,Peter G.Aitken and Lisa A.Bucki -Wiley India pvt.ltd.
3. Computer Fundamentals - P. K. Sinha Publisher: BPB Publications.
4. Computer & Internet Basics Step-by-Step - Rec-end the Cluster - Infinity Publishing
5. https://all.wikipedia.org
6. http://windows.microsoft.com/en-in/windows/windows-basics-all-topics

KUVEMPU UNIVERSITY

NEP-2021

CURRICULUM STRUCTURE AND SYLLABUS

Bachelor of Computer Application (Basic and Honors) Programmes
as Major and Minor Courses

And

Open Elective courses in Computer Applications

w.e.f Academic Year 2021-22 onwards

The objectives of the BCA Program

1. The primary objective of this program is to provide a foundation of computing principles and business practices for effectively using/managing information systems and enterprise software
2. It helps students analyze the requirements for system development and exposes students to business software and information systems
3. This course provides students with options to specialise in legacy application software, system software or mobile applications
4. To produce outstanding IT professionals who can apply the theoretical knowledge into practice in the real world and develop standalone live projects themselves
5. To provide opportunity for the study of modern methods of information processing and its applications.
6. To develop among students the programming techniques and the problem-solving skills through programming
7. To prepare students who wish to go on to further studies in computer science and related subjects.
8. To acquaint students to Work effectively with a range of current standard Office Productivity software applications

Program Outcomes: BCA (3 Years) Degree

1. **Discipline knowledge:** Acquiring knowledge on basics of Computer Science and ability to apply to design principles in the development of solutions for problems of varying complexity.
2. **Problem Solving:** Improved reasoning with strong mathematical ability to identify, formulate and analyse problems related to computer science and exhibiting a sound knowledge on data structures and algorithms.
3. **Design and Development of Solutions:** Ability to design and development of algorithmic solutions to real world problems and acquiring a minimum knowledge on statistics and optimization problems. Establishing excellent skills in applying various design strategies for solving complex problems.
4. **Programming a computer:** Exhibiting strong skills required to program a computer for various issues and problems of day to day applications with thorough knowledge on programming languages of various levels.
5. **Application Systems Knowledge:** Possessing a sound knowledge on computer application software and ability to design and develop app for application problems.
6. **Modern Tool Usage:** Identify, select and use a modern scientific and IT tool or technique for modeling, prediction, data analysis and solving problems in the area of Computer Science and making them mobile based application software.
7. **Communication:** Must have a reasonably good communication knowledge with in oral and writing.
8. **Project Management:** Practicing of existing projects and becoming independent to launch own projects by identifying a gap in solutions.
9. **Ethics on Profession, Environment and Society:** Exhibiting professional ethics to maintain the integrality in a working environment and also have concern on societal impacts due to computer-based solutions for problems.
10. **Lifelong Learning:** Should become an independent learner i.e. learn to learn ability.
11. **Motivation to take up Higher Studies:** Inspiration to continue education towards advanced studies on Computer Science.

Additional Program Outcomes: BCA Degree (Hons)

The Bachelor of Computer Application (BCA (Hons)) program enables students to attain following additional attributes besides the afore-mentioned attributes by the time of graduation.

1. Apply standard Software Engineering practices and strategies in real-time software project development.
2. Design and develop computer programs/computer based systems in the areas related to AI algorithms, networking, web design, cloud computing, IoT and data analytics.
3. Acquaint with the contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems.
4. The ability to apply the knowledge and understanding noted above to the analysis of a given information handling problem.
5. The ability to work independently on a substantial software project and as an effective team member.

Curriculum for BCA

Sem	Core Courses	Hour / Week Theory	Hour / Week Lab	DS Elective Courses	Hours / Week
1	i. Fundamentals of Computers	3			
	ii. Programming in C	3			
	iii. Mathematical Foundation	3			
	iv. LAB: Information Technology		4		
	v. LAB: C Programming		4		
2	i. Discrete Mathematical Structures	3			
	ii. Data Structures using C	3			
	iii. Object Oriented Concepts using JAVA	3			
	iv. LAB: Data Structure		4		
	v. LAB: JAVA Lab		4		
3	i. Data Base Management Systems	3			
	ii. C# and DOT NET Framework	3			
	iii. Computer Communication and Networks	3			
	iv. LAB: DBMS		4		
	v. LAB: C# and DOT NET Framework		4		
4	i. Python Programming	3			
	ii. Computer Multimedia and Animation	3			
	iii. Operating Systems Concepts	3			
	iv. LAB: Multimedia and Animation		4		
	v. LAB: Python programming		4		
5	i. Internet Technologies	3		(a) Cyber Law and Cyber Security	3
	ii. Statistical Computing and R Programming	3		(b) Cloud Computing	3
	iii. Software Engineering	3		(c) Business Intelligence	3
	iv. LAB: R Programming		4		
	v. LAB: JAVA Script, HTML and CSS		4		
	vi. Vocational 1	3			
6	i. Artificial Intelligence and Applications	3		(a) Fundamentals of DataScience	3
	ii. PHP and MySQL	3	4	(b) Mobile Application Development	3
	iii. LAB: PHP and MySQL		12		
	iv. PROJECT	3		(c) Embedded Systems	3
	v. Vocational 2				
7	i. Analysis and Design of Algorithms	3		(a) Data Compression	3
	ii. Data Mining and KnowledgeManagement	3		(b) IoT	3
	iii. LAB: Algorithms		4	(c) Data Analytics	3
	iv. LAB: Data Mining and KnowledgeManagement		4		
	v. Vocational 3				
8	i. Advanced Theory and Compiler Design	3		(a) Open Source Programming	3
	ii. Cryptography and Network Security	3	4		3
	iii. Compiler Lab		12	(b) Storage Area Networks	3
	iv. LAB: Project	3		(c) Pattern Recognition	
	v. Vocational 4			(d) Machine Learning	
		4			

TABLE I: COURSE STRUCTURE FOR BCA.

Semester	Course Code	Title of the Paper	Credit	Total Credit of GE Languages, CAE Voc, AECC, SEC	Total Credit
I	CAC01	Fundamentals of Computers	3	13	26
	CAC02	Programming in C	3		
	CAC03(a) / (b)	Mathematical Foundation	3		
	CAC01P	LAB: Information Technology	2		
	CAC02P	LAB: C Programming	2		
II	CAC04	Data Structures using C	3	13	26
	CAC05	Object Oriented Concepts using JAVA	3		
	CAC06	Discrete Mathematical Structures	3		
	CAC04P	LAB: Data Structure	2		
	CAC05P	LAB: JAVA	2		
III	CAC07	Data Base Management Systems	3	13	26
	CAC08	C# and DOT NET Framework	3		
	CAC09	Computer Communication and Networks	3		
	CAC07P	LAB: DBMS	2		
	CAC08P	LAB: C# and DOT NET Framework	2		
IV	CAC10	Python Programming	3	13	26
	CAC11	Computer Multimedia and Animation	3		
	CAC12	Operating System Concepts	3		
	CAC10P	LAB: Python programming	2		
	CAC11P	LAB: Multimedia and Animation	2		
V	CAC13	Internet Technologies	3	10	23
	CAC14	Statistical Computing and R Programming	3		
	CAC15	Software Engineering	3		
	CAC13P	LAB: JAVA Script, HTML and CSS	2		
	CAC14P	LAB: R Programming	2		
VI	CAC16	PHP and MYSQL	3	10	23
	CAC17	Artificial Intelligence and Applications	3		
	CAC16P	LAB: PHP and MYSQL	2		
	CAC17	Project Work	5		
VII	CAC18	Analysis and Design of Algorithms	3	11	21
	CAC19	Data Mining and Knowledge Management	3		
	CAC18P	LAB: Algorithms	2		
	CAC19P	LAB: Data Mining	2		
	CA101	Internship	1		
VIII	CAC20	Automata Theory and Compiler Design	3	6	20
	CAC21	Cryptography and Network Security	3		
	CAC20P	LAB: Compiler Lab	2		
	CAC01	Project Work	6		

TABLE II: CS COURSE DETAILS FOR BEA

Course Type	Course Code as referred above	Compulsory/ Elective	List of compulsory courses and list of option of elective courses. (A suggestive list)
CA	CA101, CA102, CA103, CA104, CA105, CA106, CA107, CA108, CA109, CA110, CA111, CA112, CA113, CA114, CA115, CA116, CA117, CA118, CA119, CA120, CA121	Compulsory	As Mentioned in Table I
CAE	CAE1A	Elective	Cyber Law and Cyber Security OR Business Intelligence OR Fundamentals of Data Science
	CAE2A	Elective	Fundamentals of Data Science OR Mobile Application Development OR Embedded Systems
	CAE3A	Elective	Data Communications OR Internet of Things (IoT) OR Data Analytics
	CAE4A	Elective	Open source Programming OR Storage Area Networks OR Pattern Recognition OR Machine Learning
Vocational	Vocational 1	Elective	DTP, GUI and Multimedia OR Hardware and Server Maintenance OR Web Content Management Systems OR Computer Networking OR Health Care Technologies OR Digital Marketing OR Office Automation
	Vocational 2	Elective	
	Vocational 3	Elective	
	Vocational 4	Elective	
MEC	MEC1	Compulsory	Kannada/Additional Kannada/ Sanskrit/ Environmental Learning
	MEC2	Compulsory	Sports/NCC/NSS etc
	MEC3	Compulsory	Ethics & Self Development
	MEC4	Compulsory	Professional Communication
AECC	AECC1	Compulsory	Environmental Studies
	AECC2	Compulsory	Constitution of India
Languages 1	L1-1, L1-2, L1-3, L1-4	Compulsory	Kannada/ Functional Kannada
Languages 2	L2-1, L2-2, L2-3, L2-4	Elective	English/ Hindi/ French/ Additional English/ etc

Computer Application Core Courses (CA C) for BCA (Hons)

Sl. No	Course Code	Title of the Paper
1	CAC01	Fundamentals of Computers
2	CAC02	Programming in C
3	CAC03 (a)/(b)	Mathematical Foundation/ Accountancy
4	CAC04	Discrete Mathematical Structures
5	CAC05	Object Oriented Concepts using JAVA
6	CAC06	Data Structures using C
7	CAC07	Data Base Management Systems
8	CAC08	C# and DOT NET Framework
9	CAC09	Computer Communication and Networks
10	CAC10	Python Programming
11	CAC11	Computer Multimedia and Animation
12	CAC12	Operating System Concepts
13	CAC13	Internet Technologies
14	CAC14	Statistical Computing and R Programming
15	CAC15	Software Engineering
16	CAC16	PHP and MySQL
17	CAC17	Artificial Intelligence and Applications
18	CAC18	Analysis and Design of Algorithms
19	CAC19	Data Mining and Knowledge Management
20	CAC20	Automata Theory and Compiler Design
21	CAC21	Cryptography and Network Security

Computer Application Electives (CA E) for BCA (Hons)

Sl. No.	Computer Application Electives (CA E)
1	Business Intelligence
02	Cyber Law and Cyber Security
3	Data Analytics
4	Data Compression
5	Embedded Systems
6	Fundamentals of Data Science
7	Internet of Things (IoT)
8	Machine Learning
9	Mobile Application Development
10	Open-source Programming
11	Pattern Recognition
12	Storage Area Networks

Vocational Electives

Sl. No	Vocational Electives
1	DTP, CAD and Multimedia
2	Hardware and Server Maintenance
3	Web Content Management Systems
4	Computer Networking
5	Health Care Technologies
6	Digital Marketing
7	Office Automation

Open Electives in Computer Applications:

- Office Automation
- Computer Fundamentals
- Problem Solving and C Programming Concepts
- Python Programming Concepts
- Web Designing
- Accounting Package
- E-Commerce
- Multimedia Presenting
- R Programming
- E-Content Development
- Computer Animation

Syllabus for BCA (Basic and Honors) 1st and 2nd Semesters

Semester: I

Course Code: BACC1	Course Title: Fundamentals of Computers
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03

Course Outcomes (COs):

- Introduction to computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers
- Operating systems, functions of operating systems, classification of operating system, kernel, shell, basics of Unix, shell programming, booting
- Databases, why databases are used, users, SQL, data types in SQL, introduction of queries - select, alter, update, delete, truncate, using where, and or in, not in
- Internet basics, features, applications, services, Internet service providers, domain name system, browsing, email, searching
- Web Programming basics, introduction of HTML and CSS programming
- Introduction of computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers.

Course Contents

Contents	Hours
Unit - 1	
Fundamentals of Computers: Introduction to Computers - Computer Definition, Evolution and History of Computers, Basic Organization of a Digital Computer, Number Systems – different types, conversion from one number system to another, Computer Codes - BCD, Gray Code, ASCII and Unicode, Boolean Algebra – Boolean Operators with Truth Tables, Types of Software – System Software and Utility Software, Computer Languages – Machine Level, Assembly Level & High Level Languages, Translators Programs – Assembler, Interpreter and Compiler, Planning a Computer Program - Algorithm, Flowchart and Pseudo code with Examples (at least 5 hours of teaching)	16
Unit- 2	

Introduction to Computer: Characteristics of computers. Classification of Digital Computer Systems: Microcomputers. Minicomputers. Mainframes. Super computers. Anatomy of Computer: Introduction. Functions & Components of a Computer. Central Processing Unit. Storage units. Input and output Devices. How CPU and memory works. Program execution with illustrative examples. Introduction to microcontrollers.	10
Unit-3	
Operating System Fundamentals: Operating Systems: Introduction. Functions of an operating system. Classification of Operating Systems. System programs. Application programs. Utilities. The Unix Operating System. Basic Unix commands. Microkernel Based Operating System. Booting.	08
Unit-4	
Introduction to Database Management Systems: Database. DBMS. Why Database - File system vs DBMS. Database applications. Database users. Introduction to SQL. Data types. Classification of SQL-DDL with constraints. DML. DCL. TCL.	09
Unit-5	
Internet Basics: Introduction. Features of Internet. Internet application Services of Internet. Logical and physical addresses. Internet Service Providers. Domain Name System. **Web Basics:** Introduction to web. Web browsers. http/https. URL. HTML5. CSS	09

Text Books:

1. Pradeep K. Sinha and Priti Sinha. Computer Fundamentals (Sixth Edition). BPB Publication
2. David Riley and Kenny Hunt. Computational thinking for modern solver. Chapman & Hall/CRC.

References:

1. J. Glenn Brook-shear." Computer Science: An Overview". Addition-Wesley Twelfth Edition.
2. P.C. Deswal. "How to solve it by Computer". PHI.

Course Code: CAC01F	Course Title: Information Technology Lab
Course Credits: 02	Hours/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 04

Part A:

1. Activities using Word Processor Software
2. Activities using Spreadsheets Software
3. Activities using Presentation Software
4. Activities involving Multimedia Editing (Images, Video, Audio ...)
5. Tasks involving Internet Browsing

Part B:

1. Flow charts: Installation and using of Programming software for different arithmetic tasks like sum, average, product, difference, quotient and remainder of given numbers, calculate area of Shapes (Square, Rectangle, Circle and Triangle), decision making and looping, arrays and recursion(at least 10 problems solving all concepts).

   NOTE: In addition to the ones listed above, universities can include other activities so as for the student to become proficient in using personal computers for multiple purposes for which modern computers can be put to use.

References:

1. Computational Thinking for the Modern Problem Solver, By Riley D.D. Hunt K.A. CRC press, 2014
2. Paradigms P. Lucio P. Computational Thinking, First Algorithms Then Code, Springer

Web References:

http://www.programiz.org/documentation/

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Activity – 1 from Part A	Write up on the activity/ task	8
	Demonstration of the activity/ task	10
Activity-2 from Part B	Write up on the activity/ task	8
	Demonstration of the activity/ task	10
Viva Voce based on Lab Activities		05
Practical Records		09
Total		40

Course Code: CAC03	Course Title: Programming in C
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to

- Confidently operate Desktop Computers to carry out computational tasks
- Understand working of Hardware and Software and the importance of operating systems
- Understand programming languages, number systems, peripheral devices, networking, multimedia and internet concepts
- Read, understand and trace the execution of programs written in C language
- Write the C code for a given problem
- Perform input and output operations using programs in C
- Write programs that perform operations on arrays

Course Content

Content	Hours
Unit - 1	
Introduction to C Programming: Overview of C, History and Features of C, Structure of a C Program with Examples, Creating and Executing a C Program, Compilation process in C. **C Programming Basic Concepts:** C Character Set, C tokens - keywords, identifiers, constants, and variables, Data types, Declaration & initialization of variables, Symbolic constants.	8
Unit-2	
Input and output with C: Formatted I/O functions - printf and scanf, control strings and escape sequences, output specifications with printf functions, Unformatted I/O functions to read and display single character and a string - gets(), puts(), getc and putc functions.	8
Unit-3	
C Operators & Expressions: Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment & Decrement operators, Bitwise operators, Conditional operator, Special operators, Operator Precedence and Associativity, Evaluation of arithmetic expressions, Type conversions.	13

Control Structures: Decision making Statements - Simple if, if else, nested if else, else if ladder, Switch Case, goto, break & continue statements. Looping Statements - Entry controlled and exit controlled statements- while, do-while, for loops, Nested loops.	
Unit - 4	
Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation, Two Dimensional arrays - Declaration, Initialization and Memory representation. **Pointers in C:** Understanding pointers - Declaring and initializing pointers, accessing address and value of variables using pointers, Pointers and Arrays, Pointer Arithmetic, Advantages and disadvantages of using pointers.	12
Unit 5	
User Defined Functions: Need for user defined functions, Format of C user defined functions, Components of user defined functions - return type, name, parameter list, function body, return statement and function call, Categories of user defined functions - With and without parameters and return type. **User defined data types:** Structures - Structure Definition, Advantages of Structure, declaring structure variables, accessing structure members, Structure members initialization, comparing structure variables, Array of Structures, Unions - Union definition, difference between Structures and Unions.	10

Text Books:

1. C The Complete Reference, By Herbert Schildt.
2. M.T Somashekara, D.S Guru and K.S. Manjunatha, Problem solving with C, PHI publication.
3. C Programming Language, By Brain W. Kernighan.
4. Kernighan & Ritchie, The C Programming Language (PHI)

Reference Books:

1. P. K. Sinha & Priti Sinha, Computer Fundamentals (BPB)
2. E. Balaguruswamy, Programming in ANSI C (TMH)
3. Kanetkar, Programming with ANSI and TURBO C (Pearson Education)
4. V. Rajaraman, Programming in C (PHI – EEE)
5. S. Dey and Ghoshal, Programming with C (TMH)
6. Yashavant Kanetkar, Let us C
7. P.B. Kotur, Programming in C (Sapna Book House).

Course Code: CAC02P	Course Title: C Programming Lab
Course Credits: 02	Hours/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 04

Programming LabPart A:

1. Write a C Program to read radius and find area and volume of a sphere.
2. Write a C Program to read three numbers and find the biggest of three
3. Write a C Program to demonstrate library functions in math.h (at least 5)
4. Write a C Program to read a number, find the sum of the digits, reverse the number and check it for palindrome
5. Write a C Program to read numbers from keyboard continously till the user presses 999 and to find the sum of only positive numbers
6. Write a C Program to read percentage of marks and to display appropriate grade (using switch case)
7. Write a C Program to find the roots of quadratic equation (if else ladder)
8. Write a C program to read marks scored in 3 subjects by a students and find the average of marks and result.(Demonstration of single dimensional array)
9. Write a C Program to remove Duplicate Element in a single dimensional Array
10. Program to perform addition and subtraction of 2 matrices

Part B:

1. Write a C Program to find the length of a string without using built in function
2. Write a C Program to demonstrate string functions (at least 3).
3. Write a C Program to demonstrate pointers in C
4. Write a C Program to generate n prime number by defining user defined function
5. Write a C Program to find the trace of a square matrix using function
6. Write a C Program to read, display and multiply two matrices using functions
7. Write a C Program to read a string and to find the number of alphabets, digits, vowels, consonants, spaces and special characters.
8. Write a C Program to Reverse a String using pointer
9. Write a C Program to demonstrate student structure to read & display records of n students.
10. Write a C Program to demonstrate the difference between structure & union.

Note: Student has to execute a minimum of 8 programs in each part to complete the Lab course.

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program – 1 from Part B	Flowchart / Algorithm	02
	Writing the Program	03
	Execution and Formatting	03
Program – 2 from Part B	Flowchart / Algorithm	02
	Writing the Program	03
	Execution and Formatting	03
Viva Voce based on C Programming		03
Practical Record		05
Total		40

Course Code: CACC03(a)	Course Title: Mathematical Foundation
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03

Course Outcomes (COs):

- Study and solve problems related to connectives, predicates and quantifiers under different situations.
- Develop basic knowledge of matrices and to solve equations using Cramer's rule.
- Know the concept of Eigen values.
- To develop the knowledge about derivatives and know various applications of differentiation.
- Understand the basic concepts of Mathematical reasoning, set and functions.

Content	Hours
Unit - 1	
Mathematical logic: Mathematical logic introduction-statements Connectives- negation, conjunction, disjunction- statement formulas and truth tables- conditional and bi Conditional statements- tautology contradiction- equivalence of formulas-duality law-Predicates and Quantifiers Arguments.	10
Unit - 2	
sets and Functions: power set, Venn diagram Cartesian product-relations- functions- types of functions - composition of functions.	10
Unit - 3	
Matrices and determinant: Introduction/Types of matrices-matrix operations-transpose of a matrix -determinant of matrix - inverse of a matrix- Cramer's rule	10
Unit - 4	
Matrix Algebra: finding rank of a matrix – normal form-echelon form Cayley Hamilton theorem-Eigen values.	08
Unit - 5	
Differential calculus: Functions and limits - Introduction of Algebraic Functions – Evaluation of First and Second Order Derivatives – Maxima and Minima	06

Text Books:

P. R. Vittal-Business Mathematics and Statistics, Margham Publications, Chennai.

Reference Books:

1. S. Sastry-Discrete Mathematics -New age International Limited Publishers, New Delhi.

Semester: II

Course Code: CAC04	Course Title: Data Structures using C
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):
After completing this course satisfactorily, a student will be able to

- Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms
- Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs
- Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs
- Demonstrate different methods for traversing trees
- Compare alternative implementations of data structures with respect to performance
- Describe the concept of recursion, give examples of its use
- Discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing

Course Content

Content	Hours
Unit - 1	
Introduction to data structures: Definition, Types of data structures - Primitive & Non-primitive, Linear and Non-linear. Operations on data structures. Algorithm Specification, Performance Analysis, Performance Measurements. Recursion: Definition, Types of recursion, Recursion Examples - Fibonacci numbers, GCD, Binomial coefficient nCr, Towers of Hanoi. Comparison between iterative and recursive functions.	08
Unit - 2	
Arrays: Basic Concepts - Definition, Declaration, Initialization, Operations on arrays, Types of arrays, Arrays as Abstract data types (ADT), Representation of Linear Arrays in memory, Traversing linear arrays, Inserting and deleting elements, Sorting – Selection sort, Bubble sort, Quick sort, Insertion sort, merge sort, Searching – Sequential Search, Binary search, Iterative and Recursive searching, Multidimensional arrays, Representation of multidimensional arrays, Sparse matrices.	12
Unit - 3	

Stacks: Basic Concepts – Definition and Representation of stacks; Operations on stacks; Applications of stacks; Infix, postfix and prefix notations; Conversion from infix to postfix using stack; Evaluation of postfix expression using stack; Application of stack in function calls. Queues: Basic Concepts – Definition and Representation of queues; Types of queues – Simple queues, Circular queues, Double ended queues, Priority queues; Operations on Simple queues.	10
Unit-4	
Dynamic memory allocation: Static & Dynamic memory allocation; Memory allocation and de- allocation functions – malloc calloc realloc and free. Linked list: Basic Concepts – Definition and Representation of linked list, Types of linked lists – Singly linked list, Doubly linked list, Header linked list, Circular linked list; Representation of Linked list in Memory; Operations on Singly linked lists – Traversing, Searching, Insertion, Deletion; Memory allocation; Garbage collection.	12
Unit-5	
Trees: Definition; Tree terminologies – node, root node, parent node, ancestors of a node, siblings, terminal & non-terminal nodes, degree of a node, level, edge, path, depth; Binary tree; Type of binary trees – strict binary tree, complete binary tree, binary search tree and heap tree; Array representation of binary tree; Traversal of binary tree; preorder, inorder and postorder traversal; Reconstruction of a binary tree when any two of the traversals are given.	10

Text Books

1. Ellis Horowitz and Sartaj Sahni, Fundamentals of Data Structures

References

1. Forouzan, Data structures Using C (Pearson Education)
2. Kamthane, Introduction to Data structures (Pearson Education)
3. Y. Kanitkar, Data Structures Using C (BPB)
4. Kruse, Data Structures Using C
5. Padma Reddy, Data Structure Using C
6. Sudipa Mukherjee, Data Structures using C – 1000 Problems and Solutions (McGraw-Hill Education, 2008)

Course Code: CAC04P	Course Title: Data Structures Lab
Course Credits: 02	Hours/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 03 Hours

Programming Lab

Part A

1. Write a C Program to find GCD using recursive function
2. Write a C Program to display Pascal Triangle using binomial function
3. Write a C Program to generate a Fibonacci numbers using recursive function
4. Write a C Program to implement Towers of Hanoi
5. Write a C Program to implement dynamic array, find smallest and largest element of the array.
6. Write a C Program to read the names of cities and arrange them alphabetically using bubble sort
7. Write a C Program to sort the given list using selection sort technique.
8. Write a C Program to sort the given list using insertion sort technique

Part B

1. Write a C Program to sort the given list using quick sort technique
2. Write a C Program to sort the given list using merge sort technique
3. Write a C Program to search an element using linear search technique and recursive binary search technique
4. Write a C Program to implement Stack
5. Write a C Program to convert an infix expression to postfix
6. Write a C Program to implement simple queue
7. Write a C Program to implement linear linked list
8. Write a C Program to implement traversal of a binary tree

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program 1 from Part A	Algorithm	05
	Writing the Program	10
	Execution and Formatting	05
Program 2 from Part B	Algorithm	05
	Writing the Program	05
	Execution and Formatting	05
Viva Voce based on Data structures		05
Practical Record		05
Total		40

Course Code: CAC05	Course Title: Object Oriented Programming with JAVA
Course Credits: 03	Hours / Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to

- Understand the features of Java and the architecture of JVM
- Write, compile, and execute Java programs that may include basic data types and control flow constructs and how type casting is done
- Identify classes, objects, members of a class and relationships among them needed for a specific problem and demonstrate the concepts of polymorphism and inheritance
- The students will be able to demonstrate programs based on interfaces and threads and explain the benefits of JAVA's Exceptional handling mechanism compared to other Programming Language
- Write, compile, execute Java programs that include GUIs and event driven programming and also programs based on files

Course Content

Content	Hours
Unit - 1	
Introduction to OOPS and Java: OOPS concepts and paradigm, Basics of Java programming, Data types, Variables, Operators, Control structures including selection, Looping, method Overloading, Math class, Arrays in Java.	08
Unit - 2	
Objects and Classes: Basics of objects and classes in Java, Constructors, Finalizer, Visibility modifiers, Methods and objects, Inbuilt classes like String, Character, String Buffer, File, this reference, I/O streams.	10
Unit-3	
Inheritance and Polymorphism: Inheritance in Java, Super and sub class, Overriding, Object class, Polymorphism, Dynamic binding, Generic programming, Casting objects, Instance of operator, Abstract class, Interface in Java, Package in Java, Util package.	08
Unit-4	

Multithreading in java: Thread life cycle and methods, Runnable interface, Thread synchronization, Exception handling with try catch-finally, Collections in java, Introduction to JavaBeans and Network Programming.	6
Unit - 5	
Event and GUI programming: Event handling in java, Event types- Mouse and key events, GUI Basics, Panels, Frames, Layout Managers, Flow Layout, Border Layout, Grid Layout, GUI components like Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box, Applet and its life cycle, introduction to swing.	10

Text Books

1. Programming with Java, By E Balaguruswamy – A Primer, Fourth Edition, Tata McGraw Hill Education Private Limited.
2. Core Java Volume I – Fundamentals, By Cay S. Horstmann, Prentice Hall
3. Object Oriented Programming with Java : Somashekara, M.T., Guru, D.S., Manjunatha, K.S.

Reference Books:

1. Java 2 - The Complete Reference – McGraw Hill publication
2. Java – The Complete Reference, 7th Edition, By Herbert Schildt – McGraw Hill publication.

Course Code: CAC05F	Course Title: JAVA Lab
Course Credits: 02	Hours/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 04 Hours

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to

- Implement Object Oriented programming concept using basic syntaxes of control Structures
- Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem
- Demonstrate how to achieve reusability using inheritance
- Demonstrate understanding and use of interfaces, packages, different exception handling mechanisms and concept of multithreading for robust faster and efficient application development
- Identify and describe common user interface components to design GUI in Java using Applet & AWT along with response to events

Practice Lab

1. Program to print the following triangle of numbers
   1
   1 2
   1 2 3
   1 2 3 4
   1 2 3 4 5
2. Program to simple java application to print the message "Welcome to Java"
3. Program to display the month of a year. Months of the year should be held in an array.
4. Program to find the area of rectangle
5. program to demonstrate a division by zero exception
6. Program to create a user defined exception say Pay Out of Bounds

Programming Lab

PART A: Java Fundamentals OOPs in Java

1. Program to add two integers and two float numbers. When no arguments are supplied, give a default value to calculate the sum. Use function overloading

2. Program to perform mathematical operations. Create a class called AddSub with methods to add and subtract. Create another class called MulDiv that extends from AddSub class to use the member data of the super class. MulDiv should have methods to multiply and divide. A main function should access the methods and perform the mathematical operations.
3. Program with class variable that is available for all instances of a class. Use static variable declaration. Observe the changes that occur in the object's member variable values.
4. Program to create a student class with following attributes:
Enrolment No, Name, Mark of sub1, Mark of sub2, mark of sub3, TotalMarks. Total of the three marks must be calculated only when the student passes in all three subjects. The pass mark for each subject is 50. If a candidate fails in any one of the subjects his total mark must be declared as zero. Using this condition write a constructor for this class. Write separate functions for accepting and displaying student details. In the main method create an array of n student objects and display the details.
5. In a college first year class are having the following attributes: Name of the class (BBA, BCom, BSc), Name of the staff, No of the students in the class, Array of students in the class. Define a class called first year with above attributes and define a suitable constructor. Also write a method called best Student () which process a first-year object and return the student with the highest total mark. In the main method define a first-year object and find the best student of this class.
6. Program to define a class called employee with the name and date of Appointment. Create ten employee objects as an array and sort them as per their date of appointment, ie, print them as per their seniority.

PART B: Exception Handling & GUI Programming

1. Program to catch Negative Array Size Exception. This exception is caused when the array is initialized to negative values.
2. Program which create and displays a message on the window.
3. Program to draw several shapes in the created window.
4. Program which creates a frame with two buttons father and mother. When we click the father button the name of the father, his age and designation must appear. When we click mother similar details of mother also appear.
5. Program to move any one shape according to the arrow key pressed.
6. Program to create a window when we press M or m the window displays Good Morning, A or a the window displays Good After Noon, E or e the window displays Good Evening, N or n the window displays Good Night.
7. Demonstrate the various mouse handling events using suitable example.
8. Program to create menu bar and pull-down menus.

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program – 1 from Part A		
	Writing the Program	07
	Execution and Formatting	08
Program -2 from Part B		
	Writing the Program	07
	Execution and Formatting	08
Viva Voce based on C Programming		05
Practical Record		05
Total		40

Course Code: CAC05	Course Title: Discrete Mathematical Structures
Course Credits: 03	Hours/Week: 02
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to

- To understand the basic concepts of Mathematical reasoning, set and functions.
- To understand various counting techniques and principle of inclusion and exclusions.
- Understand the concepts of various types of relations, partial ordering and
- equivalence relations.
- Apply the concepts of generating functions to solve the recurrence relations.
- Familarize the fundamental concepts of graph theory and shortest path algorithm

Course Content

Content	Hours
Unit - 1	
The Foundations: Logic and proofs: Propositional Logic: Applications of Propositional Logic, Propositional Equivalences. Predicates and Quantifiers, Nested Quantifiers, Rules of Inference. Introduction to Proofs. Proof Methods and Strategy. **Basic Structures:** Sets, Functions, Sequences, Sums, and Matrices: Sets, set operations, Functions, Sequences and Summations, matrices.	12
Unit - 2	
Counting: Basics of counting: Pigeonhole principle, Permutation and combination, Binomial Coefficient and Combination Generating Permutation and Combination. **Advanced Counting Techniques:** Applications of Recurrence Relations: Solving Linear Recurrence Relations, Divide and Conquer Algorithms and Recurrence Relations, Generating Functions, Inclusion-Exclusion, Applications of Inclusion-exclusion.	10

Unit - 3	
Induction and Recursion: Mathematical Induction, Strong Induction and Well-Ordering, Recursive Definitions and Structural Induction. Relations: Properties of relation, Composition of relation, Closer operation on relation, Equivalence relation and partition, Operation on relation, Representing relation.	12
Unit-4	
Graphs: Graphs and Graph models, Graph Terminology and Special Types of Graphs, Representing Graphs and Graph Isomorphism, Connectivity, Euler and Hamilton Paths, Shortest-Path Problems, Planar Graphs, Graph Coloring.	08

Text Book:

1. Discrete Mathematics and its Applications, Kenneth H. Rosen, Seventh Edition, 2012.

References:

1. Discrete Mathematical Structures, Bernard Kolman, Robert C. Busby, Sharon Ross, 2003.
2. Graph Theory with Applications to Engg and Comp. Sci, Narsingh Deo, PHI, 1986.
3. Discrete and Combinatorial Mathematics, Ralph P. Grimaldi, B. V. Ramanta, Pearson Education, 5 Edition.
4. Discrete Mathematical Structures, Tremblay and Manohar.

Note: The syllabi of the courses of remaining semesters shall be framed in subsequent BoS meetings.

Syllabus for Open Electives in Computer Applications:

Course Code: CAOE01	Course Title: Computer Fundamentals
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):

- Introduction to computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers
- Operating systems, functions of operating systems, classification of operating systems, kernal, shell, basics of Unix, shell programming, booting
- Databases, why databases are used, users, SQL, data types in SQL, introduction of queries - select, alter, update, delete, truncate, using where, and or in, not in
- Internet basics, features, applications, services, internet service providers, domain name system, browsing, email, searching
- Web Programming basics, introduction of HTML and CSS programming
- Introduction of computers, classification of computers, anatomy of computer constituents and architecture, microcontrollers.

Course Content

Content	Hours
Unit - I	
Fundamentals of Computers: Introduction to Computers - Computer Definition, Evolution and History of Computers, Basic Organization of a Digital Computer, Number Systems - different types, conversion from one number system to another, Computer Codes - BCD, Gray Code, ASCII and Unicode, Boolean Algebra - Boolean Operators with Truth Tables, Types of Software - System Software and Utility Software, Computer Languages - Machine Level, Assembly Level & High Level Languages, Translator Programs - Assembler, Interpreter and Compiler, Planning a Computer Program - Algorithm, Flowchart and Pseudo code with Examples. (at least 2 hours of teaching).	10
Unit-2	

Introduction to Computer: Characteristics of computers, Classification of Digital Computer Systems: Microcomputers, Minicomputers, Mainframes, Super computers. Anatomy of Computer: Introduction, Functions & Components of a Computer, Central Processing Unit, Storage units, Input and output Devices, How CPU and memory works: Program execution with illustrative examples, Introduction to microcontrollers.	10
Unit-3	
Operating System Fundamentals: Operating Systems: Introduction, Functions of an operating System, Classification of Operating Systems, System programs, Application programs, Utilities, The Unix Operating System, Basic Unix commands, Microkernal Based Operating System, Booting.	08
Unit-4	
Introduction to Database Management Systems: Database, DBMS, Why Database, File system vs DBMS, Database applications, Database users, Introduction to SQL, Data types, Classification of SQL-DDL with constraints, DML, DCL, TCL.	09
Unit-5	
Internet Basics: Introduction, Features of Internet, Internet application Services of Internet, Logical and physical addresses, Internet Service Providers, Domain Name System. **Web Basics:** Introduction to web, web browsers, http/https, URL, HTML5, CSS.	09

Text Books:

1. Pradeep K. Sinha and Priti Sinha, Computer Fundamentals (Sixth Edition), BPB Publications
2. David Kirk and Nikolay Nuss, Computational thinking for modern solver, Chapman & Hall/CRC

References:

1. J. Glenn Brookshear, "Computer Science: An Overview", Addison-Wesley, Twelfth Edition.
2. R.G. Dromey, "How to solve it by Computer", PHI.

Course Code: CADB02	Course Title: Problem Solving and C Programming Concepts
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):

- Introduction to computers: classification of computers, anatomy of computer, constituents and architecture, microcontrollers
- Operating systems: functions of operating systems, classification of operating systems, kernel, shell, basics of Unix shell programming, booting
- Databases: why databases are used, users, SQL, data types in SQL, introduction of queries - select, alter, update, delete, truncate, using where and &, in, not in
- Internet basics: features, applications, services, internet service providers, domain name system, browsing, email, searching
- Web Programming basics: introduction of HTML and CSS programming
- Introduction of computers: classification of computers, anatomy of computer, constituents and architecture, microcontrollers.

Course Content

Content	Hours
Unit – 1	
Problem Solving Techniques: Problem solving techniques – problem definition, analysis, design, debugging, testing, documentation and maintenance. Design Tools - **ALGORITHM:** definition, characteristics, advantages and disadvantages. **FLOWCHART** – definition, symbols, advantages and disadvantages. Writing an algorithm and flowchart: Area of circle, arithmetical operations, simple interest and compound interest, quadratic equation, largest of three numbers, sum of n natural numbers, factorial of number, Fibonacci series, prime number, reverse a given number, evaluation of sin(x), cos(x), exp(x), log(x) etc.	10
Unit -2	
Introduction to C Programming: Overview of C, History and Features of C, Structure of a C Program with Examples, Creating and Executing a C Program, Compilation process in C. **C Programming Basics:** Concepts, C Character Set, C tokens - keywords, identifiers, constants, and variables, Data types, Declaration & initialization of variables, Symbolic constants, Formatted I/O functions - printf and scanf.	10

Unit-3	
C Operators & Expressions: Arithmetic operators: Relational operators: Logical operators: Assignment operators: Increment & Decrement operators: Bitwise operators: Conditional operator: Special operators: Operator Precedence and Associatively: Evaluation of arithmetic expressions: Type conversion.	08
Unit-4	
Decision making, branching and looping: Decision making - if and if-else statement, nested if- else if ladder, switch statements, conditional operator, goto statement. Looping - while, do-while and for, nested for, break and continue statements. Programs on these concepts.	08
Unit-5	
Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation. Two Dimensional arrays -Declaration, Initialization and Memory representation.	07

References :

1. Computer Concepts and Programming, Padma Reddy
2. Let us C, Yashwanth Kanetkar
3. Absl C, Balaguruswamy
4. Problem solving with C, M. T. Somashekara and D. S. Guru

Course Code: C4OE03	Course Title: Office Automation
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Content

Content	Hours
Unit – 1	
Windows Desk top - GUI: Definition, Standards, Cursors, Pointers, Icons, GUI Menus, GUI-Share Data – Desktop icons and their functions: My computer, My documents, Network neighbourhood, Recycle Bin, Quick launch tool bar, System tray, Start menu, Task bar – Dialog Boxes: List Box, Spin Control Box, Slide, Drop-down list, Radio button, Check box, Text box, Task Bar - System Tray - Quick launch tool bar – Start button - Parts of Windows - Title bar: Menu bar - Scroll bar - Status bar, Maximize, Minimize, close and Resize & Moving a Window – Windows - Start Menu –Help Menu: Preview, Menu, Logoff & Shutdown – Keyboard Accelerators: Key board shortkeys or hotkeys	6p
Unit-2	
MS Word – Working with Documents: Opening & Saving files, Editing text documents, Inserting, Deleting, Cut, Copy, Paste, Undo, Redo, Find, Search, Replace, Formatting page & setting Margins, Converting files to different formats, Importing & Exporting documents, Sending files to others, Using Tool bars, Ruler, Using Scroll, using help, Formatting Documents – Setting Font styles, Font selection- style, size, colour etc, Type face – Bold, Italic, Underline, Case settings, Highlighting, Special symbols, Setting Paragraph style, Alignment, Indents, Line Space, Margins, Bullets & numbering, Setting Page style – Formatting Page, Page tab, Margins, Layout settings, Paper tray, Border & Shading, Columns, Header & footer, Setting Footnotes & endnotes – Shortcut Keys: Inserting manual page break, Column break and line break, creating bookmark & frames, Anchoring & Wrapping, Setting Document styles, Table of Contents, Index, Page Numbering, date & Time, Author etc., Creating Master Documents, Web page, Creating Tables- Table settings,	10

Borders- Alignments- Insertion- deletion- Merging- Splitting- Sorting- and Formula- Drawing - Inserting Clipart, Pictures- Files etc. Tools – Word Completion- Spell Checks- Mail merge- Templates- Printing Documents – Shortcut keys.	
Unit-3	
MS Excel: Spread Sheet & its Applications- Opening Spreadsheet- Menus - main menu- Formula Editing- Formatting- Toolbars- Using Icons- Using help- Shortcuts- Spreadsheet types- Working with Spreadsheets- opening- saving files- setting Margins- Converting files to different formats- Importing- exporting- sending files to others)- Spread sheet addressing - Rows- Columns & Cells- Referring Cells & Selecting Cells – Shortcut Keys- Entering & Deleting Data- Entering data- Cut- Copy- Paste- Undo- Redo- Filling Continuous rows- columns- highlighting values- Find- Search & replace- Inserting Data- Insert Cells- Column- rows & sheets- Symbols- Data from external files- Frames- Clipart- Pictures- Files etc- Inserting Functions- Manual Inputs- Using Formula - finding total in a column or row- Mathematical operations (Addition- Subtraction- Multiplication- Division- Exponentiation)- Using other Formulae- Formatting Spreadsheets- Formatting layout for Graphics- Clipart etc- Worksheet- Row & Column Headers- Sheet Name- Row height & Column width- Visibility - New- Column- Sheet- Security- Sheet- Formatting & style- Sheet background- Colour etc- Borders & Shading – Shortcut keys- Working with sheets – Sorting- Filtering- Validation- Consolidation- and Subtotal- Creating Charts - Drawing- Printing- Using Tools	10
Unit-4	
MS Power point: Introduction to presentation – Opening new presentation- Different presentation templates- setting backgrounds- Selecting presentation layouts- Creating a presentation - Setting Presentation style- Adding text to the Presentation- Formatting a Presentation - Adding style- Colour- gradient fills- arranging objects- Adding Header & Footer- slide background- slide layout- Adding Graphics to the Presentation- Inserting pictures- movies- tables etc into presentation- Drawing Pictures using Draw- Adding Effects to the Presentation- Setting Animation & transition effect- Printing Handouts- Delivering Presentation- Presentation views-	10
Unit-5	

Internet and Web Browsers: Definition of WebAddressing-URL-Different types of Internet Connections: Dial up connection, Broad band (ISDN, DSL, Cable), Wireless (Wi-Fi, WiMax, Satellite, Mobile) naming convention, browsers and its types, Internet browsing, searching - Search Engines - Portals - Social Networking sites- Blogs - saving a Webpage, downloading and uploading the website. Creating an email-ID, e-mail reading, saving, printing, forwarding and deleting the mails, checking the mails, viewing and running file attachments, addressing with cc and bcc.	06

References:

1. Fundamentals of computers - V.Rajaraman - Prentice- Hall of India
2. Microsoft Office 2007 Bible - John Walkenbach,Herb Tyson,Faithe Wempen,Cary N.Prague,Michael R.Groh,Peter G.Aitken and Lisa A.Bucki -Wiley India pvt.ltd.
3. Computer Fundamentals - P. K. Sinha Publisher: BPB Publications.
4. Computer & Internet Basics Step-by-Step - Rec-end the Cluster - Infinity Publishing
5. https://all.wikipedia.org
6. http://windows.microsoft.com/en-in/windows/windows-basics-all-topics

4. Suggestive Guidelines For Continuous Internal Evaluation And Semester End Examination

The Members of the Committee deliberated on the framework of Continuous Internal Evaluation (CIE) as well Semester End Examination (SEE) for the courses. The CIE and SEE will carry 40% and 60% weightage each, to enable the course to be evaluated for a total of 100 marks, irrespective of its credits. The evaluation system of the course is comprehensive & continuous during the entire period of the Semester. For a course, the CIE and SEE evaluation will be on the following parameters

1. ASSESSMENT AND EVALUATION

Assessment is an integral part of the teaching learning process. A multidisciplinary program requires a multidimensional assessment to measure the effectiveness of the diverse courses.

The assessment process acts as an indicator to both faculty and students to improve continuously. The following are the guidelines for effective assessment of the programs:

a) Student assessment should be as comprehensive as possible and provide meaningful and constructive feedback to faculty and student about the teaching-learning process.

b) Assessment tasks need to evaluate the capacity to analyze and evaluate new information and concepts rather than simply recall information previously presented.

c) The process of assessment should be carried out in a manner that encourages better student participation and rigorous study.

d) Assessment should be a combination of continuous formative evaluation and an end point summative evaluation.

e) A range of tools and processes for assessment should be used (e.g. open book tests, portfolios, case study assessment, seminar presentations, field work, projects, dissertations, peer and self assessment) in addition to the standard paper-pencil test. The teachers concerned shall conduct test / seminar / case study, etc. The students should be informed about the modalities well in advance. The evaluated exams / assignments shall be immediately provided to the students.

f) Paper-pencil tests should be designed rigorously using a range of tools and processes (e.g. constructed response, open ended items, multiple-choice with more than one correct answer). Faculty may provide options for a student to improve his / her performance in the continuous assessment mode.

g) Continuous Internal assessment marks shall be shown separately. A candidate who has failed or wants to improve the result, shall retain the IA marks, provided he she fulfils the minimum requirements.

1.1. Continuous Formative Evaluation: Internal Assessment

Total marks for each course shall be based on continuous assessment and semester end examinations. As per the decision taken at the Karnataka State Higher Education Council, it is necessary to have uniform pattern of 40 : 60 for IA and Semester End theory examinations respectively and 50 : 50 for IA and Semester End practical examinations respectively in all the Universities their Affiliated and Autonomous Colleges.

Total Marks for each course = 100 (Continuous assessment (CA) = 40% marks Continuous assessment (CA) + 60% marks Semester End Examination (SEE) = 60% marks)

Evaluation process of CA marks shall be as follows.

a) The first component (Ca) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 30% of syllabus of the course and within 45 working days of semester program.

b) The second component (Cb) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship / industrial practices / project work etc. This assessment and score process should be based on completion of remaining 30 percent of syllabus of the course of the semester.

c) During the 17th – 18th week of the semester, a remedial examination shall be conducted by the University for each course. This forms the third and final component of assessment (Cc) and the maximum marks for the final component will be 60%.

d) In case of a student who has failed to attend the Ca or Cb on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator / Principal. The Program Coordinator / Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of Ca and Cb the students should bring their own answer scripts (A4 size), graph sheets etc. required for such tests/assignments and these be stamped by the concerned department using their department seal at the time of conducting tests / assignment / work etc.

f) The outline for continuous assessment activities for Component-I (Ca) and Component-II (Cb) of a course shall be as under.

Outline for continuous assessment activities for Ca and Cb

Activities	Ca	Cb	Total Marks
Written Test	15% marks	15% marks	30%
Seminars/ Presentations/ Activity	05% marks		05%
Case Study / Assignment / Field work / Project work etc.		05% marks	05%
Total	20% marks	20% marks	40%

- For practical courses of full credits, seminar shall not be compulsory, in its place marks shall be awarded for Practical Record Maintenance (the ratio is 50% : 50%).
- Conduct of Seminar, Case study / Assignment, etc. can be either as Ca or as Cb component at the convenience of the concerned teacher.
- The teachers concerned shall conduct test / seminar / case study, etc. The students should be informed about the modalities will be adopted. The evaluated courses / assignments during component I (Ca) and component II (Cb) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Chairman in the case of a University Post-Graduate Department and the Principal / Director in the case of affiliated institutions. Before commencement of the semester end examination, the evaluated

test, assignment etc. of Cs and Ce shall be entered back to students latest till the announcement of the results of the examination of the concerned semester.

- The marks of the internal assessment shall be published on the notice board of the department / college for information of the students.
- The internal assessment marks shall be communicated to the Registrar (Evaluation) at least 10 days before the commencement of the University examinations and the Registrar (E) shall have access to the records of such periodical assessments.
- There shall be no minimum to respect of internal assessment marks.
- Internal assessment marks may be awarded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

2. **CONDUCT OF EXAMINATIONS:**

A candidate shall register for all the courses/papers of a semester for which he/she fulfills the requirements when he/she appears for examination of that semester for the first time.

a) There shall be Theory and Practical examinations at the end of each semester ordinarily during November-December for odd semesters and during May-June for even semesters as prescribed in the Scheme of Examinations.

b) Unless otherwise stated in the scheme of examination, practical examinations shall be conducted at the end of each semester. They shall be conducted by two examiners, one internal and one external and shall never be conducted by both internal examiners. The statement of marks sheet and the answer books of practical examinations shall be sent to the Registrar (Evaluation) by the Chief Superintendent of the respective College immediately after the practical examinations.

c) The candidate shall submit the record book for practical examination duly certified by the course teacher and the H.O.D/ staff in-charge. It shall be evaluated at the end of the Semester at the practical examinations.

3. **MINIMUM FOR A PASS:**

a) The candidate shall be declared to have passed the Semester Examination as the case may be under each course/paper/subject he/she obtains not less than 25% marks in Written examination / practical examination and 40% marks in the aggregate of written / practical examination and internal assessment put together in each of the courses and 40% marks (including CA) in Project work and viva-voce as prescribed.

b) A candidate shall be declared to have passed the program if he/she secures at least 40% of marks or a CGPA of 4.0 (Course Alpha-Sign Grade F) in the aggregate of both internal assessment and semester end examination marks put together in each unit such as theory papers / practical, field work / internship / project work / dissertation / Viva-voce, provided the candidate has secured at least 40% of marks in the semester end examinations in each unit.

c) The candidates who pass all the semester examinations in the first attempts are eligible for ranks provided they secure at least CGPA of 6.00 (Alpha Sign Grade B).

d) A candidate who passes the semester examinations in parts is eligible for only Class, CGPA and Alpha-Sign Grade but not for ranking.

e) The results of the candidates who have passed the last semester examinations but not passed the lower semester examinations shall be declared as "NOT" after completion of the lower semester examinations. Such candidates shall be eligible for the degree only

after completion of all the lower semester examinations.

d) If a candidate fails in a subject either in theory or in practicals, he she shall repeat for that subject only at any subsequent regular examination, as prescribed for completing the programme. He she must obtain the minimum marks for a pass in that subject (theory and practicals separately) as stated above.

4. CARRY OVER

Candidates who fail in lower semester examinations may go to the higher semesters and take the lower semester examinations.

5. CLASSIFICATION OF SUCCESSFUL CANDIDATES

An alpha-sign grade, the eight point grading system as depicted below may be adopted. The declaration of result is based on the Semester Grade Point Average (SGPA) earned towards the end of each semester or the Cumulative Grade Point Average (CGPA) earned towards the completion of all the eight semesters of the programme and the corresponding overall alpha-sign grades. In case candidates exit at the completion of first, second or third year of the four years Undergraduate Programmes, with Certificate, Diploma or the Basic Degree, respectively, then the results of successful candidates at the end of second, fourth or sixth semesters shall also be classified on the basis of the Cumulative Grade Point Average (CGPA) obtained in the two, four, six or eight semesters, respectively, forwarded of

- Certificate in Arts/ Science/ Commerce
- Diploma in Arts/ Science/ Commerce
- Bachelor's Degree in Arts/ Science/ Commerce
- Bachelor's Degree with Honours in a Discipline/ Subject

In addition to the above, successful candidates at the end of each semester of the integrated Master's Degree Programmes shall also be classified on the basis of CGPA obtained in the six semesters of the Programmes. Likewise, the successful candidates of the year or two semesters Master's Degree Programmes are also classified on the basis of CGPA of two semesters of the Master's Degree Programmes.

Table 1: Final Result / Grade Description

Semester GPA/ Programme CGPA	Alpha-Sign / Letter Grade	Semester/ Programme % of Marks	Result / Class Description
9.00-10.00	O (Outstanding)	90.0-100	Outstanding
8.00-8.99	A+ (Excellent)	80.0-89.9	First Class Exemplary
7.00-7.99	A (Very Good)	70.0-79.9	First Class Distinction
6.00-6.99	B+ (Good)	60.0-69.9	First Class
5.50-5.99	B (Above Average)	55.0-59.9	High Second Class
5.00-5.49	C (Average)	50.0-54.9	Second Class
4.00-4.99	P (Pass)	40.0-49.9	Pass Class
Below 4.00	F (Fail)	Below 40	Fail, Reappear

Ab (Absent)	-	Absent	-

The Semester Grade Point Average (SGPA) is a Semester and the CGPA at the end of each year may be calculated as described in Appendix E.

6. REJECTION OF RESULTS

a) A candidate may be permitted to reject result of the whole examination of any semester. Rejection of result course, paper wise or subject wise shall not be permitted.

b) The candidate who has rejected the result shall appear for the immediately following examination.

c) The rejection shall be exercised only once in each semester and the rejection once exercised shall not be revoked.

d) Application for rejection of results along with the payment of the prescribed fee shall be submitted to the Registrar (Evaluation) through the College at most together with the original statement of marks within 30 days from the date of publication of the result.

e) A candidate who rejects the result is eligible for only SGPA, CGPA or Class and not for ranking.

7. IMPROVEMENT OF RESULTS

a) A candidate who has passed in all the papers of a semester may be permitted to improve the result by reappearing for the whole examination of that semester.

b) The reappearance may be permitted during the period N+2 years (where N refers to duration of the program) without restoring it to the subsequent examination only.

c) The student may be permitted to apply for improvement examination 45 days in advance of the pertinent semester examination whenever held.

d) If a candidate passes in all the subjects in reappearance, higher of the two aggregate marks secured by the candidate shall be awarded for that semester. In case the candidate fails in the reappearance, candidate shall retain the earlier result.

e) A candidate who has appeared for improvement examination is eligible for class, CGPA only and not for ranking.

f) Internal assessment (IA) marks shall be shown separately. A candidate who wants to improve the result or who, having failed, takes the examination again or who has appeared for improvement shall retain the IA marks already obtained.

g) A candidate who fails in any of the semester examinations may be permitted to take the examinations again at a subsequent appearance as per the syllabus and scheme of examination in vogue at the time the candidate took the examination for the first time. This facility shall be limited to the following two years.

Suggestive Template for IAT

Internal Assessment Test Bachelor/ Master of Commerce (B.Com/M.Com)

Course Code: Name of the Course:

Duration: 1.30hrs Total Marks: 45

SECTION- A

I. Answer any two of the following questions. Questions are asked on Remembering. (2 x 2= 4)

1.

2.

3.

SECTION- B

II. Answer any two of the following questions. Questions are asked on Understanding and Applying. (2 x 8= 16)

4.

5.

6.

SECTION- C

III. Answer any one of the following questions. Questions are asked on analysis and evaluating. (1 x 10=10)

7.

8.

Note: Internal Test question papers format is prepared based on Revised Bloom's Taxonomy.

(https://www.apu.edu.in/wp-content/uploads/2019/06/Revised_Bloom_Taxonomy.pdf)

II. Semester End Examination (SEE):

The Semester End Examination for all the courses for which students who got registered during the semester shall be conducted. SEE of the course shall be conducted after fulfilling the minimum attendance requirement as per the Universities/Institutes' norms. The Members of the Committee also deliberated on the framework of Semester End Examination (SEE) and suggested to give autonomy to Board of Studies (BOS) of Universities/Institutes to have their own Framework. The BOS of the Universities/Institutes shall prepare the SEE Framework by considering the 'Revised Bloom's Taxonomy' where the courses are designed based on Outcome Based Education.

4. Program Structure

Proposed Scheme of Teaching & Examination for B.Com (Basic Hons) with Credits as Curriculum

Semester I								
Sl. No.	Course Code	Title of the Course	Category of Course	Teaching Hours per Week (L+T+P)	SEE	CIE	Total Marks	Credits
1	Lang 1.1	Language - I	AECC	3+1+0	60	40	100	3
2	Lang 1.2	Language – II	AECC	3+1+0	60	40	100	3
3	B.Com 1.1	Financial Accounting	DSC	3+0+1	60	40	100	4
4	B.Com.1.2	Management Principles and Applications	DSC	4+0+0	60	40	100	4
5	B.Com.1.3	Principles of Marketing	DSC	4+0+0	60	40	100	4
6	B.Com.1.4	Digital Finance	SEC-SB	1+0+2	60	40	100	3
7	B.Com.1.5	Accounting for Everyday Financial Literacy	OEC	2+0+0	60	40	100	2
Sub –Total (A)					420	280	700	23

Semester II								
Sl. No.	CourseCode	Title of the Course	Category of Course	Teaching Hours per Week (L+T+P)	SEE	CIE	Total Marks	Credits
8.	Lang 2.1	Language - I	AECC	3+1+0	60	40	100	3
9	Lang 2.2	Language – II	AECC	3+1+0	60	40	100	3
10	B.Com 2.3	Advanced Financial Accounting	DSC	3+0+2	60	40	100	4
11	B.Com 2.4	Business Mathematics OR Corporate Administration	DSC	4+0+0	60	40	100	4
12	B.Com 2.5	Law & Practice of Banking	DSC	4+0+0	60	40	100	4
13	B.Com 2.6	Health & Wellness, Yoga & Emotional Learning	SEC-VB	1+0+1	-	100	100	2
14	B.Com 2.7	Environmental Studies	AECC	2+0+0	60	40	100	2
15	B.Com.2.8	Financial Environment Investing in Stock Markets	OEC	2+0+1	60	40	100	3
Sub –Total (B)					420	380	800	25

EXIT OPTION WITH CERTIFICATION – with ability to solve real defined problems

Name of the Program: Bachelor of Commerce (B.Com.)

Course Code: B.Com. xx

Name of the Course: Financial Accounting

Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs	60 Hrs

Pedagogy: Classroom lecture, tutorials, Group discussion, Seminar, Case studies, Skill work etc.,

Course Outcomes: On successful completion of the course, the Students will be able to

a) Understand the theoretical framework of accounting as well accounting standards
b) Demonstrate the preparation of financial statement of manufacturing and non-manufacturing entities of sole proprietors
c) Execute the accounting treatments for consignment transactions & events in the books of consignors and consignees.
d) Understand the accounting treatment for royalty transactions & annotate the Royalty agreements
e) Outline the emerging trends in the field of accounting

Syllabus	Hours
Module No. 1: Theoretical Framework of Accounting	12
Introduction-Meaning and Scope of Accounting- Accounting Terminologies- Uses and Users of Accounting information-Accounting Process-Basis of Accounting: Cash and Accrual basis-Branches of Accounting-Accounting Principles-Concepts and Conventions-Accounting Standards-Indian Accounting Standards (Ind AS).	
Module No. 2: Financial Statements of Sole Proprietors	12
Introduction-Meaning of Sole Proprietor-Financial Statements of Non-Manufacturing Entities: Trading Account-Income Statement-Profit & Loss Account-Balance Sheet-Financial Statements of Manufacturing Entities: Manufacturing Account-Trading Account-Profit & Loss account-Balance Sheet.	
Module No. 3: Consignment Accounts	12
Introduction-Meaning of Consignment-Consignment vs Sales-Pro-forma Invoice-Account Sales-Types-Commission-Accounting for Consignment Transactions & Events in the books of Consignor and Consignee - Treatment of Normal & Abnormal Loss - Valuation of Closing Stock-Goods sent at Cost Price and Invoice Price.	
Module No. 4: Royalty Accounts	12
Introduction-Meaning-Types of Royalty-Technical Terms-Lessee, Lessor, Minimum Rent - Short Workings -Recoupment of Short Working-Accounting Treatment in the books of Lessee and lessor – Journal Entries and Ledger Accounts including minimum rent account.	
Module No. 5: Emerging Trends in Accounting	12
Digital Transformation of Accounting- Big Data analysis in Accounting -Cloud Computing in accounting- Accounting with Green- Forensic Accounting- Accounting for Human Capital- Accounting- Environmental Accounting- Predictive Accounting (Theory Only)	

Skill Development Activities:

1. Collect Annual Reports of sole proprietors and identify accounting concepts and conventions followed in the preparation of the annual reports.
2. Collect Annual Reports of sole proprietors and identify the different components.
3. Preparation of Proforma invoice and accounts sales with imaginary figures.
4. Collect Royalty Agreements and draft figures on the agreements with imaginary figures.

5. Identify latest innovations and developments in the field of accounting.
6. Any other activities, which are relevant to the course.

Text Books:

1. ICAI Study Materials on Principles & Practice of Accounting, Accounting and Advanced Accounting.
2. SP Iyengar (2009), Advanced Accounting, Sultan Chand & Sons, Vol. 1.
3. Robert N. Anthony, David Hawkins, Kenneth A. Merchant (2011) Accounting: Text and Cases, McGraw-Hill Education, 13th Edition.
4. Charles T. Horngren and Donna Philbrick (2012) Introduction to Financial Accounting, Pearson Education, 10th Edition.
5. J.R. Monga, Financial Accounting: Concepts and Application, Mayur Paper Backs, New Delhi, 9th Edition.
6. S.N. Maheshwari and S. K. Maheshwari, Financial Accounting, Vikas Publishing House, New Delhi, 6th Edition.
7. R.S. Raman (2008), Financial Accounting Vol. I & II, United Publishers & Distributors.
8. Compendium of Statements and Standards of Accounting, The Institute of Chartered Accountants of India, New Delhi.

Note: Latest edition of text books may be used.

Name of the Program: Bachelor of Commerce (B.Com.)

Course Code: B.Com. 4.2

Name of the Course: Management Principles and Applications

Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs	56 Hrs

Pedagogy: Classroom lectures, Case studies, Group discussion, Seminars & Self work etc.

Course Outcomes: On successful completion of the course, the Students will be able to

a) Understand and identify the different theories of organizations, which are relevant in the present context.
b) Design and demonstrate the strategic plan for the attainment of organizational goals.
c) Differentiate the different types of authority and chose the best one in the present context.
d) Compare and chose the different types of motivation factors and leadership styles.
e) Choose the best controlling techniques for better productivity of an organization.

Syllabus:	Hours
Module No. 1: Introduction to Management	12
Introduction- Meaning and importance of Management- Managerial Functions- Essence of Managership- Evolution of the Management thoughts- Classical organizational theories- Neo-Classical theories- Modern organizational theories.	
Module No. 2: Planning	10
Introduction- Meaning- Nature- Purpose- Types of plans- Planning process- Strategic planning- Concept- Process- Importance and Limitations- Environmental Analysis and diagnosis- Meaning- importance and Techniques (SWOT- TOWS- PORTS- CF- BCG Matrix- Competitive Analysis)- Decision- making- Concept- Importance- Committee and Group decision making Process.	
Module No. 3: Organizing	12
Introduction- Meaning- Concept and Process of Organizing – An overview- Types of management- Different types of authority- Line, staff and functional- Decentralization- Delegation of authority- Formal and Informal Structure- Principles of Organizing- Network Organization Structure.	
Module No. 4: Staffing and Leading	12
Introduction- Staffing- Concept of Staffing- Staffing Process- Motivation- Concept- Importance- extrinsic and intrinsic motivation- Major Motivation Theories- Maslow's Need Hierarchy Theory- Herzberg's Two- factor Theory- Vroom's Expectation Theory- Leadership- Concept- Importance- Major theories of Leadership (Likert's- Likert Theory- Blake and Mouton's Managerial Grid Theory- House's Path Goal theory- Fred Fiedler's situational Leadership)- Transactional leadership- Transformational Leadership- Transforming Leadership- Communication- Concept- purpose- process- Oral and written communication- Formal and informal communication network- Barriers to communication- Overcoming barriers to communication.	
Module No. 5: Controlling and Coordination	12
Control- Concept- Process- Limitations- Principles of Effective Control- Major Techniques of control – Ratio Analysis, ROI, Budgetary Control, ERA, PERT, CPM- Emerging issues in Management- Coordination- Meaning- Nature- Importance- Principles of Coordination.	

Skill Development Activities:

1. Collect the photographs and brief note of any three leading contributors of management thoughts.
2. Visit any business organization and collect the information on types of planning adopted by them.
3. Visit any business organization and collect different types of authority followed and also the basic the organizational structure.
4. Analyse the leadership styles of any select five companies of different sectors.
5. Visit any manufacturing firm and identify the controlling system followed.
6. Any other activities which are relevant to the course.

Text Books:

1. Harold Koontz and Heinz Weihrich (2007). Essentials of Management: An International and Leadership Perspective. McGraw Hill Education. 8th Edition.
2. Stephen P Robbins and Mathukumar Nanda Agrawal (2009). Fundamentals of Management: Essential Concepts and Applications. Pearson Education. 6th Edition.
3. James H. Donnelly (1990) Fundamentals of Management. Pearson Education. 7th Edition.
4. B.P. Singh and A.K. Singh (2004). Essentials of Management. Excel Books.
5. P.C Tripathi & P.N Reddy (2009). Principles of Management. Tata McGraw Hill Publications. 5th Edition.
6. Koontz Harold (2004). Essentials of Management. Tata McGraw Hill.

Note: Latest edition of text books may be used.

Name of the Program: Bachelor of Commerce (B.Com.)
Course Code: B.Com. 4.3
Name of the Course: Principles of Marketing

Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs	60 Hrs

Pedagogy: Classroom lecture, Case studies, Group discussion, Seminar & field work etc.

Course Outcomes: On successful completion of the course, the Students will be able to

a) Understand the basic concepts of marketing and know the marketing environment
b) Analyze the consumer behaviour in the present demand and marketing segmentation
c) Discover the new product development & identify the factors affecting the price of a product in the present context
d) Judge the impact of promotional techniques on the customers & importance of channels of distribution
e) Outline the recent developments in the field of marketing

Syllabus:	Hours
Module No. 1: Introduction to Marketing	12

Introduction-Nature-Scope-Importance of Marketing; Concepts & Approaches of Marketing: Need-Want-Demand-Customer Value-Customer Costing; Evolution of marketing; Selling vs Marketing; Marketing Environment: Concept-importance-Micro and Macro Environment; Marketing Management-Meaning-importance.

Module No. 2: Consumer Behaviour & Market segmentation	12

Consumer Behaviour: Nature and Importance-Consumer buying decision process; Factors influencing consumer buying behaviour; Market segmentation: Concept, importance and bases; Target market selection-Positioning concept-Importance and bases; Product differentiation vs market segmentation; Marketing Mix: Product-Price-Place & Promotion.

Module No. 3: Product and Pricing	12

Product: Concept and importance-Product classifications-Concept of product mix; Branding-packaging and labelling; Product Support Services; Product life-cycle; New Product Development Process; Consumer adoption process; Pricing: Significance, Factors affecting price of a product, Pricing policies and strategies.

Module No. 4: Promotion and Distribution	12

Promotion: Nature and importance of promotion; Communication process; Types of promotion: advertising, personal selling, public relations & sales promotion, and their distinctive characteristics; Promotion mix and factors affecting promotion mix decisions; Distribution Channels and Physical Distribution: Channels of distribution - meaning and importance; Types of distribution channels; Functions of middle men; Factors affecting choice of distribution channel; Wholesaling and retailing; Types of Retailers; e-retailing; Physical Distribution.

Module No. 5: Recent Developments in Marketing	08

Social Marketing, value marketing, direct marketing, service marketing, green marketing, Rural marketing; Concurrent, Search Engine Marketing-Mobile Marketing; Marketing Analytics-Social Media Marketing-Email Marketing-Live Video Streaming Marketing-Network Marketing, any other recent developments in Marketing.

Skill Development Activities:

1. Analyse the marketing environment of your locality and identify needs wants & purchasing power of customers

2. Collect consumer behaviour towards home appliances in your locality.
3. Visit any organization and collect the information towards pricing of the product.
4. Visit any wholesalers/ Retailers, reflect the role of them in marketing.
5. Identify the recent developments in the field of marketing.
6. Any other activities, which are relevant to the course.

Reference Materials:

1. Philip Kotler (2009). Principles of Marketing. 13th edition. Pearson Education.
2. Saxena Rajan. (2010) Marketing Management. Tata McGraw-Hill Publishing Company Ltd., New Delhi. Fifth Edition.
3. Kumar Arun & Meenakshi (2010). Marketing Management. Vikas Publishing House Pvt. Ltd., New Delhi. Third Edition
4. Pandit Tapan (2008). Marketing Management. Excel books. New Delhi. Second Edition.
5. Michael J. Etzel, Bruce J. Walker, William J Stanton and Ajay Pandit. Marketing Concepts and Cases. (Special Indian Edition). McGraw Hill Education
6. William D. Perreault and McCarthy E. Jerome. Basic Marketing. Pearson Education.
7. Majaro. Simon. The Essence of Marketing. Pearson Education, New Delhi.
8. Sumbaco and Kapoor. Marketing Management: A South Asian Perspective. Cengage Learning.
9. Chhabra, T.N., and S. K. Grover. Marketing Management. Fourth Edition.

Note: Latest edition of text books may be used.

Name of the Program: Bachelor of Commerce (B.Com)
Course Code: B.Com. 1.6 (Open Elective Course)
Name of the Course: Accounting for Beginners

Course Credits	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	3 Hrs	42 Hrs

Pedagogy: Classroom lecture, Case studies, Group discussion, Seminar, Field work etc.

Course Outcomes: On successful completion of the course, the Students will be able to

a) Analyse various terms used in accounting
b) Make accounting entries and prepare cash book and other account required while running a business
c) Prepare accounting equation of various business transactions
d) Analyse information from company's annual report
e) Comprehend the management reports of the company

Syllabus	Hours
Module No. 1: Introduction to Accounting	08
Meaning, Importance and Need, its objectives and relevance to business establishments and other organizations and individuals. Accounting information- meaning, users and utilities, sources of accounting information. Some Basic Terms –Transaction, Account, Asset, Liability, Capital Expenditure & Expense, Income, Revenue, Gain, Profit, Surplus, Loss, Deficit, Debit, Credit, Accounting Year, Financial Year.	
Module No. 2: Transactions and Recording of Transactions	08
Features of recordable transactions and events, Basis of recording – vouchers and another basis. Recording of transactions: Personal account, Real Account and Nominal Account, Rules for Debit and Credit, Double Entry System, journalizing transactions, Preparation of Ledger, Cash Book including bank transactions. (Simple Problems)	
Module No. 3: Preparation of Financial Statements	14
Fundamental Accounting Equation, Concept of revenue and Capital, Preparation of financial statements. (Simple problems)	
Module No. 4: Company Accounts	08
Explanation of certain terms – Public Limited Company, Private Limited Company, Share, Share Capital, Shareholder, Board of Directors, Stock Exchange, Listed Company, Share Price, Sensex - BSE, NSE, Annual report, its Contents and distinguish on Annual Report, Company Balance Sheet and Statement of Profit and Loss, Content Analysis based on annual report including vertical analysis.	
Module 5: Management Reports	08
Reports on Management Review and Governance, Report of Board of Directors - Management discussion analysis, Annual Report on CSR – Business responsibility report – Corporate governance report – Secretarial audit report.	

Skill Development Activities

1. Download annual reports of business Organizations from the websites and go through the contents of the annual report and present the salient features of the annual report using mind maps and content analysis including vertical analysis.
2. Prepare accounting statements by collecting necessary data from medium sized firm.
3. Prepare financial statements collecting necessary data from small business firms.
4. Collect the management reports of any large scale organization and analyse the same.
5. Any other activities, which are relevant to the course.

Text Books:

1. Hatfield, L. (2019). Accounting Basics. Amazon Digital Services LLC.
2. Horngren, C. T., Sundem, G. L., Elliott, J. a., & Philbrick, D. (2014). Introduction to Financial Accounting. London: Pearson Education.
3. Siddiqui, S. A. (2008). Book Keeping & Accountancy. New Delhi: Laxmi Publications Pvt. Ltd.
4. Sehgal, D. (2014). Financial accounting. New Delhi: Vikas Publishing House Pvt. Ltd.
5. Tulsian, P. C. (2007). Financial Accounting. New Delhi: Tata McGraw Hill Publishing Co. Ltd.
6. Mukherji, A., & Hanif, M. (2014). Financial Accounting. New Delhi: Tata McGraw Hill Publishing Co. Ltd.
7. Maheshwari, S. N., Maheshwari, S. K., & Maheshwari, S. K. (2018). Financial Accounting. New Delhi: Vikas Publishing House Pvt. Ltd.
8. Khan, M. Y. and Jain, P. K. Management Accounting. McGraw-Hill Education.
9. Arora, M.N. Management Accounting. Vikas Publishing House. New Delhi

Note: Latest edition of text books may be used.

Name of the Program: Bachelor of Commerce (B.Com)

Course Code: B.Com 1.3 (Open Elective Course)

Name of the Course: Financial Literacy

Course Credits	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	3 Hrs	42 Hrs

Pedagogy: Classroom lecture, Case studies, Group discussion, Seminar, Field visit etc.

Course Outcomes: On successful completion of the course, the Students will be able to

1. Describe the importance of financial literacy and list out the institutions providing financial services
2. Prepare financial plan and budget and manage personal finances
3. Open, avail, and manage/ operate services offered by banks
4. Open, avail, and manage/ operate services offered by post offices
5. Plan for life insurance and property insurance & select instrument for investment in shares

Syllabus	Hours
Module No. 1: Introduction	6
Meaning, importance and scope of financial literacy. Prerequisites of Financial Literacy – level of education, numerical and communication ability. Various financial institutions – Banks, Insurance companies, Post Offices, Mobile App based services. Need of availing of financial services from banks, insurance companies and postal services.	
Module No. 2: Financial Planning and Budgeting	10
Concept of economic wants and means for satisfying them, needs. Balancing between economic wants and resources. Meaning, importance and need for financial planning. Personal Budget, Family Budget, Business Budget and National Budget. Procedure for financial planning and preparing budget. Budget surplus and budget deficit, reasons for savings from surplus, sources for meeting deficit.	
Module No. 3: Banking Services	10
Types of banks, Banking products and services – Various services offered by banks. Types of bank deposit accounts – Savings Bank Account, Term Deposit, Current Account, Recurring Deposit, PPF, NRE etc. Formalities to open various types of bank accounts. ATM Card, Address proof, KYC norms. Various types of loans – short term, medium term, long term, micro finance, agricultural etc. and related interest rates offered by various nationalized banks and post office. Cashless banking, e-banking, Check Clearing/ Cheque Truncation System (CTS), ATM, Debit and Credit Card, and APP based Payment system, Banking complaints and Ombudsman.	
Module No. 4: Financial Services from Post Office	08
Post office Savings Schemes: Savings Bank, Recurring Deposit, Term Deposit, Monthly Income Scheme, Kisan Vikas Patra, NSC, PPF, Senior Citizen Savings Scheme (SCSS), Sukanya Samriddhi Yojana Account (SSY), SBA; India Post Payments Bank (IPPB), Money Transfer: Money Order, E-Money order, Instant Money Order, collaboration with the Western Union Financial Services, MO Videsh, International Money Transfer Service, Electronic Clearance Service (ECS), Money gram International Money Transfer, Indian Postal Order (IPO).	
Module 5: Protection and Investment Related Financial Services	10
Insurance Services: Life Insurance Policies, Life Insurance Term Life Insurance, Endowment Policies, Pension Policies, ULIP, Health Insurance and its Plans, Comparisons of	

policies offered by various life insurance companies. Property insurance Policies offered by various general insurance companies. Post office life insurance Schemes: Postal Life Insurance and Rural Postal Life Insurance (PLI and RPLI). Housing Loans: Institutions providing housing loans, Loans under Pradhanmantri Awas Yojana – Rural and Urban. Investment avenues in Equity and Debt Instruments: Portfolio Management Meaning and importance: Share Market and Debt Market, Issues and its significance, Investment in Shares – selection procedure for investment in shares, Risk-return, Investment Management – Services from brokers and Depositories and self-management. Mutual Fund.

Skill Development Activities:

1. Visit banks, post offices, and insurance companies to collect information and required documents related to the services offered by these institutions and to know the procedure of availing of these services
2. Fill up the forms to open accounts and to avail loans and shall attach photocopies of necessary documents.
3. Prepare personal and family budget for one six months on imaginary figures.
4. Try to open Demat account and trade for small amount and submit the report on procedure on opening of Demat account and factors considered for trading.
5. Any other activities which are relevant to the course

Text Books:

1. Avadhani V. A. (2019): Investment Management. Mumbai: Himalaya Publishing House Pvt. Ltd.
2. Chandra, P. (2019): Investment Demo: How to Why. New Delhi: Tata McGraw Hill Education.
3. Kothari, R. (2010): Financial Services in India-Concept and Application. New Delhi: Sage Publications India Pvt. Ltd.
4. Mishra, B. K. (2017): The Basics of Finance: Financial Tools for Non-Financial Managers. Indiana: universe Company.
5. Mishra, S., Pati, S. K., Saha, A. P., & Sharma, M. P. (2019): Financial Planning. New Delhi: Sage Publications India Pvt. Ltd.
6. Zabihollah, A. (2007): Financial Literacy Education. London: Palgrave Macmillan.

Note: Latest edition of text books may be used.

B. Course Contents

Advanced Financial Accounting

Business Mathematics / Corporate Administration

Law & Practice of Banking

Health Wellness / Social & Emotional Learning

Environmental Studies

Financial Environment / Investing in Stock Markets

Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com. xx Name of the Course: Advanced Financial Accounting		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs	60 Hrs

Pedagogy: Classroom Lectures, Case studies, Tutorial classes, Group Exercises, Seminar & field work etc.

Course Outcomes: On successful completion of the course, the Students will be able to

a) Understand & compute the amount of claim for loss of stock & Loss of Profit.
b) Learn various methods of accounting for hire purchase transactions.
c) Deal with the inter-departmental transfers and their accounting treatment.
d) Demonstrate various accounting treatments for dependent & independent branches.
e) Prepare financial statements from incomplete records.

Syllabus:	Hours
Module No. 1: Insurance Claims for Loss of Stock & Loss of Profit	10
Introduction-Meaning of fire computation of Claim for loss of stock- Computations of Claim for loss of Profit- Average Clause.	
Module No. 2: Hire Purchase Accounting	10
Introduction-Meaning of hire purchase-difference between hire purchase and instalment- Nature-features-terms used-Apportionment of Interest-Accounting for hire purchase transactions-Repossession.	
Module No. 3: Departmental Accounts	12
Introduction-meaning-advantages and disadvantages-methods of departmental accounting-basis of allocation of common expenditure among different departments-types of departments-Inter departmental transfer and its treatment	
Module No. 4: Accounting for Branches	12
Introduction-difference between branch accounts and departmental accounts-types of branches-Accounting for dependent & independent branches-Foreign branches- Accounts for foreign branches-Techniques for foreign currency translation. (Theory only).	
Module No. 5: Conversion of Single Entry into Double Entry	12
Introduction - Meaning-Limitations of Single Entry System-Difference between Single entry and Double entry system - Problems on Conversion of Single Entry into Double Entry.	

Skill Development Activities:

a) Identify the procedure & documentations involved in the insurance claims.
b) Collect hire purchase agreements and draft dummy hire purchase agreements with imaginary figures.
c) Identify the common expenditures of an organization among various departments.
d) Collect the procedure and documentations involved in the establishment of various branches.
e) Visit any sole proprietor firm and identify the steps involved in the conversion of single entry into double entry system.
f) Any other activities which are relevant to the course.

Text Books:

1. ICAI Study Materials on Principles & Practice of Accounting, Accounting and Advanced Accounting

1. S.P. Iyengar (2009), Advanced Accounting, Sultan Chand & Sons, Vol. 1.
2. Robert N. Anthony, David Hawkins, Kenneth A. Merchant (2011) Accounting: Text and Cases, McGraw-Hill Education, 13th Edition.
4. Charles T. Horngren and Donna Philbrick, (2014) Introduction to Financial Accounting, Pearson Education, 11th Edition.
5. J.R. Monga, Financial Accounting: Concepts and Applications, Mayur Paper Backs, New Delhi, 23rd Edition.
6. S.N. Maheshwari and S. K. Maheshwari, Financial Accounting, Vikas Publishing House, New Delhi, 6th Edition.
7. R.L. Gupta (2008), Financial Accounting Vol. I & II, United Publishers & Distributors
8. Compendium of Statements and Standards of Accounting, The Institute of Chartered Accountants of India, New Delhi.

Note: Latest edition of text books may be used.

Name of the Program: Bachelor of Commerce (B.Com.)
Course Code: B.Com. 1.1
Name of the Course: Business Mathematics

Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs	56 Hrs

Pedagogy: Classroom lecture, Case studies, Tutorial classes, Group discussion, Seminar & field work etc.

Course Outcomes: On successful completion of the course, the Students will be able to

a) Understand the number system and indices applications in solving basic business problems.
b) Apply concept of commercial arithmetic concepts to solve business problems.
c) Make use of theory of equation in solving the business problems in the present context.
d) Understand and apply the concepts of Set Theory, Permutations & Combinations and Matrices in solving business problems.
e) Apply measurement of solids in solving simple business problems.

Syllabus:	Hours
Module No. 1: Number System and Indices:	12
Introduction - Meaning - Natural Numbers - Even & Odd Numbers - Prime, Rational Number and its features in Irrational Numbers - simple problems on finding sum of natural, Odd and Even number- HCF and LCM, problems thereon; Indices: Introduction, Laws of indices, application of laws for simplification, simple problems.	
Module No. 2: Commercial Mathematics	10
Introduction: Meaning of simple and Compound interest and problems thereon. Annuities: types & problems on present and future value of annuity; Ratio and Proportions: meaning and problems thereon; problems on speed, time and work.	
Module No. 3: Theory of Equations	12
Introduction - Meaning; Problems on Linear equations and solving pair and cubical quadratic equations (factor and Sridharacharya methods only); problems on Simultaneous equations (Elimination method only).	
Module No. 4: Set Theory, Permutations & Combinations and Matrices:	12
Introduction - Meaning & types of sets; Laws of Set Venn diagram problems thereon; Meaning and problems on permutations and combinations; Matrices: Meaning & types of Matrices; simple problems on addition, subtraction and multiplication.	
Module No. 5: Measurement of Solids	10
Introduction - Meaning and problems on Area and perimeter; Circumference of Triangle, Square, Rectangle, Circle, Cone and Cylinder.	

Skill Development Activities:

a. Show the number of ways in which your telephone number can be arranged to get odd numbers.
b. Visit any Commercial Bank in your area and collect the information about types of loans and the rates of interest on loans.
c. Use Matrix principles to any known fund requirement and problem for two families.
d. Measure your classroom with the help of a tape and find the cost of the carpet for the floor area of the classroom.
e. Any other activities which are relevant to the course.

Text Books:

1. Saha and Rama Rao, Business Mathematics, 1978.
2. S.K Dorairaj, Business Mathematics, Trichy Publications.
3. R. Gupta, Mathematics for Chartered Accountants.
4. S. P. Gupta, Business Mathematics.
5. Madappa and Sridhara Rao, Business Mathematics.
6. Padmalochana Hazarika, Business Mathematics.
7. Dr.S.H.Sayed, Quantitative Techniques, Chetana Book House.
8. Dr. Padmalochan Hazarika ,A Textbook of Business Mathematics-I, Chand, New Delhi, No. 4, 2010.
9. A. R. Vermak, Business Mathematics, Arora Books Private Limited, New Delhi, No. 1, January 2007.
10. D. C. Sancheti & V. K. Kapoor, Business Mathematics, S Chand, New Delhi, 2014
11. A Lenin Jothi, Financial Mathematics, Himalaya Publications, Mumbai, No. 1, 2009.
12. B. M. Aggarwal, Business Mathematics, Arya Books Pvt. Ltd., No. 5, 2013

Note: Latest edition of text books may be used.

Name of the Program: Bachelor of Commerce (B.Com.)
Course Code: B.Com. 3.2
Name of the Course: Corporate Administration

Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs	56 Hrs

Pedagogy: Classroom lecture, Case studies, Group discussions, Seminar & field visit etc.

Course Outcomes: On successful completion of the course, the Students will be able to

a) Understand the *framework* of Companies Act of 2013 and *different* kind of companies.
b) Identify the stages and *documents* involved in the formation of companies in India.
c) Analyse the role, responsibilities and functions of Key management Personnel in Corporate Administration.
d) Examine the procedure involved in the corporate meeting and the role of company secretary in the meeting.
e) Evaluate the role of liquidators in the process of winding up of the company.

Syllabus:	Hours
Module No. 1 Introduction to Company	12

Introduction – Meaning and Definition – Features – Highlights of Companies Act 2013 – Kinds of Companies – One Person Company- Private Company- Public Company- Company limited by Guarantee-Company limited by Shares- Holding Company- Subsidiary Company- Government Company- Associate Company- Small Company- Foreign Company -Global Company- Body Corporate- Listed Company.

Module No. 2 Formation of Companies	12

Introduction - **Promotion Stage**- Meaning of Promoter- Position of Promoter & Functions of Promoter. **Incorporation Stage**- Meaning & contents of Memorandum of Association & Articles of Association- Distinction between Memorandum of Association and Articles of Association- Certificate of Incorporation. **Subscription Stage** – Meaning & contents of Prospectus- Statement in lieu of Prospectus and Book Building. **Commencement Stage** – Document to be filed- e-filing- Register of Companies- Certificate of Commencement of Business- Formation of Global Companies- Meaning – Types –Features – Legal Formalities- Administration.

Module No. 3 Company Administration	12

Introduction – Key Managerial Personnel – Managing Director, Whole time Directors- the Companies Secretary- Chief Financial Officer- Resident Director- Independent Director- Auditors – Appointment – Powers – Duties & Responsibilities- Managing Director – Appointment – Powers – Duties & Responsibilities- Audit Committee- CSR Committee- Company Secretary – Meaning- Types- Qualifications- Appointment- Position- Rights- Duties- Liabilities & Removal or Resignation.

Module No. 4 Corporate Meetings	12

Introduction – Corporate meetings- types – Importance – Distinction- Resolutions- Types – Distinction- Requisites of a valid meeting – Notice – Quorum –Proxies – Voting – Registration of resolutions- Role of a company secretary in conducting the meetings.

Module No. 5 Winding Up	10

Introduction – Meaning- Modes of Winding up –Consequences of Winding up – Official Liquidator – Role & Responsibilities of Liquidators – Defunct Company – Voluntary Strike off.

Skill Development Activities:

1. Collect the Companies Act 2013 from the Ministry of Corporate Affairs –study and

prepare the highlights of the same.

2. Visit any Registrar of the Companies and find out the procedure involved in the formation of the companies.
3. Visit any Company and discuss with Directors of the same on roles and responsibilities and prepare report on the same.
4. Collect the copy of notes of the Meeting and Resolutions. Prepare the format copy of Notice and resolutions.
5. Contact any official liquidator of an organization and discuss the procedure involved on the same and prepare report.
6. Any other activities which are relevant to the course.

Text Books:

9. S.N Maheshwari, Elements of Corporate Law, HPH.
10. Balchandran, Business Law for Management, HPH.
11. Dr. P.N. Reddy and H.R. Appannaiah, Essentials of Company Law and Secretarial Practice, HPH.
12. K. Venkataramana, Corporate Administration, HPH.
13. N.D. Kapoor: Company Law and Secretarial Practice, Sultan Chand.
14. M.C. Bhandari, Guide to Company Law Procedures, Wadhwa Publications.
15. S.C. Kuchal, Company Law and Secretarial Practice.
16. S.C. Sharma, Business Law, I.K. International Publishers

Note: Latest edition of text books may be used.

Name of the Program: Bachelor of Commerce (B.Com.)

Course Code: B.Com. 2.3

Name of the Course: Law and Practice of Banking

Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs	60 Hrs

Pedagogy: Classroom lecture, Case studies, Group discussion, Seminar, Field work etc.

Course Outcomes: On successful completion of the course, the Students will be able to

a) Summarize the relationship between Banker & customer and different types of functions of banker.

aa) Analyse the role, functions and duties of paying and collecting banker.

bb) Make use of the procedure involved in opening and operating different accounts.

cc) Examine the different types of negotiable instrument & their relevance in the present context.

dd) Estimate possible developments in the banking sector in the upcoming days.

Syllabus:	Hours
Module No. 1: Introduction to Banking	12
Introduction- Meaning – Need – Importance – Primary, Secondary & Modern functions of banks - Origin of banking- Banker and Customer Relationship (General and special relationship) - Origin and growth of commercial banks in India – Type of Banks in India – Banks Lending - changing role of commercial banks, RBI, Mirror – Role & Functions.	
Module No. 2: Paying and Collecting Banker	12
Paying banker- Introduction - Meaning – Role – Functions - Duties - Precautions and Statutory Protection and rights - Dishonor of Cheques – Grounds of Dishonor - Consequences of wrongful dishonor of Cheques. Collecting Banker- Introduction - Meaning – Legal status of collecting banker - Holder for value -Holder in due course – Duties & Responsibilities - Protections and Statutory Protections to Collecting Banker.	
Module No. 3: Customers and Account Holders	10
Introduction - Types of Customers and Account Holders - Procedure and Practice in opening and operating accounts of different customers. Minor - Joint Account Holders- Partnership Firms - Joint Stock companies - Executors and Trustees - Clubs and Associations and Joint Hindu Undivided Family.	
Module No. 4: Negotiable Instruments	12
Introduction – Meaning & Definition – Features – Kinds of Negotiable Instruments- Promissory Notes - Bills of Exchange - Cheques - Crossing of Cheques - Types of Crossing- Endorsements- Introduction - Meaning - Essentials & Kinds of Endorsements – Rules of endorsement.	
Module No. 5: Recent Developments in Banking	10
Introduction - New technology in Banking – E-services – Debit and Credit cards - Internet Banking-Electronic Fund Transfer- NECS – RTGS - NEFT –ECS- Small banks- Payment banks- Digital Wallet-Crypto currency- KYC norms - Basel Norms - Mobile banking- E-payments - E-money. Any other recent development in the banking sector.	

Skill Development Activities:

1. Refer RBI website and identify the different types of banks operating in India.
2. Visit any Public sector bank & discuss with the branch manager about the role and functions of a paying and collecting banker.
3. Collect and fill diverse account opening forms of different types of customer.
4. Draft specimen of Negotiable instruments: bill of exchange, Promissory Notes and Cheques.

5. Identify and prepare report on pros and cons of recent developments in the field of banking sector.
6. Any other activities, which are relevant to the course.

Text Books:

17. Gupta & Natarajan, Banking Theory Law and Practice, SPH, 19th Edition
18. S. P Srivastava (2018): Banking Theory & Practice, Kanishka Publications
19. Maheshwari S.N. (2014): Banking Law and Practice, Kalyani Publishers, 11th edition
20. Shekar, K.C (2015): Banking Theory Law and Practice, Vikas Publications, 24th Edition
21. Dr. Alice Mathai (2015): Banking Law and Operations, SBH

Note: Latest edition of text books may be used.

Name of the Program: Bachelor of Commerce (B.Com)
Course Code: B.Com. 4.6 (Open Elective Course)
Name of the Course: Financial Environment

Course Credits:	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	3 Hrs.	42 Hrs

Pedagogy: Classroom lecture, Case studies, Group discussion, Seminar & field work etc.

Course Outcome: On successful completion of the course, the Students will be able to

a) Understand the fundamentals of Indian Economy and its significance.
b) Evaluate the impact of monetary policy on the stabilization of the Economy.
c) Assess the impact of fiscal policy on the stabilization of the Economy.
d) Examine the status of inflation, unemployment and labour market in India
e) Interpret the financial sector reforms in India

Syllabus	Hours
Module No. 1: Fundamentals of Indian Economy	10
Introduction - Production & Cost- Demand & Supply- Perfect & Imperfect Competition- Monopoly- National Income Accounting- Business Cycle- Open Economy- Utility theory- GDP- GNP- impact- other Macro Economic indicators.	
Module No. 2: Monetary Policy	08
Introduction - Meaning- objective- qualitative & quantitative measures for credit control- Influence of policy rates of RBI- Repo Reverse repo- Marginal standing facility and Bank rate- Influence of reserve ratios of RBI- CRR- SLR- Exchange rate- lending- deposit rate- design & areas of monetary policy- LAF- RBI Role- functions and its Governance	
Module No. 3: Fiscal Policy	08
Introduction - Meaning- objectives- public expenditure- public debt- deficit & budget- Keynesian approach- fiscal policy tools- fiscal policy effects on employment- supply side approach- design & areas of fiscal policy- fiscal budget- Role of Ministry of Finance in Fiscal Policy.	
Module No. 4: Inflation, Unemployment and Labour market	08
Introduction - Inflation- Causes of rising & falling inflation- inflation and interest rate- social costs of inflation- Unemployment – natural rate of unemployment- frictional & real unemployment- Labour market and its interaction with production system- Phillips curve- the trade-off- link on inflation and unemployment- various rate- role of expectations- adaptive and rational	
Module 5: Financial Sector Reforms	08
Introduction – Financial sector reforms – Recommendations & action taken- BASEL Accord- Narasimham Committee I & II- Raghuram Committee- FEDAI Act – Basel III- Liquidity- credit- Basel objectives- Basel norms I, II & III- criticism of Basel norms- Implementation of Basel norms in India- impact of Basel norms on Indian banks.	

Skill Development Activities:

1. Collect last ten year GDP rate and examine the same.
2. Collect last two years monetary policy rates of RBI and analyse the impact of the

name.
3. Collect last five years fiscal policy of Indian Government and analyse the impact of the same on rural poor.
4. Collect last five year data on inflation, unemployment rate and labour market conditions and critically analyse the same.
5. Identify the recent financial sector reforms in India.
6. Any other activities which are relevant to the course

Text Books:

1. V K Puri and S K Mishra, Indian Economy, 2018.
2. Datt and Sundharam's Indian Economy, S Chand
3. Ramesh Singh, Indian Economy, McGraw Hill education.
4. Khan and Jain, Financial Services, Mcgraw Hill Education, 5th edition
5. RBI working papers
6. Ministry of Finance, GOI working papers
7. SEBI Guidelines issued from time to time.

Note: Latest edition of text books may be used.

Name of the Program: Bachelor of Commerce (B.Com)
Course Code: B.Com. xxx (Open Elective Course)
Name of the Course: Investing in Stock Market

Course Credit	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	3 Hrs	42 Hrs

Pedagogy: Classroom lecture, Case studies, Group Discussion, Seminars & Field work etc.

Course Outcomes: On successful completion of the course, the Students will be able to

i) Explain the basics of investing in the stock market, the investment environment as well as risk & return;
ii) Analyse Indian securities market;
iii) Examine EIC framework and conduct fundamental analysis;
iv) Perform technical analysis;
v) Invest in mutual funds market.

Syllabus:	Hours
Module No. 1: Basics of Investing	08
Basics of Investment & Investment Environment: Risk and Return, Avenues of Investment - Equity shares, Preference shares, Bonds & Debentures, Insurance Schemes, Mutual Funds, Index Funds, Indian Security Markets - Primary Market, Secondary Market and Derivative Market, Responsible Investment.	
Module No. 2: Fundamental Analysis	08
Top down and bottom up approaches, Analysis of international & domestic economic scenario, Industry analysis, Company analysis (Quality of management, Financial analysis: Both annual and Quarterly Income statement analysis, profits statement analysis including key financial ratios, Cash flow statement analysis, Industry market ratios: PE, PEG, Price over sales, Price over book value, EVA), Understanding shareholding pattern of the company.	
Module No. 3: Technical Analysis	08
Trading rules (credit balance theory, confidence index, filter rules, market breath, advance vs declines) and charting (use of historic price, simple moving averages and MACD), basic and advanced interactive charts, Do's & Don'ts of investing in markets.	
Module No. 4: Indian Stock Market	08
Market Participants: Stock Broker, Investor, Depositories, Clearing House, Stock Exchanges, Role of stock exchange, Stock exchanges in India: BSE, NSE and MCX, Security Market Indices: NIFTY, Sensex and Sectoral indices, Sources of financial information, Trading in securities: Demat trading, types of orders, using brokerage and analyst recommendations.	
Module 5: Investing in Mutual Funds	08
Concept and background on Mutual Funds: Advantages, Disadvantages of investing in Mutual Funds, Types of Mutual funds: Open ended, close ended, equity, debt, hybrid, index funds and money market funds, Factors affecting choice of mutual funds, CRISIL mutual fund ranking and its usage, calculation and use of Net Asset Value.	

Skill Development Activities:

1. Work on the spreadsheet for doing basic calculations in finance.
2. Learners will also practice technical analysis with the help of relevant software.
3. Practical use of Technical charts in predicting price movements through line chart, bar chart, candle and stick chart, etc., moving averages, exponential moving averages.
4. Calculate risk and return of stocks using price history available on NSE website.
5. Prepare equity research report on use of spreadsheets in valuation of securities.

fundamental analysis of securities with the help of guidelines and questionnaire data available in respect of companies on various financial websites etc.

6. Any other activities which are relevant to the course.

Text Books:

1. Chandra, P. (2017). Investment Analysis and Portfolio Management. New Delhi: Tata McGraw Hill Education.
2. Kevin, S. (2015). Security Analysis and Portfolio Management. Delhi: PHI Learning Ranganatham.
3. M., & Madhumathi, R. (2016). Security Analysis and Portfolio Management. Uttar Pradesh: Pearson (India) Education.
4. Pandian, P. (2012). Security Analysis and Portfolio Management. New Delhi: Vikas Publishing House.

Note: Latest edition of text books may be used.

Government of Karnataka

Curriculum Framework for Undergraduate Programme in Colleges and Universities of Karnataka State.

5th Semester Model Syllabus for B.Sc. in BOTANY

Submitted to:

Vice Chairman
Karnataka State Higher Education Council
No. 18, Jnana Bharathi Block, Bangalore City University
Central, Bangalore, Karnataka- 560056

Composition of Subject Expert Committee Members

SN	Name & Organization
1	Dr. G. R. Naik, Vice Chancellor, Garden City University, Bengaluru
2	Dr. Rajaah, M S Ramaiah University of Applied Science, Bangalore
3	Dr. G. R. Janardhana, Professor, University of Mysore, Mysuru
4	Dr. Koresh K, Professor, Karnatak University, Dharwad
5	Dr. L. Rajanna, Professor, Bangalore University, Bengaluru
6	Dr. Siddaraju M.L, Professor, Mangalore University, Konaje
7	Dr. Krishnamurthy Y.L, Professor, Kuvempu University, Shivamogga
8	Dr. Govindappa M, Professor, Davanagere University, Davanagere
9	Dr. Bharathappa P, Hassan University, Hassan
10	Dr. K. Ramakrishnaiah, Assoc. Professor, Maharani Cluster University, Bengaluru
11	Shri M. N. Mallikarjunaiah, Assoc. Professor, Mandya University, Mandya
12	Dr. Abdul Khayoom , Assoc. Professor, Govt. Womens College, Kolar – 563 101
13	Dr. Manjatha, Assoc. Professor, GPGC, Vijayanagar, Bengaluru
14	Dr. Jayalaxmi Bhandary, Professor, GPGC, Mangalore
15	Dr. Latha Devi Kaushal, Gharamchand Rathmal college of Science, Kalaburgi
16	Smt. Akshatha Chandra G. R., Special Officer, KSHEC, Member Convener

Government of Karnataka

Model Curriculum of B.Sc. in BOTANY

5th Semester

Karnataka State Higher Education Council

Karnataka State Higher Education Council

Listing of Courses from V and VI Semesters for the Undergraduate Programs in BOTANY

Sem. No.	Course Category	Course Code	Course Title	Credits Assigned	Instructional hours per week		Duration of Exam	Exam Evaluation Pattern (Marks)		
					Theory	Practical	(Hrs.)	IA	Exam	Total
			BOTANY AS SINGLE MAJOR IN THREE YEARS							
V	DSC	BOT C9-T	Plant Morphology and Taxonomy	4	4		2	40	60	100
		BOT C10-P	Plant Morphology and Taxonomy	2		4	3	25	25	50
		BOT C11-T	Genetics and Plant Breeding	3	3		2	40	60	100
		BOT C12-P	Genetics and Plant Breeding	2		4	3	25	25	50
		BOT C13-T	Cell Biology	3	3		2	40	60	100
		BOT C14-P	Cell Biology	2		4	3	25	25	50
	DSE	BOT E1-T (Anyone to be chosen)	A. Algal and Fungal Biotechnology B. Bio fertilizers C. Sericulture	3	3		2	40	60	100
	Vocational	BOT V1-T (Anyone to be chosen)	A. Landscaping and gardening B. Mushroom Cultivation Technology C. Community Forestry	3	3		2	40	60	100
VI	DSC	BOT C15-T	Plant Physiology and Biochemistry	4	4		2	40	60	100
		BOT C16-P	Plant Physiology and Biochemistry	2		4	3	25	25	50
		BOT C17-T	Bioinformatics and computational biology	3	3		2	40	60	100
		BOT C18-P	Bioinformatics and computational biology	2		4	3	25	25	50
		BOT C19-T	Plant Biotechnology	3	3		2	40	60	100
		BOT C20-P	Plant Biotechnology	2		4	3	25	25	50
	DSE	BOT E2-T (Anyone to be chosen)	A. Herbal Drug Technology B. Techniques in Plant Biology C. Floriculture	3	3		2	40	60	100
	Vocational	BOT V2-T (Anyone to be chosen)	A. Plant Quarantine B. Plant Diversity and Human Welfare C.	3	3		2	40	60	100

BOTANY AND ANOTHER SUBJECT AS DOUBLE MAJORS IN THIRD YEAR

V	DSC	BOT C9-T	Plant Morphology and Taxonomy	4	2		2	40	60	100
		BOT C10-P	Plant Morphology and Taxonomy	2		2	2	30	20	50
		BOT C11-T	Genetics and Plant Breeding	4	2		2	40	60	100
		BOT C12-P	Genetics and Plant Breeding	2		2	2	30	20	50
VI	DSC	BOT C13-T	Cell Biology	4	2		2	40	60	100
		BOT C14-P	Cell Biology	2		2	2	30	20	50
		BOT C15-T	Plant Physiology and Biochemistry	4	2		2	40	60	100
		BOT C16-P	Plant Physiology and Biochemistry	2		2	2	30	20	50

Open Electives for non-BOTANY Students are also to designed and provided as that for the first three semesters with multiple options.
3rd,5th Theory Papers

Note:

1. If any Elective or Vocational course involves theory+non-practical (3+1 credit), then 1 hr of Exam Work will be in the ratio of 70:30. The practical part is to be evaluated as part of IA. Semester end examination is only in theory component and question from practical part if any.
2. C11, C12, C13 and C14 paper model syllabus given below is designed for single major (Botany). C13 & C11 consists of 3 units and C12, C14 contains the related practical syllabus respectively. Those study BOT who choose double major will have to include 1 more syllabus (one extra unit) for C11 and C13 papers along with the practical experiments in their respective practical papers (C12, C14)

Government of Karnataka

BOTANY Curriculum

Plant Morphology and Taxonomy (Theory)

Program Name	B.Sc. in BOTANY	Semester	V
Course Title	Plant Morphology and Taxonomy (Theory)		
Course Code	DSC – BOT-C9 - T	No. of Credits	04
Contact hours	60 Hours	Duration of SEA/Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite(s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

CO1 Understanding the main features in Angiosperm evolution.

CO2 Ability to identify, classify and describe a plant in scientific terms, thereby, identification of plants using dichotomous keys. Skill development in identification and classification of flowering plants.

CO3 Interpret the rules of ICN in botanical nomenclature.

CO4 Classify Plant Systematic and recognize the importance of herbarium and Virtual Herbarium. Evaluate the important herbaria and botanical gardens.

CO5 Recognition of locally available angiosperm families and plants and economically important plants. Appreciation of human activities in conservation of useful plants from the past to the present.

Contents	60 Hrs
Unit 1:	15 hrs
Morphology of Root, Stem and Leaf. Their modifications for various functions. Inflorescence – types. Structure and variations of flower. Fruits–types. Floral diagram and floral formula. **Introduction to Taxonomy**: History, objectives, scope and relevance of Taxonomy. **Systems of classification**: Artificial, Natural and Phylogenetic. Brief account of Linnaeus', Bentham& Hooker's, Engler and Prantl's system and APG IV System (2016). Merits and demerits of classification. **Taxonomic literatures**: Floras, Monographs, Revisions, Journals. **Herbaria and Botanical gardens**: Important herbaria and botanical gardens of the world and India. Techniques of Herbarium Preparation, role of botanical gardens. **Virtual herbarium**: E-flora. Documentation.	
Unit 2:	15 hrs
Plant Identification: Taxonomic dichotomous keys: Intended (bulleted) and Indented keys. (Brief account only). **Plant description**: Common Terminologies used for description of vegetative and reproductive parts of the following families	

Study of the diagnostic features of Angiosperm families (Any 15 from the listed): Annonaceae, Brassicaceae, Malvaceae, Rutaceae, Anacardiaceae, Fabaceae (with sub Families), Myrtaceae, Cucurbitaceae, Apiaceae, Rubiaceae, Asteraceae, Apocynaceae, Solanaceae, Acanthaceae, Lamiaceae, Amaranthaceae, Euphorbiaceae, Orchidaceae, Zingiberaceae, Liliaceae, Commelinaceae, Arecaceae and Cyperaceae, Poaceae. **Plant Taxonomic Evidences:** from palynology, embryology, cytology, phytochemistry and molecular data. Field inventory	
Unit 3:	**15 hrs**
Taxonomic Hierarchy: Concept of taxa (family, genus, species). Categories and taxonomic hierarchy. Species concepts (biological, morphological, evolutionary). Modes of speciation. Problems with species concepts. Ranks less systems of phylogenetic systematics **Botanical Nomenclature**: Principles and rules (ICN). Latest code –brief account. Brief account of Ranks of taxa. Type concept (Typification), Rule of priority, Author citation., valid publication, rejection of names, principle of priority and its limitations, Names of hybrids cultivated species.	
Unit 4:	**15 hrs**
Biometrics, Numerical Taxonomy, Phenetics and Cladistics: Characters, Variations, OTUs, character weighting and coding. Cluster analysis. Phenograms, cladograms (definitions and differences) **Phylogenetic Systematics:** Terms and concepts (primitive and advanced, homology and analogy, parallelism and convergence, monophyly, Paraphyly, polyphyly, clades, synapomorphy, symplesiomorphy, apomorphy, lineage sorting, serial homology etc). **Origin and evolution of angiosperms:** Co-evolution of angiosperms and animals. Methods of illustrating evolutionary relationship (phylogenetic tree, cladogram). **Molecular taxonomy:** Respect to DNA sequences of chloroplast genes (rpoB, rbcL, ITS, trnL etc) and one nuclear gene (nuclear ribosomal 18s DNA).	

Pedagogy: Teaching and learning, Seminar, Assignments, etc

Formative Assessment for Theory	
Assessment Occasion/ type	**Marks**
Attendance	10
Test (Objective type)	10
Assignments	10
Seminar	10
Total	**40 Marks**
Formative Assessment as per guidelines are compulsory	

Program Name	B.Sc. in BOTANY	Semester	V
Course Title	Plant Morphology and Taxonomy (Practical)	Practical Credits	02
Course Code	DSC – BOT - C10 - P	Contact Hours	4 Hours per week
Formative Assessment	15 Marks	Summative Assessment	35 Marks

Practical Content

1. Study of root, stem and leaf structure and modifications. Study of inflorescence types. Study of flower and its parts. Study of fruits. Floral diagram and floral formula.

2. Study of families mentioned in theory with at least two examples for each family and make suitable diagrams, describe them in technical terms (Description, V.S. flower, section of ovary, floral diagram's, floral formula'e and systematic position according to Bentham & Hooker's system of classification) and identify up to species using the flora. 36 hrs

3. Construction of plant phylogenetic trees using various loci (eg:B. loci, ITS, matK, etc) with various phylogenetic methods (Neibour Joining, Maximum Likelihood etc) 06 hrs

4. Identify plants plant products of economic importance belonging to the families mentioned in the syllabus with binomial, family and morphology of useful parts. Cotton, Mango, Red gram, Green gram, Horse gram, Black gram, Bengal gram, Indigo, Brinjal, Tomato, Chilly, Tamarind, Bitter gourd, Luffa, Asafoetida, Cumin, Coriander, Coffee, Rubber, Tapioca, Ricinus, Ginger, Turmeric, Coir, Arecanut, Rice, Wheat, Ragi, Sugarcane, Onion, Garlic, Cabbage, Lady finger, Rauwolfia serpentina, Justicia adhatoda, Ficus religiosa and Taxus species 16 hrs

5. **Field visit**: Local or outside area, Botanical garden, tribal settlements minimum 3 to 5 days.

6. **Submission**: Record book, Tour report and Herbarium. Preparation of 10 properly identified herbarium specimens, mounting of a properly dried and pressed specimen of any common plants from your locality with herbarium label.

Pedagogy: Teaching and learning, conducting experiments, field visits.

Formative Assessment for Practical	
Assessment Occasion/ type	Marks
Attendance	03
Test	05
Field visit (3 to 5 days)	02
Submission (Record book, Tour report and Herbarium)	10
Total	20 Marks
Formative Assessment as per guidelines are compulsory	

GENERAL PATTERN OF THEORY QUESTION PAPER

(60 marks for semester end Examination with 2 hrs duration)

Part-A

1. Question number 1-06 carries 2 marks each. Answer any 02 questions. — 10 marks

Part-B

2. Question number 07- 11 carries 05 Marks each. Answer any 04 questions. — 20 marks

Part-C

3. Question number 12-15 carries 10 Marks each. Answer any 03 questions. — 30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 2=3 or 3+4 or 2+5 if necessary)

Total: 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

SCHEME OF PRACTICAL EXAMINATION

(distribution of marks): 40 marks for the semester end examination

1. Identify, classify and describe the specimen A & B tabulamically	8 Marks
2. Identify the given specimen C with the help of Key using Flora	4 Marks
3. Write the floral diagram and floral formal of the given specimen D.	2 Marks
4. Identification of Specimens under E, F and G	9 Marks
5. Viva Voce	2 Marks
6. Submission (Journal, Record + Study Tour Report)	5 Marks
	Total 30 marks

General instructions:

Q1. One specimen from Division Thallophyta (A) and Bryophyta/Pteridophyta (B)

Q2. Give specimen from family they studied (C)

Q3. One specimen from family they studied (D)

Q4. Specimen (Fruits) Materials from Root Stem Leaf Inflorescence (E) Flower Fruit (F) and Economic importance (G)

Q5. Viva

Q6. Submission (Journal, Record + Study Tour Report)

Note: Same Specimen may be used for CA (Formative Assessment) examination

References	
1	Baker, H.G. 1970. Plant and Civilization. Wadsworth Publishing Company.
2	Cotton C.M. 1997. Ethnobotany – Principles and applications. John Wiley and sons –Chichester
3	Cotton, C.M. 1996. Ethnobotany – Principles and Applications. Wiley and Sons.
4	Datta S.C) *Systematic Botany*. 4th Ed. Wiley Eastern Ltd., New Delhi, 1988.
5	Eames A. J. – *Morphology of angiosperms* - Mc Graw Hill, New York.
6	Hall, B.G. (2011). *Phylogenetic Trees Made Easy: a How-To Manual*. Sinauer Associates, Inc. USA.
7	Hayward - *Plant taxonomy* - Edward Arnold London.
8	Jeffrey C. J. and A. Chanchal - *An introduction to taxonomy* – London.
9	Jeffrey, C. (1982). An Introduction to *Plant Taxonomy*. Cambridge University Press, Cambridge.
10	Judd, W.S., Campbell, C.S., Kellogg, E.A., Stevens, P.F., Donoghue, M.J., 2002. *Plant Systematics: A Phylogenetic approach*. 2nd edition. Sinauer Associates, Inc., USA.
11	Lawrence - *Taxonomy of Vascular Plants* - Oxford & I.B.H. New Delhi.
12	Manilal, K.S. and N.S. Nikhesh Kumar 1998. *A Handbook on Taxonomy Training*. DST, New Delhi.
13	Manilal, K.S. and A.K. Pandey. 1986. *Taxonomy and Plant Conservation*. C.B.S. Publishers & Distributors, New Delhi.
14	Manilal, K.S. 2003. *Nam Khanda Hortus Malabaricus*. English Edition, with Annotations and Modern Botanical Nomenclature. (12 Vols.) University of Kerala, Trivandrum.
15	Naik V.N. *Taxonomy of Angiosperms*. 1991. Tata Mcgraw-Hill Pub. Co. Ltd., New Delhi.
16	Pandey, B.N. and B.P. Sinha (2008). *Taxonomy of Angiosperms* - Alpa Books India, New Delhi.
17	Radford A.E. W.C Dickison, J.R Massey & C.R Bell. *Vascular Plant Systematics*. 1974, Harper & Row Publishers, New York.
18	Singh G. 2012. *Plant systematics: Theory and Practice*. Oxford and IBH Pvt. Ltd., New Delhi.
19	Singh V. & Jain - *Taxonomy of Angiosperms* - Rastogi Publications, Meerut.
20	Srivastava V. V. - *Introduction to Principles of taxonomy* - Oxford & I.B.H. New Delhi.
21	Any local/state/regional flora published by BSI or any other agency.

Genetics and Plant Breeding (Theory)

Program Name	B.Sc. in BOTANY	Semester	V
Course Title	Genetics and Plant Breeding (Theory)		
Course Code:	DSC – BOT-C11 - T	No. of Credits	03
Contact hours	45 Hours	Duration of SEA Exam	2hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite (s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

CO1.Understanding the basics of genetics and plant breeding

CO2.Abilityto identify, calculate and describe crossing over, allele generation and frequencies of recombination

CO3.Interpretthecresults of mating and pollinations

CO4.Classify Plantpollination methods

CO5.Recognitionof modes of inheritance of traits/ phenotypes and Phenotype-genotype correlation

Contents	45 Hrs
Unit 1: Mendelian genetics and its extension Mendelism: History, Principles of inheritance: Chromosome theory of inheritance, Autosomes and sex chromosomes: Probability and pedigree analysis, Incomplete dominance and codominance, Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, Recessive and Dominant traits, Penetrance and Expressivity, Numericals, Polygenic inheritance, Extrachromosomal Inheritance Chloroplast mutation, Variegation in Four o'clock plant, Mitochondrial mutations in yeast.	12hrs
Unit 2: Linkage, crossing over and chromosome mapping: Linkage and crossing over-Cytological basis of crossing over, Recombination frequency, two factor and three factor crosses, Interference and coincidence, Numerical based on gene mapping, Sex Linkage, Variation in chromosome number and structure: Gene mutations: Types of mutations, Molecular basis of Mutations, Mutagens – physical and chemical (Base analogs, deaminating, alkylating and intercalating agents), Detection of mutations: CIB method, Role of Transposons in mutation, DNA repair mechanisms. Fine structure of gene, Population and Evolutionary Genetics, Allele frequencies, Genotype frequencies, Hardy-Weinberg Law, role of natural selection, mutation, genetic drift, Genetic variation and Speciation.	12hrs
Unit 3: Plant Breeding: Introduction and objectives, Breeding systems: modes of reproduction in crop plants, Important achievements and undesirable consequences of plant breeding. Methods of crop improvement: Introduction: Centers of origin and domestication of crop plants, plant genetic resources, Acclimatization; Selection methods: For self pollination, cross pollination and vegetative Propagation in plants. Hybridization: For self cross and vegetative propagation in plants – Procedure, advantages and limitations.	21 hrs

Quantitative inheritance Concept, mechanism, examples of inheritance of Kernel colour in wheat. Monogenic vs polygenic Inheritance Inbreeding depression and heterosis: History, genetic basis of inbreeding depression and heterosis, Applications Crop improvement and breeding: Role of mutations; Polyploidy; Distant hybridization and role of biotechnology in crop improvement	

Pedagogy: Teaching and learning, Seminar, Assignments, etc

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Quizzes/s	10
Test (Objective type)	10
Assignments	10
Seminar	10
Total	**40 Marks**
Formative Assessment as per guidelines are compulsory	

Program Name	B.Sc. in BOTANY	Semester	V
Course Title	Genetics and Plant Breeding (Practical)	Practical Credits	02
Course Code	DSC – BOT – C12 – P	Contact Hours	4 Hours per week
Formative Assessment	20 Marks	Summative Assessment	30 Marks

Practical Content

Practical: Plant breeding

1. Reproductive biology, self and cross pollinated plants; Vegetative reproduction
2. Hybridization: Emasculation, bagging, pollination and production of hybrids and pollen fertility
3. Origin, distribution and centres of diversity of crop plants: Wheat, Sorghum, Rice, Chilly, Sugarcane, Cotton, Potato, coffee, Sunflower and groundnut

Practical: Genetics

1. Mendel's laws through seed ratios. Laboratory exercises in probability and chi-square
2. Chromosome mapping using point test cross data.
3. Incomplete dominance and gene interaction through seed ratios (9:7, 9:6:1, 13:3, 15:1, 12:3:1, 9:3:4)
4. Study of aneuploids: Down's, Klinefelter's and Turner's syndromes.
5. Photographs/ Permanent Slides showing Translocation Ring, Laggards and Inversion Bridge

Pedagogy: Teaching and learning, conducting experiments, field / Lab visits

Formative Assessment for Practical	
Assessment Occasion type	Marks
Attendance	05
Test	05
Field visit	05
Submission	10
Total	25 Marks
Formative Assessment as per guidelines are compulsory	

GENERAL PATTERN OF THEORY QUESTION PAPER

(80 marks for semester end Examination with 3 hrs duration)

Part-A

1. Question number 1-06 carries 2 marks each. Answer any 05 questions. 10 marks

Part-B

2. Question number 07-11 carries 05 Marks each. Answer any 04 questions. 20 marks

Part-C

3. Question number 12-15 carries 10 Marks each. Answer any 03 questions. 30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 7+3 or 6+4 or 5+5 if necessary).

Total: 80 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

SCHEME OF PRACTICAL EXAMINATION

(distribution of marks): 40 marks for the Practical and examination

1. Perform the emasculation / pollen viability / fertility of the given variety A — 5 Marks
2. Calculate the recombinant frequency and state the order of gene from the given data B — 4 Marks
4. Identification of specimens (slides/ Photographs) C, D and E — 6 Marks
5. Viva Voce — 5 Marks
6. Submission (Journal / Record) — 5 Marks

Total 10 marks

General instructions

Q1. Manual Canada/ Hawaiian etc (A)

Q2. Mapping using one point / two point test cross data (B)

Q3. Down's, Klinefelter's and Turner's syndromes, Translocation Ring, Laggard's and for meiotic Bridge (C, D and E)

Q4. Viva

Q5. Submission (Journal/ Record)

Note: Same Scheme may be used for IA (Formative Assessment) examination

References	
1	Acquaah, G. (2007). Principles of Plant Genetics & Breeding (2nd Edition). U.S. Blackwell Publishing
2	Allard, R.W. (2009). Plant Breeding: Principles and Practices, 3rd edition. New Delhi. Kalyani Publishers.
3	Chaudhari, H.K. (1984). Elementary Principles of Plant Breeding. 2nd edition. New Delhi. Oxford – IBH.
4	Gardner, E.J., Simmons, M.J., Snustad, D.P. (Eds.). Principles of Genetics. 8th edition. New Delhi. John Wiley & sons.
5	Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis. 10th

	edition. New York, NY : W.H. Freeman and Co
6	King, W.S., Cummings, M.R., Spencer, C.A. (2012). Concepts of Genetics. 10th edition. San Francisco, California: Benjamin Cummings.
7	Raven, P.H., Evert, R. F., Eichhorn, S.E. (1992).Biology of Plants. New York, NY: W.H. Freeman and Co.
8	Welsh, J. R. (1981). Fundamentals of Plant Genetics and Breeding. John Wiley and Sons, New York.
9	Poehlman, J.M. (1987). Breeding Field Crops. 3rd Ed. AVI Publishing Co. Inc., Westport, Connecticut
10	Chopra, V.L. (2000). Plant Breeding. Theory and Practice 2nd Ed. Oxford & IBH, New Delhi.

Cell Biology (Theory)

Program Name	B.Sc. in BOTANY	Semester	V
Course Title	Cell Biology (Theory)		
Course Code	DSC-BOT - C1.5.T	No. of Credits	03
Contact hours	45 Hours	Duration of SEA Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite (s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to

CO1: Understanding of Cell metabolism, chemical components, physiochemical and functional organization of organelle

CO2: Contemporary approaches in modern cell and molecular biology.

CO3: To study the organization of cell, cell organelles and biomolecules (i.e protein, carbohydrate, lipid and nucleic acid)

CO4:To gain knowledge on the activities in which the diverse motor molecules and macroscopic structures inhabiting the cellular world of life are engaged.

CO5:To understand the various metabolic processes such as respiration, photosynthesis etc. which are important for life.

Contents	45Hrs
Unit 1:	15hrs
Cell wall: distribution, chemical composition, functions and variations in prokaryotic and eukaryotic cells (primary and secondary Wall). Glycocalyx, Cell-cell interactions: Junctions, gap connections. Phases of eukaryotic cell cycle, mitosis and meiosis. Regulation of cell cycle: checkpoints, role of protein kinases. Programmed Cell Death: Biology and elementary knowledge of development and causes of cancer.	
Unit 2:	15hrs
Structure and function, active and passive transport, permeases and porins. Ca2+, Na+, Cl- channels and their functions. Ligand-gated, voltage-gated. Structural organization, function, marker enzymes of the above organelles, biogenesis of mitochondria and chloroplasts; brief account of transport in mitochondria and chloroplasts (Fo0, Tom, Tic Toc) and semi-autonomous nature of mitochondria and chloroplast.	
Unit 3:	15hrs
Nuclear envelope, structure of nuclear pore complex, nuclear lamina, transport across nuclear membrane, nucleolus, rRNA processing. Endoplasmic Reticulum – Ribosome targeting and insertion in membrane, protein folding, processing, Synthesis of lipid synthesis, export of proteins and lipids. Golgi Apparatus – organization, protein glycosylation, protein sorting and export from Golgi Apparatus, Lysosomes.	

Pedagogy: Teaching and learning, Seminar, Assignments, etc.

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Attendance	10
Test (Objective type)	10
Assignments	10
Seminar	10
Total	**40 Marks**
Formative Assessment as per guidelines are compulsory	

Course Title	Cell Biology (Practical)	Practical Credits	02
Course Code	DSC-BOT - C14-P	Contact Hours	4 Hours per week
Formative Assessment	25Marks	Summative Assessment	25 Marks

Practical Content

1. Study of plant cell structure with the help of epidermal peel mount of Onion/ Rhoeo/ Crinum.
2. Study of cell and its organelles with the help of electron micrographs.
3. Measurement of length and breadth of plant cell using micrometry.
4. Study different stages of mitosis and meiosis (Onion/ Rhoeo/ Crinum)
5. Study of Karyotype using camera lucida / chart.
6. Isolation of cell organelle – Chloroplast

GENERAL PATTERN OF THEORY QUESTION PAPER

(40 marks for semester end Examination with 2 hrs duration)

Part-A

1. Question number 1-08 carries 2 marks each. Answer any 05 questions. 10 marks

Part-B

4. Question number 9-11 carries 05 marks each. Answer any 04 questions. 20 marks

Part-C

8. Question number 12-15 carries 10 marks each. Answer any 03 questions. 30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 7+3 or 6+4 or 5+5 if necessary)

Total: 60 Marks

Note: Proportionate Weightage shall be given to each unit based on number of hours prescribed

SCHEME OF PRACTICAL EXAMINATION

(Distribution of marks: 25 marks for the Semester end examination)

CELL BIOLOGY

Time =03 hrs Marks =25

1. Preparation of squash/ smear of material A, identify, sketch and label the any One stages with reasons of mitosis 08marks
2. Find out cell length and breadth of the given material using micrometry 05marks

3. Identify the slides C & D — 04 marks
4. Viva-voce — 05 marks
5. Submission (Journal/ Record + 5 slides) — 05 marks

Total 25 marks

General instructions

Q1. Give specimen from Onion/ Rheo/ Cinnamomum plant (A)
Q2. Give specimen from Onion/ Rheo leaf (B)
Q3. Give slide from meristem (C) museum (D).
Q4. Viva-voce
Q5. Submission (Journal/ Record + 5 slides)

Note: Same Scheme may be used for IA (Formative Assessment) examination

References

1.	Cooper, G.M.; Hausman, R.E. (2009). The Cell: A Molecular Approach, 5th edition. Washington, D.C.: ASM Press & Sunderland, Sinauer Associates, MA
2.	King, G. (2010). Cell Biology, 6th edition. New Jersey, U.S.A.: John Wiley & Sons.
3.	De Robertis, E. D. P. and De Robertis, E. F. 2006. Cell and Molecular Biology, 8th edition. Lippincott Williams and Wilkins, Philadelphia
4.	Becker W. M., Kleinsmith L. J. and Gerjuoy G. P. 2009. The World of the Cell. 7th edition. Pearson Benjamin Cummings Publishing. San Francisco
5.	Raven, P.H., Evert, R.F., Eichhorn, S.E. (2013). Biology of Plants. New York, NY: W.H.Freeman and Company
6.	Alberts, B., Bray, D., Hopkin, K., Johnson, A. D., Lewis, J., Raff, M., Roberts, K., & Walter, P. (2013). Essential cell biology (4th ed.). Garland Publishing.
7.	Raven, P.H., Evert, R.F., Eichhorn, S.E. (2005) Biology of Plants. New York, NY: W.H.Freeman and Co.
8.	Verma, P. S. (2004). Cell Biology, Genetics, Molecular Biology, Evolution and Ecology. India: S. Chand Limited.

ELECTIVE PAPERS

(Anyone to be chosen)

A. Algal and Fungal Biotechnology (Theory)

B. Bio-fertilizers (Theory)

C. Bio-fuels (Theory)

A. Algal and Fungal Biotechnology (Theory)

Program Name	B.Sc. in BOTANY	Semester	V
Course Title	Algal and Fungal Biotechnology (Theory)		
Course Code	BOT ET-A	No. of Credits	03
Contact hours	45 Hours	Duration of SEA Exam	2hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite (s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to:
CO1: To provide knowledge on the structure and reproduction of certain selected algal and fungi
CO2: To introduce students to basics of algal biotechnology and economic importance of both groups
CO3: To understand the role of fungi in our society and how fungi can be used for more applied aspects
CO4: To gain knowledge on the industrial applications of fungi

Contents	45Hrs
Unit 1:	**15hrs**
Introduction to algal biotechnology. Resource potential of algae. Commercial utility of algae. Algae as a source of food and feed. Algae as a source of pigments, fine chemicals, fuel and bio-fertilizers. Role of algae in the environment, agriculture, biotechnology and industry. Algal biotechnology: single cell proteins (SCP). Spirulina as single cell protein production and harvesting of algal biomass – factors affecting biomass production.	
Unit 2:	**15hrs**
Cyanobacterial biofertilizers (BGA): Isolation, preparation of starter culture, mass cultivation, field application and crop response. Ecological importance of Algae, commercial products of algae. Agal Agar, Alginates, Carrageenan, diatomite, mucilage, mannitol and algin. – Algae in cosmetics.	
Unit 3:	**15hrs**
Role of fungi in biotechnology. Applications of fungi in food industry (Flavour & texture, Fermentation), Baking, Organic acids, Enzymes, Mycoprotein(s), Secondary metabolites (Pharmaceutical preparations), Agriculture (Mycorrhiza, Mycofertilizers, Biological control (Mycofungicides, Mycoherbicides, Mycoinsecticides, Mycoacaricides); Fungi as source of medicines (Antibiotics).	

Pedagogy: Teaching and learning, Seminar, Assignments, etc.

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Assignments	10
Test (Objective type)	10
Assignments	10
Seminar	10
Total	40 Marks

Formative Assessment as per guidelines are compulsory

GENERAL PATTERN OF THEORY QUESTION PAPER

(60 marks for semester end Examination with 2 hrs duration)

Part-A

1. Question number 1-06 carries 2 marks each. Answer any 05 questions. 10 marks

Part-B

2. Question number 07-12 carries 05 Marks each. Answer any 04 questions. 20 marks

Part-C

3. Question number 13-15 carries 10 Marks each. Answer any 03 questions. 30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 7+3 or 6+4 or 5+5 if necessary)

Total: 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

References	
1	Webster, J. and Weber, R. (2007). Introduction to Fungi. Cambridge University Press, Cambridge. 3rd edition.
2	Sethi, I.K. and Walia, S.K. (2011). Text book of Algae and Their Allies. Nikunj Publishers Delhi Ed.
3	Kumar, H.D. (2000) Introductory Phycology, 2nd edition. New Delhi, Delhi: Affiliated East-West Press.
4	Raven, P.H. Evert, R.F. Eichhorn, S.E. (1992). Biology of Plants. New York, NY: W.H. Freeman and Company
5	Tahon, B. (2000) Farming the ocean: seaweeds cultivation and utilization. New Delhi, Delhi: Aravali International
6	Lee, R.E. (2008). Phycology. Cambridge University Press, Cambridge. 4th edition
7	Barsanti, Laura and Paolo Gualtieri (2005) Algae: Anatomy, Biochemistry and Biotechnology. Taylor & Francis, London, New York

B. Bio-fertilizers (Theory)

Programme Name	B.Sc. in BOTANY		Semester	V
Course Title	Bio-fertilizers (Theory)			
Course Code	BOT ET-8		No. of Credits	03
Contact hours	45 Hours		Duration of SEA/Exam	2hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Pre-requisite (s):

Course Outcomes (COs): After the successful completion of the course the student will be able to:

CO1: Explain isolation and role of various soil bacteria in bio-fertilizer production.
CO2: Describe production steps and specific requirements for each bio-fertilizers.
CO3: Restore the soil fertility by performing the sustainable agriculture practices via organic farming
CO4: Apply the knowledge gained to generate opportunities of self-employability.

Contents	45Hrs
Unit I:	15hrs
General account about the microbes used as biofertilizer – Rhizobium – isolation, identification, mass inoculation, and carrier based inoculants. Azospirillum, Azotobacter, Acetobacter, Beijerinckia and Acetobacter – isolation, characteristics – role of different microorganisms. Azolla – classification, characteristics – crop response to Azolla based inoculum, maintenance and mass multiplication. Cyanobacteria (blue green algae). Azolla and Anabaena azollae association, nitrogen fixation, factors affecting growth, role of blue green algae and Azolla in rice cultivation.	
Unit II:	15hrs
Mycorrhizal association, types of mycorrhizal association, taxonomy, occurrence and distribution, endophytic nutrition, growth and yield – colonization of VAM – isolation and inoculum production of VAM, and its influence on growth and yield of crop plants.	
Unit III:	15hrs
Organic farming – Green manuring and organic fertilizer, Recycling of biodegradable municipal, agricultural and industrial wastes – biocompost making methods, types and merits of vermicomposting – field Applications.	

Pedagogy: Teaching and learning, Seminar, Assignments, etc.

Formative Assessment for Theory	
Assessment Occasion/type	Marks
Attendance	10
Test (Objective type)	15
Assignments	10
Seminar	05
Total	40Marks

Formative Assessments as per guidelines are compulsory

GENERAL PATTERN OF THEORY QUESTION PAPER

(60 marks for semester end Examination with 2 hrs duration)

Part-A

1. Question number 1-06 carries 2 marks each. Answer any 05 questions. 10 marks

Part-B

6. Question number 07 - 11 carries 05 Marks each. Answer any 04 questions. 20 marks

Part-C

2. Question number 12-15 carries 10 Marks each. Answer any 03 questions. 30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 7+3 or 6+4 or 5+5 if necessary)

Total: 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

References

1. Dubey, R.C., 2005 A Text book of Biotechnology, S Chand & Co. New Delhi.
2. Kumaresan, V. 2005, Biotechnology, Saras Publications, New Delhi.
3. Chawla Pragna, K. 2004, Outlines of Plant Biotechnology, Emkay Publications, New Delhi.
4. Sinha, T.V. 2004 Vermiculture and Organic Farming, Dave publishers.
5. Subba Rao, N.S. 2000, Soil Microbiology, Oxford & IBH Publishers, New Delhi.
6. Yawalkar, K.S., Agarwal, J. and Bokde, M.A. 1998 Bio-fertilizers and organic Farming, Agra Prakashan, Kanpur.

C Bio-fuels (Theory)

Program Name	B.Sc in BOTANY	Semester	V
Course Title	Bio fuels (Theory)		
Course Code:	BOT E14-C	No. of Credits	03
Contact hours	45Hours	Duration of SEA Exam	3hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite (s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to

CO1. The student will be aware from a technical point of view of energy plants where biomasses and organic wastes are used

CO2. The student will be capable to apply the acquired knowledge to design biomass energy plants and to evaluate their performances.

CO3.The student will become capable to judge the different options available given the nature of the feedstock available (kind of biomass, kind of organic waste) and the technological opportunities to valorise it as bioenergy

CO4.The student will be capable to efficiently communicate concerning bio-energy options, processes and plants.

CO5. The student will be taught that significant bioenergy process advancements are in progress, and that he/she should keep him/herself updated on the last technological outcomes that face the bio-energy market.

Contents	45Hrs
Unit 1:	15Hrs
Introduction, definition, scope and importance of Bio-fuel, limitations related to biofuels in India and worldwide. Public awareness of biofuel. Biofuels scenario in India and worldwide. History of Biofuel. Advantages and disadvantages of biofuels. Conversion of biofuels, first, second, third and fourth generation of biofuels and present status.	
Unit 2:	15Hrs
Biofuel feed stocks: Agricultural waste, farm waste, forestry waste, organic wastes from the residential, institutional and industrial waste and its importance (biomass plant, animal and microbial based waste). Algal biofuel. Biodiesel species, *Pongamia pinnata, Limnanthes alba, Jatropha curcas, Azadirachta indica, Madhuca indica* and *Calophyllum inophyllum* etc.; oil content ability to and characterization.	
Unit 3:	15Hrs
Introduction to ethanol, bioethanol, sugar and bio-diesel production technology of biofuels, quality analysis of biodiesel, bioethanol and biogas and its integration with national and international standards. Biofuel sustainability, Biofuel Policy in India and around the worldwide. Biofuel production statistics, production of Biodiesel, bioethanol, biogas in Country wide.	

Pedagogy: Teaching/self learning Seminar, Assignments etc

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Attendance	10
Test (Objective type)	15
Assignments	10
Seminar	15
Total	**40 Marks**

Formative Assessment as per guidelines are compulsory

GENERAL PATTERN OF THEORY QUESTION PAPER

(60 marks for semester end Examination with 2 hrs duration)

Part-A

1. Question number 1-06 carries 2 marks each. Answer any 05 questions. 10 marks

Part-B

2. Question number 07- 11 carries 05 Marks each. Answer any 04 questions. 20 marks

Part-C

3. Question number 12-15 carries 10 Marks each. Answer any 03 questions. 30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 5=3 or 6=4 or 2=5 if necessary)

Total: 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

References	
1.	The Biodiesel Handbook (2005). Purgeuknil, Jon Harlan Van Gerpen AOCS Press
2.	Biochemistry and Biofuels (2017). Gerald Pilcher CRC Press, Taylor & Francis group.
3.	https://nbb.gov.in/nbbmills
4.	Biofuels for internal combustion engines. Bath, and Hamilton D.L. Kiss. Academic Press http://www.sciencedirect.com/science/book/9780124166158
5.	Sistemi a biomassa: progettazione e installazione commerciale. R. Bucci, A. Calfapietra, M. Villanis, A. D'Amato. Maggioli Editore. http://www.maggioli.it/catalogo/scheda/9788838750007/sistemi-a-biomassa-progettazione-e-installazione-commerciale.html

VOCATIONAL PAPERS

(Anyone to be chosen)

A. Landscaping and Gardening (Theory)

B. Mushroom Cultivation Technology (Theory)

C. Community Forestry (Theory)

A. Landscaping and Gardening (Theory)

Program Name	B.Sc. in BOTANY		Semester	V
Course Title	Landscaping and Gardening (Theory)			
Course Code	BOT VI-A		No. of Credits	03
Contact hours	45 Hours		Duration of SEA/Exam	3 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Pre-requisite (s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to...

CO1: Students would be able to identify the ornamental plants.
CO2: They will have an understanding of cultivation methods, landscaping and making the flower arrangement.
CO3: To understand the concept of different types of gardening practices.
CO4: Apply the basic principles and components of gardening.
CO5: Learn to design various types of formal and informal gardens.
CO6: Establish and maintain special types of gardens for outdoor and indoor landscaping.

Contents	45Hrs
Unit I: Introduction: History of gardening. Importance and scope of floriculture and landscape gardening. Landscaping Places of Public Importance. Landscaping highways and Educational institutions. Planning and layout (parks and avenues). gardening traditions - Ancient Indian, European, Mughal and Japanese Gardens. Specialized Gardens: Aquatic garden, Rock garden, Kitchen garden, Herb Garden, Butterfly garden, Botanical garden, English garden, Terrace garden.	15hrs
Unit II: Gardening: definition, objectives and scope - different types of gardening - landscape and indoor gardening - parks and its components - plant materials and design - computer applications in landscaping. Urban forestry, pergolas and pergolas. Soil and its characteristics, Potting Mixtures, Essential soil elements, Mineral nutrition and Garden implements.	15hrs
Unit III: Gardening operations: soil laying, manuring, watering, management of pests and diseases and harvesting. Sowing (using of seeds and seedlings) - Transplanting of seedlings - Study of cultivation of different vegetables. Propagation Methods: Seeds (Germination, Viability, Dormancy, Storage, Transplantation), Grafting, Cutting, Layering, Division, Budding, Scaling, Stooling, Micropropagation. Introduction and methodology of hydroponics.	15hrs

Pedagogy: Teaching and learning, Seminar, Assignments, etc.

Formative Assessment for Theory	
Assessment Occasion/ type	Marks
Attendance	10
Test (Objective type)	10
Assignments	10
Seminar	10
Total	40Marks

Formative assessment as per guidelines and compulsory

GENERAL PATTERN OF THEORY QUESTION PAPER

(60 marks for semester end Examination with 2 hrs duration)

Part-A

1. Question number 1-06 carries 2 marks each. Answer any 05 questions. 10 marks

Part-B

2. Question number 07-11 carries 05 Marks each. Answer any 04 questions. 20 marks

Part-C

3. Question number 12-15 carries 10 Marks each. Answer any 03 questions. 30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 7+3 or 6+4 or 5+5 if necessary)

Total: 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

References	
1.	Nambisan K.S.P. (1992) Design elements of Landscape gardening Oxford and IBH
2.	Gulhane K.P and Indira V (2007) Post harvest technology of Horticultural crops New India Publication agencies
3.	Bose T.K., Mitra K.G., Dutta R.S and Das P. (1999) Floriculture and Landscaping Orya Prakash
4.	Biomass for renewable energy, fuels, and chemicals, D.L. Klass, Academic Press. http://www.sciencedirect.com/science/book/9780126109108
5.	Sistemi a biomassa, progettazione e valutazione integrata E. Bocci, A. Carlucci, M. Villarini, A. D'Annibale, 2 luglio Editore, http://www.maggioli.it/catalogo/scheda.asp?ID=5000?- sistemi-a-biomassa-progettazione-e-valutazione-integrata.html

B. Mushroom Cultivation Technology (Theory)

Program Name	B.Sc in BOTANY	Semester	V
Course Title	Mushroom Cultivation Technology (Theory)		
Course Code	BOTV18	No. of Credits	03
Contact hours	45Hours	Duration of SEA/Exam	2hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite(s):

Course Outcomes (COs) After the successful completion of the course, the student will be able to

CO1: Identify edible types of mushroom

CO2: Gain the knowledge of cultivation of different types of edible mushrooms and spawn production

CO3: Manage the diseases and pests of mushroom

CO4: Learn a means of self employment and income generation

Contents	45Hrs
Unit1:	15hrs
Mushrooms -Taxonomical rank-History and Scope of mushroom Cultivation-Edible and Poisonous Mushrooms -Vegetative characters. Button mushroom (*Agaricus bisporus*), Milky mushroom (*Calocybe indica*), Oyster mushroom (*Pleurotus sajor-caju*) and paddy straw mushroom (*Volvariella volvacea*).	
Unit2:	15hrs
Structure and construction of mushroom house, Sterilization of substrates, Spawn production - culture media preparation, production of pure culture, mother spawn and multiplication of spawn. Composting technology, mushroom bed preparation, Spawning, spawn running, harvesting. Cultivation of oyster and paddy straw mushrooms Problems in cultivation - diseases, pests and nematodes, weed moulds and their management strategies.	
Unit3:	15hrs
Nutritional and medicinal values of mushrooms, Poisonous mushroom- Symptoms, Treatment Edible species) Therapeutic aspects- antitumor effect Preservation of mushrooms - Drying, drying, canning, quality assurance and entrepreneurship. Value added products of mushrooms.	

Pedagogy: Teaching and learning Seminar, Assignments, etc.

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Assignment	10
Test (Objective type)	10
Assignments	10
Seminar	10
Total	**40Marks**
Formative assessments as per guidelines are compulsory	

GENERAL PATTERN OF THEORY QUESTION PAPER

(60 marks for semester end Examination with 2 hrs duration)

Part-A

1. Question number 1-06 carries 2 marks each. Answer any 05 questions. 10 marks

Part-B

2. Question number 07 - 11 carries 05 Marks each. Answer any 04 questions. 20 marks

Part-C

3. Question number 12-15 carries 10 Marks each. Answer any 03 questions. 30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 7=3 or 6+4 or 5+5 if necessary)

Total: 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

References	
1.	Natarajan, K. et al. (2001). Oyster Mushroom. Department of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore
2.	Zain Bhat, (2000). Hand book on Mushrooms, 2nd ed. vol. I and 2 Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi
3.	Dahiya, B.K. J. P. Dhoth, (1996). A Hand Book on Mushroom Cultivation, Kinkay Publications
4.	Pathak, V.N. and Yadav, N. (1998). Mushroom Production and Processing Technology, Agrobios, Jodhpur
5.	Tewari Pankaj, Kapoor, S. C. (1988). Mushroom Cultivation, Mittal Publications, New Delhi
6.	Tripathi, D.P. (2002) Mushroom Cultivation, Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi
7.	V.N. Pathak, Nagendra Yadav and Manorama Gaur, Mushroom Production and Processing Technology Vedams eBooks Pvt. Ltd., New Delhi (2006)

C. Community Forestry (Theory)

Program Name	B.Sc in BOTANY	Semester	V
Course Title	Community Forestry (Theory)		
Course Code	BOT VI-C	No. of Credits	03
Contact hours	45Hours	Duration of SEA Exam	3hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite(s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to;
CO1. To understand socio-economic, cultural and ecological relationship between forests and people.
CO2. Students acquaint with the role of people in forest management through analysis of need dependence and traditional interactions between forests and society.
CO3 Demonstrate ability to identify major forest ecosystems and describe their changes over time, with and without human influence/management.
CO4 Demonstrate knowledge of inter-temporal management and planning at the forest and landscape levels, and the ability to develop alternative management scenarios for forest lands for an array of objectives, including forest products, environmental services, social amenities cultural and other resource values.

Contents	40Hrs
Unit I:	15hrs
Forests and its importance, forest societies, interactions between forests and people, importance of forests in traditional farming systems, livestock economy and forests, social and cultural factors of forest management, man in ecosystem in relation to eco-philosophy. Afforestation programmes and forest conflicts, wildlife and human conflicts, important forest movements like Chipko, Apiko Movement. Gender dimension of forest management, tribal economy and forest, Panchayati raj and its dependence on forests. Forests and livelihood security of tribals.	
Unit-I:	15hrs
Management of Commons and Common Property Resources (CPRs) and open access resources, forest management and sustainable livelihood strategies, forests and food security, eco-tourism and local development, land use change and forestry. Case studies of Panchayat Sahyukarata Tantrasara and Panchayat Vahat Gonda.	
Unit-A:	15hrs
Forest rights, customary rights of people, community participation, joint forest and community forest management, global and sub-national change and land use, drivers and resettlement of people and case studies – case study, govern alternative and forests, tourism and forest management, role of NGOs and other CBOs (community based organization) in forest management.	

Pedagogy: Teaching and learning, Seminar, Assignments, etc.

Formative Assessment for Theory	
Assessment Occasion/Type	**Marks**
Assignment	10
Test (Objective type)	10
Assignments	10
Seminar	10
Total	**40 Marks**
Formative Assessment as per guidelines are compulsory	

GENERAL PATTERN OF THEORY QUESTION PAPER

(60 marks for semester end Examination with 2 hrs duration)

Part-A

1. Question number 1-06 carries 2 marks each. Answer any 05 questions.	10 marks

Part-B

10. Question number 07-21 carries 05 Marks each. Answer any 04 questions.	20 marks

Part-C

3. Question number 22-35 carries 10 Marks each. Answer any 03 questions.	30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 7=3 or 6+4 or 5+5 if necessary)

Total: 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

References	
1	Annamalai P. 1999. Participatory Learning Action and Micro-planning for PRI Dean SERC, Coimbatore
2	FAO. 1978. Forestry for Local Community Development. FAO Publ.
3	Shah I.C. 1981. Forestry for People. ICAR.
4	Tiwari KN. 1998. Social Forestry and Rural Development. International Book Distr.
5	Vyas OPS. 1998. Community Forestry. Agrobios.
6	Publications in Tamil such as Tamilnadu Tamizhaka and Tamil Nadu

Government of Karnataka

Curriculum Framework for Undergraduate Programme in Colleges and Universities of Karnataka State.

6th Semester Model Syllabus for B.Sc. in BOTANY

Vidyavardhaka

Vice Chairman

Karnataka State Higher Education Council

30, Prasanna Kumar Block, Bangalore-560 001(Address

Cauvery, Bangalore, Karnataka- 560 009

Government of Karnataka

Model Curriculum of B.Sc. in BOTANY

6th Semester

Karnataka State Higher Education Council

Composition of Subject Expert Committee Members

SN	Name & Organization
1	Dr. G. R. Naik, Vice Chancellor, Garden City University, Bengaluru
2	Dr. Rajesh. M S Ramaiah University of Applied Science, Bangalore
3	Dr. G. R. Jamadhana , Professor, University of Mysore, Mysuru
4	Dr. Kotresh K, Professor, Karnatak University, Dharwad
5	Dr. L. Rajanna , Professor, Bangalore University, Bengaluru
6	Dr. Siddaraju M L , Professor, Mangalore University, Konaje
7	Dr. Krishnamurthy Y.L , Professor, Kuvempu University, Shivamogga
8	Dr. Govindappa M, Professor, Davangere University, Davangere
9	Dr. Kharamagya P, Hassan University Hassan
10	Dr. H. Ramakrishnaiah, Assoc. Professor, Maharaja Chitrar University, Bengaluru
11	Shri M. N. Mallikarjunaiah, Assoc. Professor, Mandya University, Mandya
12	Dr. Abdul Khayum , Assoc. Professor, Govt. Womens College, Kolar – 563 101
13	Dr. Manohar, Assoc. Professor, GFGC, Vijayanagar, Bengaluru
14	Dr. Jayakara Bhandary, Professor, GFGC, Mangalore.
15	Dr. Latha Devi Kilakal, Bharatiyar mahilaa college of Science, Kalaburgi
16	Smt. Akshatha Chandra G. R., Special Officer, Kuvempu University

Government of Karnataka
BOTANY Curriculum

PLANT PHYSIOLOGY AND PLANT BIOCHEMISTRY (THEORY)

Program Name:	BSc BOTANY	Semester:	VI
Course Title	Plant Physiology and Plant Biochemistry (Theory)		
Course Code:	BOT C16T	No. of Credits	04
Contact hours	60 Hours	Duration of Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite (s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to

CO1 Importance of water and the mechanism of transport.
CO2 To understand biosynthesis and breakdown of biomolecules.
CO3 Role of plant hormones in plant development and about secondary metabolites.
CO4 Preliminary understanding of the basic functions and metabolism in a plant body.
CO5 To understand the importance of nutrients in plant metabolism and crop yield.

Contents	60 Hrs
UNIT 1	15 Hrs
Plant water relations: Importance of Water as a solvent, Diffusion, osmosis, imbibition, osmotic pressure, osmotic potential, turgor pressure, wall pressure, water potential and its components. Mechanism of water absorption. Factors affecting water absorption. **Transpiration:** Types and process. Mechanism of guard cell movement. Kevlon mechanism, Antitranspirants. **Mechanism of Ascent of sap:** Vital and physical force theories. **Phloem Transport:** Transport of organic solutes, path of transport, vein loading and unloading. Transcellular hypothesis, mass flow hypothesis. **Mineral nutrition:** (A brief account on Micro and macro nutrients).	
UNIT 2	15 Hrs
Photosynthesis Photosynthetic Pigments (Chl a, b, xanthophylls, carotene); Photosystem I and II, reaction center, antenna molecules. Electron transport and mechanism of ATP synthesis. C3, C4 and CAM pathways of carbon fixation. Photorespiration. **Respiration:** Glycolysis, anaerobic respiration, TCA cycle. Oxidative phosphorylation, Glyoxylate, Oxidative Pentose Phosphate Pathway. **Nitrogen metabolism:** Biological nitrogen fixation, Nitrate and ammonia assimilation.	
UNIT 3	15 Hrs
Definition and classification of plant growth regulators- Hormones: Site of synthesis, biosynthesis pathway and metabolism and influence on plant growth development of individual group of hormone- Auxins, Gibberlins cytokinins, ABA, ethylene Synthetic growth regulators: classification, their effect on plant growth and development practical utility in agriculture and horticulture. **Sensory Photobiology:** Biological clocks, photoperiodism, function & structure of phytochromes, phototropins & cryptochromes. Senescence, Aging & Cell Death (PCD and Autophagosis) plant Movements	

UNIT-4	15 Hrs
Carbohydrate metabolism **Enzymes** - classification, kinetics and mechanism of action. **Proteins and amino acids**: classification, structure - primary, secondary, tertiary and quaternary	
Vitamins - classification, distribution, structure, production, function. **Lipids**: classification, structure, function and biosynthesis of fatty acids. **Secondary plant products**: structure, biosynthesis and distribution of terpenes, phenolics and nitrogen containing compounds	

Assessment	Marks
Attendance	10 Marks
Test	10 Marks
Seminar	10 Marks
Assignment	10 Marks
Total	40 Marks
Formative Assessment as per guidelines are compulsory	

Pedagogy:

Course Title	Plant Physiology and Biochemistry (Practical)	Practical Credits	2
Course Code	BOT C16-P	Contact Hours	4 Hours
Formative Assessment:	25 Marks	Summative Assessment:	25 Marks

Practical Content

1. Experiment to demonstrate the plasmolysis of epidermis and endosmosis.
2. To determine the osmotic pressure of the cell sap by plasmolysis method.
3. To demonstrate root pressure - transpiration pull in plants.
4. To compare the rate of transpiration from the two surfaces of leaf by cobalt chloride paper method.
5. To demonstrate that oxygen is liberated in the process of photosynthesis.
6. Separation of photosynthetic pigments by paper chromatography and measure their Rf values.
7. Estimation of total chlorophyll content by Arnon method.
8. To isolate and identify the amino acids from a mixture using paper chromatography.
9. To Study of Plasmolysis.
10. Qualitative test for Starch, Protein, Reducing Sugars and Lipids.
11. Estimation of TASS Titratable acid Number from Bryophyllum leaves Aloe Vera.

GENERAL PATTERN OF THEORY QUESTION PAPER

(80 marks for semester end Examination with 3 hrs duration)

Part-A

I. Question number 1-09 carries 2 marks each. Answer any 05 questions. 10 marks

Part-B

II. Question number 10-11 carries 05 marks each. Answer any 04 questions. 20 marks

Part-C

III. Question number 12-15 carries 10 marks each. Answer any 03 questions. 30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 7+3 or 6+4 or 5+5 if necessary)

Total: 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

SCHEME OF PRACTICAL EXAMINATION
PLANT PHYSIOLOGY AND PLANT BIOCHEMISTRY

Time =03 hrs **Marks =25**

1. Conduct Major Experiment A	06 marks
2. Comment on minor Experiments B & C	06 marks
3. Micro Chemical test D	03 marks
4. Viva-voce	05 marks
5. Practical Record + Industrial visit report	05 marks

Pedagogy: Teaching and learning, Seminar, Assignments, etc

Formative Assessment for Practical	
Assessment	**Marks**
Attendance	10 Marks
Test	10 Marks
Project report / Industrial visit	05 Marks
Total	**25 Marks**
Formative Assessment as per guidelines are compulsory	

REFERENCES

1. Fundamentals of Biochemistry 2nd Ed. John Wiley and Sons Inc. Wilson, K. and Walker, J. 1994
2. Jain V.K. 2008 Fundamentals of Plant Physiology S Chand and Co.
3. Kochhar P.L., Krishnamurthy M.N. Plant Physiology. Atmaram and sons, Delhi
4. Kumar and Purohit Plant Physiology Fundamentals and Applications Agrobotanical Publishers.
5. Malik CP. 2002. Plant Physiology. Kalyani publishers
6. Mukherjee S. Ghosh AK. 2002. Plant Physiology. New Central Book Agency, Calcutta
7. Noggle GR, Fritz GJ, Introductory Plant Physiology Prentice Hall of India
8. Pandey SN, Sinha BK, 2006. Plant physiology. Vikas Publishing House, New Delhi
9. Salisbury F B, Ross C W, 1992. Plant Physiology, CBS publishers and Distributors, New Delhi
10. Sinha A K, 2004 Modern Plant Physiology, Narosa publishing House, New Delhi
11. Srivastava H S, 2004. Plant physiology and Biochemistry. Rastogi publications
12. Verma V, 2007 Text Book of Plant Physiology. Ane Books Pvt. Ltd.

BIOINFORMATICS (THEORY)

Program Name	B.Sc. in BOTANY		Semester	VI
Course Title	Bioinformatics (Theory)			
Course Code	BOT-C17-T		No. of Credits	03
Contact hours	45 Hours		Duration of SEA Exams	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Pre-requisite(s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

CO1: Understand the concept of databases and use of different public domain for DNA and proteins sequence retrieval.

CO2: Understand the concept of pairwise alignment of DNA sequences using algorithms.

CO3: Explain the structure of protein homology modeling approach using SWISS MODEL and SWISS-PDB.

CO4: Reflect upon the role of various models in molecular evolution.

CO5: Analyze the role of (QSAR) techniques in Drug Design.

Contents	45 Hrs
Unit I	15Hrs
Introduction to bioinformatics, Bioinformatics-Definition, History, Scope and Applications, Opportunities in Bioinformatics. Fundamental of IT: Social and Ethical aspects of IT, Data, information, Knowledge, Introduction to Hardware (CPU, memory, storage, etc.). Role of IT in Bioinformatics, Introduction to problem solving, algorithms, flow charts, Introduction to networking: Types of networks, world wide web, distributed computing. Biological databases : Nucleotide databases, Protein databases, Genome databases, Organization of data in NCBI, DDBJ, EBI, PDB, Swiss PROT and retrieval and storage of data in different file formats.	
Unit II	15Hrs
Sequence alignment: Types – Local Alignment and Global Alignment, Pair wise and Multiple alignment of protein and DNA sequences, Algorithms for used for sequence alignment. Use of sequence alignment tools: BLAST, Clustal Omega, interpretation of the results to derive biological significance of the queried DNA/protein sequences. Prediction of structure of proteins by homology modeling approach using SWISS MODEL and SWISS-PDB. Models of molecular Evolution, Selection of best-fitting models, Methods of Phylogeny reconstruction: Phenetic vs. Cladistic, Neighbor Joining, UPGMA, Maximum Parsimony, Maximum Likelihood, Bayesian Inference. Software for Phylogenetic Analyses, Consistency of Molecular Phylogenetic Prediction.	
Unit III	15Hrs
Structural Bioinformatics in Drug Discovery, Quantitative structure-activity relationship (QSAR) techniques in Drug Design. Structure-based drug designing approaches – Target Identification and Validation, homology modelling and protein folding, receptor mapping, active site analysis and pharmacophore mapping, Qed maps. Ligand-based drug designing approaches, Lead Designing, combinatorial chemistry, High Throughput Screening (HTS), QSAR, Database generation and Chemical libraries, ADME properties, Docking methods to generate new structure, Tools and Molecular modeling programs, AutoDock	

Deck: HEX	

Pedagogy: Teaching and learning, Seminar, Assignments, etc.

Formative Assessment for Theory	
Assessment Occasion/ type	Marks
Attendance	30
Test (Objective type)	10
Assignments	20
Seminar	10
Total	40 Marks
Formative Assessment as per guidelines are compulsory	

Course Title	Bioinformatics (Practical)		Practical Credits	02
Course Code	BOT C18-P		Contact Hours	60 Hours
Formative Assessment	25 Marks	Summative Assessment		25 Marks

Practical Content

1. Retrieval of Nucleic acid and amino acid sequences Data from NCBI
2. Retrieval of Protein structure from PDB
3. Sequence similarity search by BLAST, FASTA and phylogenetic tree construction
4. Multiple sequence alignments by Clustal W and
5. Protein structure visualization, retrieval of structural PDB files from PDB database
6. Retrieval and Preparation of ligand and Proteins from data banks/libraries and for molecular docking

GENERAL PATTERN OF THEORY QUESTION PAPER

(60 marks for semester end Examination with 2 hrs duration)

Part-A

1. Question number 1-06 carries 2 marks each. Answer any 05 questions. 10 marks

Part-B

12. Question number 07- 11 carries 05 Marks each. Answer any 04 questions. 20 marks

Part-C

3. Question number 12-15 carries 10 Marks each. Answer any 03 questions. 30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 2=3 or 4=4 or 5=5 if necessary)

Total: 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

SCHEME OF PRACTICAL EXAMINATION

BIOINFORMATICS

Time =03 hrs Marks =25

1. Molecular docking - Multiple sequence alignments (A) 04 marks
2. Patrwise of Nucleic acid / Amino acid sequences (B) 04 marks
3. Sequence similarity search Or Download structural PDB files from PDB database (C) 04 marks
4. Phylogenetic tree construction and analysis by downloading the data (D) 05 marks
5. Viva-voce 05 marks
6. Practical Record + Lab visit report 03 marks

Pedagogy: Teaching and learning, Seminar, Assignments, etc

Formative Assessment for Practical	
Assessment Occasion/type	Marks
Attendance	01
Test	05
Field Visit	05
Submission	10
Total	20Marks

Formative Assessment as per guidelines are compulsory

References

1. Arthur M. Lesk (2003) Introduction to Bioinformatics, Oxford University Press, Indian edition
2. Dan Higgins and Willie Taylor (2000) Bioinformatics Sequence, structure and databanks A practical approach, Oxford University Press, Indian edition, Second impression, New Delhi
3. Imtiaz Alam Khan (2007) Elementary bioinformatics Pharma Book Syndicate, Hyderabad
4. Krane Dan E. and Raymer M.L. (2004) Fundamental concepts of Bioinformatics Pearson education, New Delhi Second Indian reprint
5. Rastogi, S.C. Mendiratta, N. and Rastogi P. (2004) Bioinformatics methods and applications genomics, proteomics and drug discovery, Prentice hall of India, p-t. Ltd. New Delhi
6. Baxevanis, A. D. and Ouellette, B. F. F. (2005) Bioinformatics: A Practical Guide to the analysis of Genes and Proteins (2nd Ed.) New York, John Wiley & Sons, Inc Publications
7. Attwood, T. K. and Parry-Smith, D. J. (2001) Introduction to Bioinformatics Delhi, Pearson Education (Singapore) Pvt. Ltd

PLANT BIOTECHNOLOGY (THEORY)

Program Name	B.Sc. in BOTANY	Semester	VI
Course Title	Plant Biotechnology (Theory)		
Course Code	BOTC-19 T	No. of Credits	03
Contact hours	45Hours	Duration of SEA Exam	2hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite(s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to
CO1: Explain the basics of the physiological and molecular processes that occur during plant growth and development and during environmental adaptations
CO2: Understand how biotechnology has been used to develop knowledge of complex processes that occur in the plant
CO3: Use basic biotechnological techniques to explore molecular biology of plants
CO4: Understand the processes involved in the planning, conduct and execution of plant biotechnology experiments
CO5: Explain how biotechnology is used for plant improvement and discuss the ethical implications of their use

Contents	45Hrs
Unit 1:	15hrs
Historical perspective; Composition of media; Nutrient and hormone requirements (role of vitamins and hormones); Totipotency; Organogenesis; Embryogenesis (somatic and zygotic); Protoplast isolation, culture and fusion; Tissue culture applications (micropropagation, androgenesis, virus elimination, secondary metabolite production, haploids, triploids and cybrids; Cryopreservation; Germplasm Conservation)	
Unit 2:	15hrs
Restriction Endonucleases (Kinds, Type I-IV, biological role and application); Restriction Mapping (Linear and Circular); Cloning Vectors: Prokaryotic (pUC 18 and pUC19, pBR322, Ti plasmid, BAC); Lambda phage, M13 phagemid, Cosmid, Shuttle vector, Eukaryotic Vectors (YAC and briefly PAC, HAC, BAC); Gene Cloning (Recombinant DNA, Bacterial Transformation and selection of recombinant clones, PCR-mediated gene cloning); Gene Construct; construction of genomic and cDNA libraries; screening DNA libraries to obtain gene of interest by genetic selection, immunoassay, colony hybridization; Primer-oligonucleotide homologous, PCR;	
Unit 3:	15hrs
Methods of gene transfer: Agrobacterium-mediated, Direct gene transfer by Electroporation, Microinjection, Micro projectile bombardment; Selection of transgenics – selectable marker and reporter genes (Luciferase, GUS, GFP); Post-transgenic characterization of transgenic plants (Briefly Southern, Northern and Western blotting); Transgenic crops with improved quality traits (Flavr Savr tomato, Golden rice); Improved horticultural varieties (Shrublike ornamentals); Role of transgenics in bioremediation (Superbug); abiotic resistance (Industrial enzyme (Aspergillus, Bromelain, Lipase); Biosafety concerns;	

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Attendance	10
Test (Objective type)	10
Assignments	10
Seminar	10
Total	**40 Marks**
Formative Assessment as per guidelines are compulsory	

Course Title	Plant Biotechnology (Practical)	Practical Credits	02
Course Code	BOT C 20 P	Contact Hours	48Hours
Formative Assessment	75 Marks	Summative Assessment	25Marks
Practical Content			
1. (a) Preparation of MS medium (b) Demonstration of in vitro sterilization and inoculation methods using leaf and nodal explants of Tobacco/Datura/Brassica sp. 2. Study of anther, embryo and endosperm culture, micropropagation, somatic embryogenesis & 3. Preparation of Artificial Synthetic seeds. 4. Isolation of protoplasts. 5. Study and description of binary vectors by using photographs. 6. Study of methods of gene transfer through photographs. *Agrobacterium*-mediated, direct gene transfer by electroporation, microinjection, micro projectile bombardment. 7. Study of steps of genetic engineering for production of Bt cotton, Golden rice, Flavr Savr tomato through photographs. 8. Isolation of plasmid DNA. 9. Isolation and spectrophotometric quantification of DNA. 10. Separation of DNA using agarose gel electrophoresis and gel documentation. 11. Visit Biotech lab nearby your area.			

GENERAL PATTERN OF THEORY QUESTION PAPER

(60 marks for semester end Examination with 2 hrs duration)

Part-A

1. Question number 1-08 carries 2 marks each. Answer any 05 questions. 10 marks

Part-B

2. Question number 09- 14 carries 05 Marks each. Answer any 04 questions. 20 marks

Part-C

3. Question number 15-19 carries 10 Marks each. Answer any 03 questions. 30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 7+3 or 6+4 or 5+5 if necessary)

Total 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

SCHEME OF PRACTICAL EXAMINATION

PLANT BIOTECHNOLOGY

Time =03 hrs **Marks =25**

1. Isolation of plant DNA/ spectrophotometric quantification of DNA (A) 05 marks
2. Preparation of Artificial (synthetic Seed) Inoculation using leaf and nodal explant (B) 04 marks
3. Constituents of MS media, Golden rice, Flavr Savr tomato, micro-injection, micro projectile bombardment, Agarose PAGE electrophoresis, transillumination, PCR (C&D) 09 marks
4. Viva-voce 05 marks
5. Practical Record + Lab Visit report 05 marks

25 Marks

Pedagogy: Teaching and learning, Seminar, Assignments, etc.

Formative Assessment for Practical	
Assessment Occasion/ type	Marks
Attendance	05
Test	05
Lab visit	05
Submission	10
Total	25 Marks
Formative Assessment as per guidelines are compulsory	

References	
1	Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam The Netherlands.
2	Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology: Principles and Applications of recombinant DNA. ASM Press, Washington.
3	Bhojwani, S.S. and Bhatnagar, S.P. (2011). The Embryology of Angiosperms. Vikas Publication House Pvt. Ltd., New Delhi. 5th edition.
4	Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons, U.K. 5th edition.
5	Stewart, C.N. Jr. (2008). Plant Biotechnology & Genomics: Principles, Techniques and Applications. John Wiley & Sons Inc. U.S.A.

Discipline Specific Elective Papers

(Anyone to be chosen)

A. Herbal Drug Technology (Theory)

B. Techniques in Plant Biology (Theory)

C. Phytochemistry (Theory)

A. Herbal Drug Technology (Theory)

Program Name	B.Sc. in BOTANY	Semester	VI
Course Title	Herbal Drug Technology (Theory)		
Course Code	BOT-E2-A-Th	No. of Credits	03
Contact hours	45 Hours	Duration of SEA Exam	2hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite(s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to

CO1: Explain method for identification and authentication of herbal drugs

CO2: Explain methods for selection and processing of herbal drugs as raw materials for herbal drug preparation

CO3: Explain methods of good agricultural practices for medicinal plants like organic farming and using biopesticides for pest control

CO4: Explain basic principles of traditional medicinal systems with method of preparation and standardization of Ayurvedic formulations

CO5: Describe benefits of various plants as nutraceuticals in ailments and also the herb-food interactions of various plant drugs

CO6: Describe about herbs or natural origin drugs as raw materials for preparation of cosmetics, excipients, conventional herbal formulations and novel dosage forms like phytosomes

CO7: Describe rules and regulations for assessment of herbal drugs, providing of medical products and manufacture of herbal formulations based on traditional medicinal systems

CO8: Explain present status and prospects of herbal drug based industry and components for Good Manufacturing Practice for Indian systems of medicine

Contents	45 Hrs / Lectures
Unit I	
Herbs as raw materials: Definitions of herb, herbal medicine, herbal medicinal product, herbal drug preparation. Sources of Herbs: Selection, identification and authentication of herbal materials. Processing of herbal raw material: Biodynamic Agriculture, Good agricultural practices in cultivation of medicinal plants including Organic farming. Pest and Pest management in medicinal plants: Biopesticides, Botanicals, Indian Systems of Medicine & Basic principles involved in Ayurveda, Siddha, Unani and Homeopathy. b) Preparation and standardization of Ayurvedic formulations viz Asavas and Arishtas, Churnas, Leha's and Bhasmas. Herbal Cosmetics: Sources and description of raw materials of herbal origin used viz. fixed oils, waxes, gums, colours, perfumes, preservative agents, bleaching agents, antioxidants in products such as skin care, hair care and oral hygiene products. Schedule T – Good Manufacturing Practice of Indian systems of medicine Components of GMP, Schedule – T2 and its objectives, Infrastructural requirements, working space, storage area, machinery and equipments, standard operating procedures, health and hygiene.	
Unit 2:	
Nutraceuticals: General aspects, Market, growth, scope and types of products available in the market. Health benefits and role of Nutraceuticals in ailments like Diabetes, CVS diseases, Cancer, Irritable bowel syndrome and various Gastro intestinal disorders. Study of following herbs as health food: Alfalfa, Chicory, Ginger, Fenugreek, Garlic, Honey, Amla, Wheatgrass, Ashwagandha, Spirulina, Herbal-Drug and Herb-Food interactions. General introduction to nanoherbs and classification. Study of following drugs and their possible side effects and interactions: Hypericum, Ginkgo biloba, Glucosamine, Ginseng, Garlic, Papaya & Bromelain. Herbal excipients: Natural Excipients – Significance and sources of natural origin as excipients – starches, lactose, sugars, dextrin, alginates, chitosan, guar gum, tragacanth, Pectin & pectates. Herbal formulations: Conventional herbal formulations like syrups, mixtures and tablets and novel	

dosage forms like phytosomes	
Unit F:	**15hrs**
General Introduction to Herbal Industry Herbal drugs industry, Present scope and future prospects. A brief account of plant based industries and institutions involved in work on medicinal and aromatic plants in India. Evaluation of Drugs WHO & ICH guidelines for the assessment of herbal drugs, Stability testing of herbal drugs. Patenting and Regulatory requirements of natural products: a) Definition of the terms, Patent, IPR, Farmers right, Breeder's right, Biopiracy, Bioprospecting and Biopiracy b) Patenting aspects of Traditional Knowledge and Natural Products. Case study of Curcuma & Neem. Regulatory issues - Regulations in India (ASU DTAB, ASU DCC). Regulation of manufacture of ASU drugs - Schedule Z of Drugs & Cosmetics Act for ASU drugs.	

Pedagogy: Teaching and learning, Seminar, Assignments, etc

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Attendance	10
Test (Objective type)	10
Assignments	10
Seminar	10
Total	**40Marks**
Formative Assessment as per guidelines are compulsory	

References

1. Textbook of Pharmacognosy by Trease & Evans
2. Textbook of Pharmacognosy by Tyler, Brady & Robber
3. Pharmacognosy by Kokate, Purohit and Gokhale
4. Essential of Pharmacognosy by Dr. S.H. Ansari
5. Pharmacognosy & Phytochemistry by V.D. Rangari
6. Pharmacopoeial standards for Ayurvedic Formulations, Council of Research in Indian Medicine & Homeopathy
7. Chakraborty, P.W. Quality Control of Herbal Drugs: An Approach to Evaluation of Botanicals, Siddhi & Ayurveda Pharmacopoeia of India, Part I, Vol. I, Ministry of Health & Family Welfare, Govt. of India, New Delhi, India, 2003

GENERAL PATTERN OF THEORY QUESTION PAPER

(80 marks for semester end Examination with 3 hrs duration)

Part-A

I. Question number 1-20 carries 2 marks each. Answer any 15 questions	30 marks

Part-B

II. Question number 21- 31 carries 05 marks each. Answer any 10 questions	50 marks

Part-C

III. Question number 32-42 carries 10 marks each. Answer any 05 questions	50 marks

(Minimum 1 question from each unit and 10 marks questions may have sub-questions eg. 5+5 or 4+6 or 3+7 if necessary)

Total: 80 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed

5. Techniques in Plant Biology (Theory)

Program Name	B.Sc. in BOTANY	Semester	VI
Course Title	Techniques in Plant Biology (Theory)		
Course Code:	BOT E2-B-Th	No. of Credits	03
Contact hours	45 Hours	Duration of SEA Exam	3hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite (s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to
CO1: To learn principals and operations of microscopes and application in biology
CO2: To learn the techniques of separation of biological samples
CO3: To understand the techniques of characterization of biomolecules.
CO4: To learn the techniques and principals of chromatography, spectrophotometry, blotting and molecular biology techniques and their advance versions.

Contents	45Hrs
Unit I	15hrs
Microtomy and slide preparation. Fixatives and staining techniques. Preparation of whole mounts. Bright-field stains and fluorochromes. Metachromatic staining reaction. Histochemical dyes for the localization of starch, proteins, nucleic acid and lipids. Spectroscopic techniques - Colorimetry, UV-Visible Absorption Spectrophotometry, Infra-Red Spectrophotometry, Mass Spectrophotometry, NMR Spectrophotometry and GCMS, LCMS	
Unit II	15hrs
Chromatographic techniques – Principle, Paper Chromatography, Thin Layer Chromatography (TLC), Column chromatography and Gas Chromatography, Gas Liquid Chromatography (GLC), High Performance Thin Layer Chromatography (HPTLC), High Performance Liquid Chromatography (HPLC), Ion-Exchange Chromatography, Affinity Chromatography, Autoradiography	
Unit III	15hrs
Characterization and isolation of protein, nucleic acids and physicochemical: Centrifugation, Mass spectrometry, X-ray diffraction, X-ray crystallography; Characterization of proteins and nucleic acids, PCR. Molecular techniques: Southern, Northern, Western & Dot blot, PCR, DNA sequencing, Electrophoresis: AGE, PAGE, 2DE-PAGE.	

Pedagogy: Teaching and learning: Seminar, Assignments, etc.

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Attendance	10
Test (Objective type)	10
Assignments	10
Seminar	10
Total	**40marks**
Formative Assessment as per guidelines to be compulsory	

Course Title	Techniques in Plant Biology (Practical)	Practical Credits	02
Course Code	BOT E2-B-P	Contact Hours	45Hours
Formative Assessment	15 Marks	Summative Assessment	25Marks

Practical Content (Based on BOS recommendations)

1. Study of Blotting techniques: Southern, Northern and Western, DNA fingerprinting, DNA sequencing, PCR through photographs
2. Demonstration of ELISA
3. To separate nitrogenous bases by paper chromatography
4. Isolation of chloroplasts by differential centrifugation
5. To separate chloroplast pigments by column chromatography
6. To estimate protein concentration through Lowry's methods
7. To separate proteins using PAGE
8. To separate DNA (marker) using AGE
9. Study of different microscopic techniques using photographs/ micrographs (freeze fracture, freeze etching, negative staining, positive staining, differential staining, fluorescence and TEM)
10. Preparation of permanent slides (double staining)

References

1. Alan pearse A.H. 1968 Elementary Microtechnique Edward Arnold (Pub) Ltd.
2. Reid P.D. and R.F. Paul-Lanza (Eds.). 1995. Tissue Printing: tools for the study of anatomy, histochemistry, and gene expression. Academic Press. New York
3. Cook M.J. 1991. Biological stains. Ninth Edition. Sigma Chemical Company, St. Louis. USA
4. Pandit B. Pandit 2005 Emkay Publications, Delhi. 8. Fuller's M.F. et al 1966 Laboratory Techniques in Botany Butter Worths
5. Pathi L.P. 1993 An Introduction to Microtechniques Chandik Company, New Delhi
6. Johnson D.A. 1940 Plant Microtechnique, Mc - Graw Hill, New Delhi
7. Pandit & Pandit 2000 Emkay Publications, Delhi. 8. Fuller's M.F. et al 1966 Laboratory Techniques in Botany Butter Worths
8. Krishnamurthy K.V. 1998. Methods in Plant Histochemistry. S. Viswanathan (Printers & Publishers) Pvt. Ltd. Madras.

GENERAL PATTERN OF THEORY QUESTION PAPER

(60 marks for semester end Examination with 3 hrs duration)

Part-A

I. Question number 1-09 carries 2 marks each. Answer any 08 questions. 10 marks

Part-B

II. Question number 9-11 carries 05 Marks each. Answer any 04 questions. 20 marks

Part-C

III. Question number 12-15 carries 10 Marks each. Answer any 03 questions. 30 marks

(Multiple 1 question from each unit and 10 marks question may have sub-questions for 2+3 or 5+4 or 5+5 if necessary)

Total: 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

C. Floriculture (Theory)

Program Name	B.Sc in BOTANY	Semester	VI
Course Title	Floriculture (Theory)		
Course Code	BOT E1-C-Th	No. of Credits	03
Contact hours	45 Hours	Duration of SEA Exam	2hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite(s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to

CO1: Identify and describe the ornamental flowering plants

CO2: Practice the methods of preparing soil and water, cultivation and propagation methods.

CO3: Design, prepare and apply appropriate combinations of plants and methods of cultivation for commercial setup

CO4:Adapt to the job role of Horticulturist (employment/ entrepreneurship)

Contents	45Hrs
Unit1:	10hrs
Introduction to floriculture, tools and equipments. Study of diversity in shape, size, and colour of flowers (including bulbous), nomenclature, common name and general uses). Identification and preparation of an inventory of herbaceous flowering plants, climbers, shrubs, and trees around the campus. Study the various physico-chemical properties of soil.	
Unit2:	16hrs
Methods of propagation of floral seeds, soil preparation, greenhouse design and irrigation methods. Methods of seed sowing and raising flowering plants through seeds, bulbs and through vegetative methods in glasshouses, containers and in outdoor environments. Role of light, plant growth regulators and nutrients in blooming and flowering Bacterial and fungal diseases and pests of ornamental flowers and their management	
Unit3:	16hrs
Flower decoration methods, flower arrangements (Japanese, Western and Indian). Harvesting methods to increase the shelf life of flowers, postharvest care and marketing practices for the floriculture industry Field visit to nearby nursery/ garden to understand basic aspects of Garden design. Five flowering plants that are grown commercially, their share in the global market, methods used for selling the products and importance of the floriculture industry to its countries.	

Pedagogy: Teaching and learning, Seminar, Assignments, etc

Formative Assessment for Theory	
Assessment Occasions/type	**Marks**
Attendance	10
Test (Objective type)	15
Assignments	10
Seminar	05
Total	40Marks
Formative Assessment as per guidelines are compulsory	

Course Title	Floriculture (Practical)	Practical Credits	02
Course Code	BOTE3CP	Contact Hours	45Hours
Formative Assessment	25Marks	Summative Assessment	25Marks

Practical Content (Based on SDS recommendation)

1. Common garden operations using different implements. Identification & practice Bio-fertilizer.
2. Handling of pots, purpose of nursery bed, potting media, potting etc.
3. Propagation by cutting, budding, grafting.
4. Handling of seeds, bulbs, cut flowers, nursery plants, pot plants.
5. Acquaintance with soil types, various mixtures, fertilizers, Vermi compost, pesticides, growth regulator.
6. Systematic waste disposal keeping environment pollution in view.

References

1.	Randhawa, G S., Mukhopadhyay, A. (1986). Floriculture in India. New York, NY: Allied Publishers.
2.	Larson, R. A. (Ed.). (2012). Introduction to floriculture. Elsevier.
3.	Pal, J. L. (2018). Role of plant growth regulators in floriculture. An overview. J. Pharmacogn. Phytochem., 8, 1992-1996.
4.	Sadhu, M. K. 2004. Vermiculture and Organic Farming. Daya publishing.
5.	Subba Rao, N.S. 2000. Soil Microbiology. Oxford & IBH Publishers, New Delhi.
6.	Verma, L.C. Nayee, S. and Modi, H.A. 1998 Bio-fertilizers and organic Farming. AkruPrakashan, Nadiad.

GENERAL PATTERN OF THEORY QUESTION PAPER

(80 marks for semester end Examinations with 2 hrs duration)

Part-A

1. Question number 1-09 carries 2 marks each. Answer any 05 questions. 10 marks

Part-B

10. Question number 10-17 carries 05 marks each. Answer any 04 questions. 20 marks

Part-C

18. Question number 18-15 carries 10 marks each. Answer any 03 questions. 30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 7+3 or 6+4 or 5+5 if necessary)

Total 80 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

VOCATIONAL PAPERS

(Anyone to be chosen)

A. Plant Quarantine (Theory)
B. Plant Diversity and Human Welfare (Theory)

A. Plant Quarantine (Theory)

Program Name	B Sc in BOTANY		Semester	VI
Course Title	Plant Quarantine (Theory)			
Course Code	BOT VI- A		No. of Credits	03
Contact hours	45 Hours		Duration of SEA Exam	2hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Pre-requisite(s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

CO1: Diagnose causes of plant damage, especially by pests, and identify the agent responsible.

CO2: Apply an understanding of the practices available to manage insects, diseases and weeds.

CO3: Create an integrated management program and explain the benefits and limitations of its components.

CO4: Make informed decisions about pest management practices based on appropriate sampling of pest populations and interpreting sampling data.

CO5: Defend the value of a holistic approach to pest management.

Contents	40Hrs
Unit 1:	15hrs
Plant quarantine: Introduction to Plant Quarantine Information System (PQIS) and objective. Imports: Plant Quarantine Order and Amendments, Issuance of the Import Permit, Import inspection and clearance, Procedures of PEQ inspection, Time schedules for clearance, Permits required for import of Quarantine, Transgenic or Genetically Modified Organisms, live insects and microbial cultures, plants and plant products, Requirement of Import of Wood and Timber. Special conditions for import of plant species	
Unit 2:	15hrs
Exports: Export inspection and certification procedure, Time schedule for clearance, Fees and Charges, Circular issued to Export Certification Authorities. Post entry Quarantine: Appeal and Revision, Power of Relaxation, Issuance of import permit, Import inspection, Inspection authorities, Fees and charges, commodities not requiring Plant Quarantine clearance	
Unit 3	15hrs
Phytosanitary: Phytosanitary Agreement, national standards for phytosanitary measures, accredit treatment facilities, Quarantine Disinfestation Treatment. The Destructive Insects and Pests Act, 1914 and amendments, The Plant Quarantine Order 2003 - Amendments, International Plant Protection Convention, WTO-SPS Agreement, International Standards on Phytosanitary Measures (ISPMs). Biodiversity Act. Bioorganic and bio organisms. Testing quality and contaminants (Chemical and biological in organic farming and their products)	

Pedagogy: Teaching and learning, Seminar, Assignments, etc

Formative Assessment for Theory	
Assessment Occasion/ type	Marks
Attendance	10
Test (Objective type)	15
Assignments	10
Seminar	05
Total	40Marks

Formative Assessment as per guidelines are compulsory

References	
1	M.C. Mathaiyan (2005) Principles and Practices of Plant Quarantine. Allied publishers private limited.
2	Agrios, G.N. 1997 Plant Pathology. 4th edition, Academic Press, U.K.
3	Singh, R.S. 1998 Plant Diseases. 7th edition, Oxford & IBH, New Delhi.
4	Wilcken, C.E. 2004 Economic Entomology: Principles and Practices. Springer Kluwer Publishers, Dordrecht, The Netherlands.

GENERAL PATTERN OF THEORY QUESTION PAPER

(60 marks for semester end Examination with 2 hrs duration)

Part-A

I. Question number 1-08 carries 2 marks each. Answer any 05 questions. 10 marks

Part-B

II. Question number 09-11 carries 05 Marks each. Answer any 04 questions. 20 marks

Part-C

III. Question number 12-15 carries 10 Marks each. Answer any 03 questions. 30 marks

(Minimum 1 question from each unit and 10 marks question may have sub-questions for 7+3 or 6+4 or 5+5 if necessary)

Total: 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

B. Plant Diversity and Human Welfare (Theory)

Program Name	B.Sc in BOTANY	Semester	VI
Course Title	Plant Diversity and Human Welfare (Theory)		
Course Code	BOTVI-B	No of Credits	03
Contact hours	45 Hours	Duration of SEA Exam	3hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite (s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to

CO1: Knowledge related to Plant diversity

CO2: Skill related to the Conservation of Biodiversity

CO3: Understand methods of conservation of Biodiversity

CO4: Learn the role and scope of Plant Diversity for Human Welfare.

Contents	40Hrs
Unit 1:	15hrs
Plant diversity and its scope- Genetic diversity, Species diversity, Plant diversity at The ecosystem level, Agro-biodiversity and cultivated plant taxa, wild taxa. Values and uses of Biodiversity: Ethical and aesthetic values, Precautionary principle, Methodologies for valuation. Uses of plants, Uses of microbes. Loss of Biodiversity: Loss of genetic diversity, Loss of species diversity, Loss of ecosystem diversity, Loss of agro-biodiversity, Projected scenario for biodiversity loss.	
Unit 2:	15hrs
Role of plants in relation to Human Welfare: a) Importance of forests, their utilization and commercial aspects. b) Avenue trees. c) Ornamental plants of India. d) Alcoholic beverages through ages. e) Wood and its uses. f) Medicinal and aromatic plants (*Aegle marmelos, Adhatoda vasica, Andrachne indica, Aloe barbadensis, Centella asiatica, Dalbergia sissoides, Moringa oleifera, Nothapodytes nimmoniana, Rauvolfia serpentina, Solanum nigrum, Terminalia chebula, Terminalia bellerica, Zingiber officinale, Withania somnifera, L. Cymbopogon flexuosus, Curcuma longa, Ocimum sanctum*)	
Unit 3:	10hrs
Fruits and nuts. Important fruit crops (25 important locally seasonally available plants) and their commercial importance. Management of Plant Biodiversity. Organizations associated with biodiversity management-Methodology for assessment - IUCN, UNEP, UNESCO, WWF, NBPGR. Biodiversity legislation and conservations, Biodiversity information management and communication.	

Pedagogy: Teaching and learning Tutorials, Assignments etc

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Attendance	10
Test (Objective type)	10
Assignments	10
Seminar	10
Total	**40Marks**
Formative Assessment as per guidelines are compulsory	

References	
1	Krishnamurthy, K.V. (2003). An Advanced Textbook of Biodiversity : Principles and Practices. Oxford and IBH Publications Co. Pvt. Ltd. New Delhi.
2	FAO. 1978. Forestry for Local Community Development. FAO Publ.
3	P.Sivarajan Kumar,2014. Ecological Botany. Kanak Publications New Delhi.
4	Jayadeo Rajan ,2007. College Botany Vol.V. Part I. Taxonomy and Economic Botany Himalaya Publishing House.
5	Odum E.P. (1971). Fundamentals of Ecology (3rd Edn.). Saunders & Co., Philadelphia.

GENERAL PATTERN OF THEORY QUESTION PAPER

(60 marks for semester end Examination with 2 hrs duration)

Part-A

I. Question number 1-10 carries 2 marks each. Answer any 05 questions. 10 marks

Part-B

II. Question number 11- 21 carries 05 Marks each. Answer any 04 questions. 20 marks

Part-C

A. Question number 12-17 carries 10 Marks each. Answer any 03 questions. 30 marks

(Minimum 1 question from each Unit and 10 mark question may have sub questions for 7+3 or 6+4 or 5+5 if necessary)

Total: 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.

B.Sc BOTANY: Semester - 3

Theory: Discipline Specific Core Course (DSCC)

Title of the Course and Code:

BOT-A-3.1: PLANT ANATOMY AND DEVELOPMENT BIOLOGY

Course No	Type of Course	Theory /Practical	Credits	Contact hrs/ week	Total No. of Lectures hours/ Course	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
BOT-A-3.1	DSCC	Theory	04	04	56 hrs	3hrs	40	60	01

Course Outcomes:

On completion of this course, the students will be able to

1. Observation of variations that exist in internal structure of various parts of a plant and as well as among different plant groups in support for the evolutionary concept.
2. Skill development for the proper description of internal structure using botanical terms, their identification and further classification.
3. Induction of the adaptations on internal structure of locally available plants.
4. Understanding various levels of organization in a plant body with an outlook in the relationship between the structure and function through comparative studies.
5. Observation and classification of the floral variations from the pressure of ecology and biotic
6. Understanding the various reproductive methods, sub-stages of the life cycle of plants.
7. Observation and classification of the embryological variations in angiosperms.
8. Enthusiasm to understand evolution based on the variations in reproduction among plants.

PLANT ANATOMY

Unit I: ANGIOSPERM ANATOMY- PLANT CELL STRUCTURE AND TISSUES

14 Hrs

Introduction, objective and scope of Plant Anatomy. Plant cell structure – ultra structure of plant cell wall.

Tissue and tissue systems - structure and, permanent tissue and secretory cells.

Classification of meristems: Apical, intercalary and lateral; primary and secondary meristems.

Apical meristems: Theories on organization of meristems (apical cell theory, Tunica-Corpus theory, histogen theory and Korper-Kappe theory), quiescent centre, Root cap.

Evolution and concept of organization of shoot apex (Apical cell theory, Histogen theory, Tunica Corpus theory combining ultrastructural studies, cytohistological zonation).

Unit II: MORPHOGENESIS AND DIFFERENTIATION 14 Hrs

Morphogenesis in plants - Differentiation of root, stems and leaf.

Types of vascular bundles and Vascular cambium: Origin, development, arrangement and growth: in size and shape of leaves.

Structure of Dicot root: primary and secondary structure, Tricot root(Grasses), Structure of monocot root (Maize)

Structure of Dicot stem: Primary and secondary structure (Tridax Sunflower), Structure of Monocot stem (Maize), Nodal anatomy

Structure of Dicot leaf: primary structure (Tridax Sunflower), primary structure of Monocot leaf (Maize), Stomatal types, Anomalous secondary growth, Anatomy of Bombax (Dicot stem), Dracaena (monocot stem).

Applications in systematics, Economics and Pharmacognosy

DEVELOPMENT BIOLOGY

Unit III: Morphogenesis and Differentiation **14 Hrs.**

Differentiation and cell polarity in acellular (Dictyostelium), Unicellular (Acetabularia) and multicellular system (root hair and stomata formation) Shoot Apical meristem (SAM): Origin, structure and function, Cytohistological zonation and Ontogeny of meristems. Organogenesis: Differentiation of root, stem, leaf and axillary bud, bud dormancy

Mechanism of leaf primordium initiation, development and Phyllotaxis (Genetic basis and shape of leaves)

Structure and function of root apical meristem (RAM): Root cap, quiescent centre and origin of lateral roots.

Transition from vegetative apex into reproductive apex

Developmental patterns of flowering apex: ABC model specification of floral organs. Modification of gene action by growth hormones and cellular differences between floral organs. Senescence – a general account.

Unit IV: Reproductive Biology **14 Hrs.**

Introduction, Scope and contributions of Indian embryologists: P. Maheswari, B.G.L. Swamy, P.Nanjundaiah, M.S. Swaminathan and K.C. Mehra

Microsporangium: Development and structure of mature anther, Anther wall layers, Tapetum - types, structure and functions and sporogenous tissue

Microsporogenesis - Microspore mother cells, microspore tetrads, Pollen

Microgametogenesis – Formation of vegetative and generative cells, structure of male gametophyte, Pollen embryoid, Pollen phenomenon)

Megasporangium – Structure of typical Angiosperm ovule Types of ovule: Anatropous, Orthotropous, Amphitropous, Circinotropous **Megasporogenesis** – Types of development of Female gametophyte embryosac- monosporic- Polygonum type, tetrapore – Adoxa type, tetrasporic - Fritillaria type. Structure of mature embryosac.

Pollination and fertilization: Structural and functional aspects of pollen, stigma and style. Post pollination events. Current aspects of fertilization and significance of double fertilization. Post fertilization changes.

Endosperm – Types and its biological importance. Free nuclear (Coco nucifera) cellular (Cucumis) helobial type. Haustoria endosperm.

Embryogenesis – Structure and composition of zygote. Dicot (Capsella hetrogeneric and Solanad Origin) embryo development. A general account of seed development.

B.Sc. BOTANY: Semester - 3

Practical: Discipline Specific Core Course (DSCC)

Title of the Course and Code:

BOT-A-32: PLANT ANATOMY AND DEVELOPMENT BIOLOGY

Course No	Type of Course	Theory/ Practical	Credits	Semester hours per week	Total No. of Lectures/ Hours/ Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
BOT-A-32	DSCC	Practical	02	04	52 hrs	3hrs	25	25	50

LIST OF EXPERIMENTS TO BE CONDUCTED

Practical No.1:

i) Study of meristems (Permanent slides/ Photographs)

ii) Study of Simple Tissues (Parenchyma, Collenchyma and Sclerenchyma) and Complex Tissues (xylem and phloem).

Practical No.2

Maceration technique to study elements of xylem and phloem, Study of primary structure of dicot root, stem and leaf (Sunflower) and monocot root, stem and leaf (Maize)

Practical No.3

Study of Normal secondary growth structure in dicot stem and root (Sunflower)

Practical No.4

Anomalous secondary growth: *Aristolochia*, *Bignonia* (dicot stem); *Dracaena* (monocot stem)

Practical No. 5

Study of trichomes (any three types) and stomata (any three types) with the help of locally available plant materials.

Practical No. 6

Permanent slides of Microsporogenesis and male gametophyte. Staining of Pollen grains of Grass and Hibiscus and Pollens of Calotropis

Practical No. 7

Pollen germination (hanging drop method) and Effect of Boron and Calcium on pollen germination.

Practical No. 8

Permanent slides of types of ovules, Megasporogenesis-Monosporic development and types of placentation: Axile, Marginal and Parietal type. Sectioning of ovary for the studied types of placentation.

Practical No. 9

Mounting of embryo: Fruits and Cotyledons. Mounting of endosperm: Coconut

Practical No. 10 and 11

Mini project work in groups of 3-4 students from the following list

a) Study of pollen morphology of different flowers with regard to shape, colour, aperture etc.

b) Pollen germination of different pollen grains and calculate percentage of germination.

c) Calculating percentage of germination of one particular type of pollen grain collected from different localities/ under different conditions

d) Study of placentation of different flowers.

e) Any other relevant study related to Anatomy / Embryology

Text Books for References

1. Bhojwani and Bhatnagar. Introduction to Embryology of Angiosperms. Oxford & IBH, Delhi
2. Bhojwani, Siva. Soran. 2014 Current Trends in the Embryology of Angiosperms. Wuong-Chang Yeh, Springer Netherlands
3. Cutler E. G. , 1969. Plant Anatomy – Part I Cells and Tissues – Edward Arnold, London.
4. Dickison, W.C. (2000). Integrative Plant Anatomy. Harcourt Academic Press, USA
5. Eames A. J. - Morphology of Angiosperms - Mc Graw Hill, New York
6. Esau, K. 1960. Plant Anatomy. Wiley Eastern Pvt Ltd. New Delhi
7. Evert, R.F. (2006) Esau's Plant Anatomy: Meristems, Cells, and Tissues of the Plant Body: Their Structure, Function and Development. John Wiley and Sons, Inc
8. Fahn, A. 1992. Plant Anatomy, Pergamon Press, USA
9. Johri, B.M. (ed.). 1984 Embryology of Angiosperms, Springer-Verlag Netherlands
10. Karp G. 1985. Cell Biology. Mc Graw Hill Company
11. Maheshwari P. 1950. An introduction to the embryology of angiosperms. New York: McGraw-Hill
12. Mauseth, J.D. (1988). Plant Anatomy. the Benjamin/Cummings Publisher, USA.
13. Nair P. K. K. - Pollen Morphology of Angiosperms. - Scholar Publishing House, Lucknow
14. Pandey B.P. 1997. Plant Anatomy and Embryology. S. Chand. Vikas Publication House Pvt. Ltd.
15. Pandey B. P., 1997. Plant Anatomy. S Chand and Co. New Delhi
16. Raghavan, V., 2000. Developmental Biology of Flowering plants. Springer, Netherlands
17. Sharma O. P. – Palynology – A treatise - Oxford & I. B. H., New Delhi

18. Sharma, K.R. 2003. Pollen Biology and Biotechnology. Oxford and IBH Publishing Co. Pvt. Ltd. Delhi.
19. Vasishta P.C. 1994. Plant Anatomy – Pradeep Publications – Jalandhar
20. Vasishta, P.C. 2007. Plant Anatomy. Pradeep Publications

B.Sc. BOTANY SEMESTER IV

Title of the Course: Ecology and Conservation Biology

Number of Theory Credits	Total Lecture Hours/Semester	Number of Practical Credits	Total Practical Hours/Semester
04	56	02	56

Contents of Theory Course		
Unit 1	Topics	Teaching Hours
I	**Introduction to Ecology and Conservation Biology:** Definitions, Principles of Ecology, Brief History, Major Indian Contributors, Scope and importance, Ecological levels of organization. **Ecological factors:** Climatic factors: light, temperature, precipitation and humidity. **Edaphic factors:** Soil and its types, soil texture, soil profile, soil formation, physico-chemical properties of soil - mineral particle, soil pH, soil structure, organic matter, soil humus and soil microorganisms. Topographic Factors, Altitude **Ecological groups of plants and their adaptations:** Morphological and anatomical adaptations of hydrophytes, xerophytes, epiphytes and halophytes	15 hrs
II	**Ecosystem Ecology:** Introduction, types of ecosystem with examples: terrestrial and aquatic, natural and artificial. Structure of ecosystem: Biotic and Abiotic components, detailed structure of a pond ecosystem. Ecosystem functions and processes: Food chain, grazing and detritus, Food web, Ecological pyramids: Pyramids of energy, biomass and number, Principles of Energy flow in ecosystem. Biogeochemical cycles: Gaseous cycles: carbon and nitrogen, Sedimentary cycle: Phosphorus. Ecological succession: Definition, types: primary and secondary, General stages of succession: Hydrosere and lithosere. **Community Ecology:** Community and its characteristics – frequency, density, abundance, cover and basal area, phenology, stratification, life forms, Concept of Ecotone and Ecotypes. Intra-specific and Inter-specific interactions with examples. **Ecological methods and techniques:** Methods of sampling plant communities – transects and quadrats, Remote sensing as a tool for vegetation analysis, land use – land cover mapping. **Population Ecology:** Population and its characteristics – Population density, natality, mortality, age distribution, population growth curves and dispersal.	15 hrs

III	**Phytogeography and Environmental issues** Theory of land bridge, theory of continental drift, polar wanderers and glaciations. Centre of origin of plant – Vavilov's concept, types. Phytogeographical regions – concept, phytogeographical regions of India. Vegetation types of Karnataka – Composition and distribution of evergreen, semi evergreen, deciduous, scrub, mangroves, dry forest and grasslands. An account of the vegetation of the Western Ghats. Pollution: Water pollution: Causes, effect, types, water quality indicators, water quality standards in India, control of water pollution (Waste water treatment) Water pollution disasters – National mission on clean Ganga Minamata, Pacific gyre garbage patch, Bellandur lake oil spill. Air pollution: Causes, effect, air quality standards, acid rain, control. Soil pollution: Causes, effect, solid waste management, control measures of soil pollution.	11hrs
IV	**Biodiversity and its conservation** Biodiversity: Definition, types of biodiversity - habitat diversity, species diversity and genetic diversity. Global and Indian species diversity. IUCN as biodiversity conservation. Values of Biodiversity – Economic and aesthetic value, Medicinal and timber yielding plants. NTFP. Threats to biodiversity. Concept of Biodiversity Hotspots, Biodiversity hot spots of India. Concept of endemism and endemic species. IUCN plant categories with special reference to Karnataka Western Ghats. Biodiversity Conservation: Indian forest conservation act, Biodiversity bill (2002) Conservation methods – In-situ and ex-situ methods *In-situ* methods –Biosphere reserves, National parks, Sanctuaries, Sacred groves. *Ex-situ* methods-Botanical gardens, Seed bank, Gene banks, Pollen banks, Culture collections, Cryopreservation.	11hrs
	Total	45 Hours

SUGGESTED REFERENCE BOOKS:

1. Khanna P.D. 2018. Fundamentals of Ecology. Ramya Publications.
2. Odum E.P. (1971). Ecology By Holt, Rinehart Winston.
3. Oosting H.J. (1973). Plant and Environment Wadsworth Belmont
4. Krishna, P.L. (1972). Plant Ecology. (9th Edn.) New Delhi, Bombay, Calcutta (Engg.,
5. Kumar, H.D. (1992). Modern Concepts of Ecology (7th Edn.) Vikas Publishing Co., New Delhi
6. Kotwal M.D. (2000). Biodiversity & Sustainable Conservation. Oxford & IBH Publishing Co Ltd., New Delhi.
7. Newman, E.I. (2000). Applied Ecology, Blackwell Scientific Publisher, U.K.
8. Chapman, J.L.&M.J. Reiss (1992). Ecology Principles & Applications. Cambridge University Press, U.K.
9. Mallinder L. Hunter Jr., James P. Gibbs, Carol Buys, 2020. Fundamentals of Conservation Biology, 4th Edition. Wiley Blackwell.
10. Sinha S. K., 2017. Ecology and Environmental Ecology. Books and Allied Publishers.

List of Practicals in Ecology and Conservation Biology

Practical No.	Experiments
1	Determination of pH of different types of Soil. Estimation of salinity of soil water sample.
2	Study of Ecological instruments – Tin and Dry thermometer, Maximum Temperature and thermometer, Rain Gauge, Barometer etc.
3	Hydrophytes: Morphological adaptations in Pistia, Eichhornia, Hydrilla, Trapa and Aquatic adaptations in Typha latifolia and Nymphaea spp.
4	Xerophytes: Morphological adaptations in Opuntia, Casuarina, Aloe vera, Euphorbia, Nerium and Asparagus. Anatomical adaptations in phyllode of Casuarina.
5	Epiphytes: Morphological adaptations in Orchids, Bulbophyllum. Dicot root Anatomical adaptations in epiphytic root of Orchids/ Tinospora.
6	Halophytes: study of Mangroves, Morphology and anatomy of Pneumatophores
7	Study of a pond/ local ecosystem and recording the different biotic and abiotic components
8	Demonstration of different types of vegetation sampling methods – transects and quadrats. Determination of Density and Frequency
9	Application of remote sensing to vegetation analysis using satellite imageries
10	Field visits to study different types of local vegetations ecosystems and the report to be written in practical record book
11	Determination of water holding capacity of soil samples
12	Determination of Biological oxygen demand (BOD)
13	Determination of Chemical oxygen demand (COD)
14	Determination of soil texture of different soil samples

KUVEMPU UNIVERSITY

NEP-2021

CURRICULUM STRUCTURE AND SYLLABUS

Bachelor of Science (Basic and Honors) Programmes with Computer Science as Major and Minor Courses

And

Open Elective courses in Computer Science

w.e.f Academic Year 2021-22 onwards

The objectives of the Program

1. The primary objective of this program is to provide a foundation of computing principles for effectively using information systems and enterprise softwares
2. It helps students analyze the requirements for system programming and exposes students for information systems
3. This programme provides students with options to specialize in various software system
4. To produce outstanding Computer Scientists who can apply the theoretical knowledge into practice in the real world and develop standalone live projects themselves
5. To provide opportunity for the study of modern methods of information processing and its applications.
6. To develop among students the programming techniques and the problem-solving skills through programming
7. To prepare students who wish to go on to further studies in computer science and related subjects
8. To acquaint students to Work effectively with a range of Current standard Office Productivity software applications

Program Outcomes

1. **Discipline knowledge:** Acquiring knowledge on basics of Computer Science and ability to apply to design principles in the development of solutions for problems of varying complexity.
2. **Problem Solving:** Improved reasoning with strong mathematical ability to identify, formulate and analyze problems related to computer science and exhibiting a sound knowledge on data structures and algorithms.
3. **Design and Development of Solutions:** Ability to design and development of algorithmic solutions to real world problems.
4. **Programming a computer:** Exhibiting strong skills required to program a computer for various issues and problems of day-to-day scientific applications.
5. **Application Systems Knowledge:** Possessing a minimum knowledge to practice existing computer application software.
6. **Communication:** Must have a reasonably good communication knowledge both in oral and writing.
7. **Ethics on Profession, Environment and Society:** Exhibiting professional ethics to maintain the integrity in a working environment and also have concern on societal impacts due to computer-based solutions to problems.
8. **Lifelong Learning:** Should become an independent learner. So, learn to learn ability.
9. **Motivation to take up Higher Studies:** Inspiration to continue educations towards advanced studies on Computer Science.

Additional Program Outcomes for B.Sc (Hons) in Computer Science

The four years Bachelors in Computer Science (Hons) program enables students to attain the following additional attributes besides the afore-mentioned attributes:

1. Apply standard Software Engineering practices and strategies in real -time software project development
2. Design and develop computer programs/computer-based systems in the areas related to AI, algorithms, networking, web design, cloud computing, IoT and data analytics
3. Acquaint with the contemporary trends in industry/research settings and thereby innovate novel solutions to existing problems
4. The ability to apply the knowledge and understanding noted above to the analysis of a given information handling problem
5. The ability to apply independently on a substantial software project and as an effective team member

Curriculum Structure

Program: B.Sc. (Basic and Honors) Subject: Computer Science

1. Computer Science as MAJOR with another Subject as MINOR (Table IIA of Model Curriculum)

Sem	Discipline Specific Core Courses (DSC)	Hour of Teaching/ Week		Discipline Specific Elective Courses (DSE)/ Vocational Courses (VC)	Hour of Teaching/ Week
		Theory	Lab		
1.	DSC-1: Computer Fundamentals and Programming in C DSC-1 Lab: C Programming Lab	4	4		
2	DSC-2: Data Structures using C DSC Core: Data structures Lab	4	4		
3	DSC-3: Object Oriented Programming Concepts and Programming in JAVA DSC-3 Lab: JAVA Lab	4	4		
4	DSC-4: Database Management Systems DSC-4 Lab: DBMS Lab	4	4		
5	DSC-5: Programming in PYTHON DSC-6: Computer Networks DSC-5 Lab: PYTHON Programming lab DSC-6 Lab: Computer Networks Lab	3 3	5 4	VC-1 Any one from Vocational Courses, Group – 1*	3
6	DSC-7: Internet Technologies DSC-8: Operating System Concepts DSC-7 Lab: JAVA Script, HTML, DSS Lab DSC-8 Lab: OS Programming Lab	3 3	4 4	VC-2 Any one from Vocational Courses, Group – 2* Internship	3 2
7	DSC-9: Computer Graphics and Visualization DSC-10: Design and Analysis of Algorithms DSC-11: Software Engineering DSC-9 Lab: Computer Graphics and Visualization Lab DSC-10 Lab: Algorithms Lab	3 3 3	4 4	DSE-1 Any one from Discipline Specific Elective Courses, Group – 1* DSE-2 Any one from Discipline Specific Elective Courses, Group – 2* Research Methodology	3 3 3
8	DSC-12: Artificial Intelligence and Applications DSC-13: Computer Organization and Architecture DSC-14: Data Warehousing and Data Mining DSC-12 Lab: AI Lab	3 3 3	4	DSE-3 Any one from Discipline Specific Elective Courses, Group – 3* Research Project	3 6

2. Computer Science as MINOR with another Subject as MAJOR (As per Table 9A of Model Curriculum)

Sem	Discipline Specific Core Courses (DSC)	Hour of Teaching/ Week	
		Theory	Lab
1	DSC-1: Computer Fundamentals and Programming in C	4	
	DSC-1Lab: C Programming Lab		4
2	DSC-2: Data Structures using C	4	
	DSC-2Lab: Data structures Lab		4
3	DSC-3: Object Oriented Programming Concepts and Programming in JAVA	4	
	DSC-3Lab: JAVA Lab		4
4	DSC-4: Database Management Systems	4	
	DSC-4Lab: DBMS Lab		4
5	DSC-5: Programming in PYTHON	3	
	DSC-5Lab: PYTHON Programming lab		4
6	DSC-6: Internet Technologies	3	
	DSC-6Lab: JAVA Script, HTML, CSS Lab		4

Vocational Courses:

Group-1:	Group-2:
• DTP, CAD and Multimedia • Hardware and Server Maintenance • Web Content Management Systems • E-Commerce • Web Designing	• Health Care Technologies • Digital Marketing • Office Automation • Multimedia Processing • Accounting Package

Discipline Specific Elective Courses:

Group-1:	Group-2:	Group-3:
• IoT • Cyber Law and Cyber Security • Web programming : Ruby and MySQL • Clouds, Grids, and Clusters • Software Testing	• Information and Network Security • Data Compression • Discrete Structures • Object-oriented Programming • Multimedia Computing • Big Data	• Data Analytics • Storage Area Networks • Pattern Recognition • Digital Image Processing • Parallel Programming • Digital Signal Processing

Open Electives in Computer Science

- Office Automation
- Computer Fundamentals
- Problem Solving and C Programming Concepts
- Python Programming Concepts
- Web Designing
- Accounting Package
- E-Commerce
- Multimedia Processing
- R Programming
- E-Content Development
- Computer Animation

Syllabus for B.Sc (Basic and Honors) 1st and 2nd Semesters

Semester: I

Course Code: DSE-1	Course Title: Computer Fundamentals and Programming in C
Course Credits: 04	Hour of Teaching/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03

Course Content

Content	Hours
Unit - 1	
Fundamentals of Computers: Introduction to Computers - Computer Definition, Characteristics Computers, Evolution and History of Computers, Types of Computers, Basic Organization of a Digital Computer, Number Systems – different types, conversion from one number system to another, Computer Codes – BCD, Gray Code, ASCII and Unicode, Boolean Algebra – Boolean Operation with Truth Tables; Types of Software – System Software and Utility Software, Computer Languages - Machine Level, Assembly Level & High Level Languages, Translator Programs – Assembler, Interpreter and Compiler, Planning a Computer Program - Algorithm, Flowchart and Pseudo code with Examples (at least five)	10
Unit - 2	
Introduction to C Programming: Over View of C, History and Features of C, Structure of a C Program with Examples, Creating and Executing a C Program, Compilation process in C. **C Programming Basic Concepts:** C Character Set, C tokens - keywords, identifiers, constants, and variables; Data types, Declaration & initialization of variables, Symbolic constants. **Input and output with C:** Formatted I/O functions - *printf* and *scanf* control strings and escape sequences, output specifications with *printf* functions, Unformatted I/O functions to read and display single character and a string - *getchar, putchar, gets* and *puts* functions.	8
Unit - 3	
C Operators & Expressions: Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment & Decrement operators, Bitwise operators, Conditional operator, Special operators, Operator Precedence and Associativity, Evaluation of arithmetic expressions, Type conversion. **Control Structures:** Decision making Statements - Simple if, if-else, nested if-else, else-if ladder, Switch case, goto, break & continue statements, Looping Statements - Entry controlled and exit controlled statements, *while, do-while, for* loops, Nested loops.	12
Unit - 4	
Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation, Two Dimensional arrays - Declaration, Initialization and Memory representation. **Strings:** Declaring & Initializing string - strlen, String handling functions - *strcpy, strcmp, strcat*, Character handling functions - *isalpha, isdigit, islower, isupper, isalnum, isspace, tolower, toupper* etc.	12

Pointers in C: Understanding pointers - Declaring and initializing pointers, accessing address and value of variables using pointers, Pointers and Arrays, Pointer Arithmetic, Advantages and disadvantages of using pointers.	
Unit - 5	
User Defined Functions: Need for user defined functions, Format of C user defined functions, Components of user defined functions - return type, name, parameter list, function body, return statement and function call. Categories of user defined functions - With and without parameters and return type **User defined data types:** Structures - Structure Definition, Advantages of Structure, declaring structure variables, accessing structure members, Structure members initialization, comparing structure variables, Array of Structures, Unions - Union definition, difference between Structures and Unions.	16

Text Books

1. Pradeep K. Sinha and Priti Sinha: Computer Fundamentals (Sixth Edition), BPB Publication
2. E. Balaguruswamy: Programming in ANSI C (TMH)

References

1. Kanetkar: Programming with ANSI and TURBO C (Pearson Education)
2. V. Rajaraman: Programming in C (PHI - EEE)
3. B. Gottfried: Programming with C (TMH)
4. Kernighan & Ritchie: The C Programming Language (PHI)
5. Yashwant Kanetkar: Let us C
6. P.B. Kotiir: Programming in C (Sapna Book House)

Course Code: BSC-IILab	Course Title: C Programming Lab
Course Credit: 02	Hour of Teaching/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 03

Practice Lab

The following activities be carried out/ discussed in the lab during the initial period of the semester.

1. Basic Computer Proficiency
   a. Familiarization of Computer Hardware Parts
   b. Basic Computer Operations and Maintenance
   c. Do's and Don'ts in Safety Guidelines in Computer Lab
2. Familiarization of Basic Software – Operating System, Word Processors, Internet Browsers, Integrated Development Environment (IDE) with Examples.
3. Type Program Code, Debug and Compile basic programs covering C Programming fundamentals discussed during theory classes.

Programming Lab Part

Part A

1. Write a C Program to read radius and find area and volume of a sphere.
2. Write a C Program to read three numbers and find the biggest of three.
3. Write a C Program to demonstrate library functions in math.h (at least 5)
4. Write a C Program to read a number, find the sum of the digits, reverse the number and check if its palindrome.
5. Write a C Program to read numbers from keyboard continuously till the user presses 000 and to find the sum of only positive numbers.
6. Write a C Program to read percentage of marks and to display appropriate grade (using switch case)
7. Write a C Program to find the roots of quadratic equation (if else ladder)
8. Write a C program to read marks scored in 3 subjects by a students and find the average of marks and result (Demonstration of single dimensional array)
9. Write a C Program to remove Duplicate Elements in a single dimensional Array
10. Program to perform addition and subtraction of Matrices

Part B

1. Write a C Program to find the length of a string without using built in function
2. Write a C Program to demonstrate string functions (at least 5)
3. Write a C Program to demonstrate pointers in C
4. Write a C Program to generate n prime numbers by defining your own C function
5. Write a C Program to find the value of a square matrix using function
6. Write a C Program to read, display and multiply two matrices using functions
7. Write a C Program to read a string and to find the number of alphabets, digits, vowels, consonants, spaces and special characters.
8. Write a C Program to Reverse a String using pointer
9. Write a C Program to demonstrate student structure to read & display records of n students
10. Write a C Program to demonstrate the difference between structure & union.

Note: Student has to execute a minimum of 2 programs in each part to complete the Lab course.

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program – 1 from Part A	Flowchart / Algorithm	04
	Writing the Program	05
	Execution and Formatting	06
Program - 2 from Part B	Writing the Program	08
	Execution and Formatting	07
Viva Voce based on C Programming		05
Practical Record		05
Total		40

Semester: II

Course Code: DSC-3	Course Title: Data Structures using C
Course Credits: 04	Hour of Teaching/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms
- Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs
- Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs
- Demonstrate different methods for traversing trees
- Compare alternative implementations of data structures with respect to performance
- Describe the concept of recursion, give examples of its use
- Discuss the computational efficiency of the principal algorithms for sorting and searching

Course Content

Content	Hours
Unit - 1	
Introduction to data structures: Definition, Types of data structures – Primitive & Non-primitive, Linear and Non-linear. Operations on data structures Algorithm Specification, Performance Analysis, Performance Measurement. Recursion: Definition, Types of recursion, Examples - Fibonacci numbers, GCD, Binomial coefficient (C), Towers of Hanoi, Comparison between iterative and recursive functions.	8
Unit - 2	
Arrays: Basic Concepts – Definition, Declaration, Initialization, Operations on arrays, Types of arrays, Arrays as abstract data types (ADT), Representation of Linear Arrays in memory; Traversing linear arrays, Inserting and deleting elements, Sorting – Selection sort, Bubble sort, Quick sort, Insertion sort, merge sort, Searching - Sequential search, Binary search, Iterative and Recursive searching. Multidimensional arrays: Representation of multidimensional arrays, Sparse matrices.	12

Unit - 3	
Stacks: Basic Concepts – Definition and Representation of stacks, Operations on stacks, Applications of stacks: Infix, postfix and prefix notations, Conversion from infix to postfix using stack, Evaluation of postfix expression using stack, Application of stack in function calls. Queues: Basic Concepts – Definition and Representation of queues, Types of queues – Simple queues, Circular queues, Double ended queues, Priority queues, Operations on Simple queues.	15
Unit - 4	
Dynamic memory allocation: Static & Dynamic memory allocation, Memory allocation and de-allocation functions - malloc, calloc, realloc and free. Linked list: Basic Concepts – Definition and Representation of linked list, Types of linked lists – Singly linked list, Doubly linked list, Header linked list, Circular linked list; Representation of Linked list in Memory. Operations on Singly linked lists – Traversing, Searching, Insertion, Deletion, Memory allocation: Garbage collection.	12
Unit - 5	
Trees: Definition, Tree terminologies –node, root node, parent node, ancestors of a node, siblings, terminal & non-terminal nodes, degree of a node, level, edge, path, depth. Binary tree, Type of binary trees – strict binary tree, complete binary tree, binary search tree and heap tree; Array representation of binary tree, Traversal of binary tree, preorder, inorder and postorder traversal; Reconstruction of a binary tree when any two of the traversals are given.	10

Text Books

1. Sartaj Sahni: Fundamentals of Data Structures

References

1. Tanenbaum: Data structures using C (Pearson Education)
2. Kamthane: Introduction to Data structures (Pearson Education)
3. Y. Kanetkar: Data Structures Using C (BPB)
4. Padma Reddy: Data Structures using C – 1000 Problems and Solutions (McGraw-Hill Education, 2007)

Course Code: DSC-Lab	Course Title: Data Structures Lab
Course Credit: 02	Hour of Teaching/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 04

Programming Lab

Part A:

1. Write a C Program to find GCD using recursive function.
2. Write a C Program to display Pascal Triangle using binomial function.
3. Write a C Program to generate n Fibonacci numbers using recursive function.
4. Write a C Program to implement Towers of Hanoi.
5. Write a C Program to implement dynamic array, find smallest and largest element of the array.
6. Write a C Program to read the names of cities and arrange them alphabetically using bubble sort.
7. Write a C Program to sort the given list using selection sort technique.
8. Write a C Program to sort the given list using insertion sort technique.

Part B:

1. Write a C Program to sort the given list using quick sort technique.
2. Write a C Program to sort the given list using merge sort technique.
3. Write a C Program to search an element using linear search technique and recursive binary search technique.
4. Write a C Program to implement stack.
5. Write a C Program to convert an infix expression to postfix.
6. Write a C Program to implement simple queue.
7. Write a C Program to implement linear linked list.
8. Write a C Program to implement traversal of a binary tree.

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program – 1 from Part A	Algorithm	02
	Writing the Program	04
	Execution and Formatting	02
Program – 2 from Part B	Algorithm	04
	Writing the Program	06
	Execution and Formatting	04
Viva Voce based on Data Structures		02
Practical Record		02
Total		40

Syllabus for Open Electives in Computer Science:

Course Code: CSOE-1	Course Title: Computer Fundamentals
Course Credit: 03	Hour of Teaching/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- Introduction to computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers
- Operating systems, functions of operating systems, classification of operating systems, kernel, shell, basics of Unix shell programming, booting
- Databases, why databases are used, intro SQL, data types in SQL, introduction of queries - select, alter, update, delete, truncate, using where, and or, in, not in
- Internet basics, features, applications, services, internet service providers, domain name system, browsing, email, searching
- Web Programming basics, introduction of HTML and CSS programming
- Introduction of computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers.

Course Content

Content	Hours
Unit - 1	
Fundamentals of Computers: Introduction to Computers - Computer Definition, Evolution and History of Computers, Basic Organization of a Digital Computer, Number Systems – different types, conversion from one number system to another, Computer Codes - BCD, Gray Code, ASCII and Unicode, Boolean Algebra – Boolean Operators with Truth Tables, Types of Software - System Software and Utility Software, Computer Languages - Machine Level, Assembly Level & High Level Languages, Translator Programs – Assembler, Interpreter and Compiler, Planning a Computer Program - Algorithm, Flowchart and Pseudo code with Examples. [Last 5 hours of teaching.]	10
Unit-2	

Introduction to Computer: Characteristics of computers. Classification of Digital Computer Systems: Microcomputers, Minicomputers, Mainframes, Super computers. Anatomy of Computer: Introduction, Functional & Components of a Computer, Central Processing Unit, Storage units, Input and output Devices, How CPU and memory works, Program execution with illustrative examples, Introduction to microcontrollers.	12
Unit-3	
Operating System Fundamentals: Operating Systems: Introduction, Functions of an operating System, Classification of Operating Systems, System programs, Application programs, Utilities, The Unix Operating System, Basic Unix commands, Microkernel Based Operating System, Booting.	08
Unit-4	
Introduction to Database Management Systems: Database, DBMS, Why Database, File system vs DBMS, Database applications, Database users, Introduction to SQL, Data types, Classification of SQL: DDL with constraints, DML, DCL, TCL	08
Unit-5	
Internet Basics: Introduction, Features of Internet, Internet application, Services of Internet, Logical and physical addresses, Internet Service Providers, Domain Name System. Web Basics: Introduction to web, web browsers, http/https, URL, HTML5, CSS	08

Text Books:

1. Pradeep K. Sinha and Priti Sinha: Computer Fundamentals (Sixth Edition), BPB Publication
2. David Riley and Kenny Hunt, Computational thinking for modern solver, Chapman & Hall/CRC

References:

1. J. Glenn Brookshear" Computer Science An Overview" Addision-Wesley, Twelfth Edition
2. R.G. Dromey, "How to solve it by Computer", PHI

Course Code: 15CSE02	Course Title: Problem Solving and C Programming Concepts
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

1. Introduction to computers: classification of computers, anatomy of computer, constituents and architecture, microcontrollers
2. Operating systems: functions of operating systems, classification of operating systems, kernel, shell, basics of Unix, shell programming, booting
3. Databases: why databases are used, users, SQL, datatypes in SQL, introduction of queries - select, alter, update, delete, truncate, using where, and or, in, not in
4. Internet: basics, features, applications, services, internet service providers, domain name system, browsing, email, searching
5. Web Programming basics: introduction of HTML and CSS programming
6. Introduction of computers: classification of computers, anatomy of computer, constituents and architecture, microcontrollers

Course Content

Content	Hours
Unit – 1	
Problem Solving Techniques: Problem solving methodologies – problem definition, analysis, design, debugging, testing, documentation and maintenance. Design Tools – ALGORITHM: definition, characteristics, advantages and disadvantages. FLOWCHART – definition, symbols, advantages and disadvantages. Writing an algorithm and flowchart: Area of circle, arithmetical operations, simple interest and compound interest, quadratic equation, largest of three numbers, sum of N natural numbers, factorial of number, Fibonacci series, prime number, reverse a given number, evaluation of series like sin(x), cos(x), log(x) etc.	10
Unit-2	

Introduction to C Programming: Overview of C: History and Features of C: Structure of a C Program with Examples: Creating and Executing a C Program: Compilation process in C. **C Programming Basic Concepts:** C Character Set: C tokens - keywords, identifiers, constants, and variables: Data types: Declaration & initialization of variables: Symbolic constants: Formatted I/O functions - printf and scanf.	10
Unit-3	
C Operators & Expressions: Arithmetic operators: Relational operators: Logical operators: Assignment operators: Increment & Decrement operators: Bitwise operators: Conditional operator: Special operators: Operator Precedence and Associatively: Evaluation of arithmetic expressions: Type conversion.	08
Unit-4	
Decision making, branching and looping: Decision making - if and if-else statement, nested if, else if ladder, switch statements, conditional operator, goto statement. Looping - while, do-while and for, nested for, break and continue statements. Programs on these concepts.	09
Unit-5	
Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation. Two Dimensional arrays - Declaration, Initialization and Memory representation.	08

References:

1. Computer Concepts and Programming, Padma Reddy.
2. Let us C, Yashavanth Kanetkar.
3. Ansi C, Balaguruswamy.
4. Problem solving with C, M. T. Somashekara and D. S. Guru.

Course Code: CA0203	Course Title: Office Automation
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Content

Content	Hours
Unit - 1	
Windows Desk top - GUI: Definition, Standards, Cursors/Pointers, Icons, GUI Menus, GUI-Share Data - Desktop icons and their functions: My computer, My documents, Network neighbourhood, Recycle bin, Quick launch tool bar, System tray, Start menu, Task bar - Dialog Boxes: List Box, Spin Control Box, Slide, Drop-down list, Radio button, Check box, Text box, Task Bar - System Tray - Quick launch tool bar - Start button - Parts of Windows -Title bar-Menu bar - Scroll bar- Status bar- Maximize, Minimize, close and Resize & Moving a Window - Windows - Start Menu -Help Menu- Preview Menu: Logoff & Shutdown - Keyboard Accelerators: Key board short keys or hotkeys	08
Unit- 2	
MS Word - Working with Documents -Opening & Saving files, Editing text documents, Inserting, Deleting, Cut, Copy, Paste, Undo, Redo, Find, Search, Replace, Formatting page & setting Margins, Converting files to different formats, Importing & Exporting documents, Sending files as others, Using Tool bars, Ruler, Using Icons, Using help, Formatting Documents - Setting Font styles, Font selection- style, size, colour etc, Type face - Bold, Italic, Underline, Case settings, Highlighting, Special symbols, Setting Paragraph style, Alignments, Indents, Line Space, Margins, Bullets & Numbering, Setting Page style - Formatting Page, Page tab, Margins, Layout settings, Paper tray, Border & Shading, Columns, Header & footer, Setting Positions & attributes - Shortcut keys, Inserting manual page break, Column break and line breaks, creating sections & frames, Additioning & Wrapping, Setting Document styles, Table of Contents, Index, Page Numbering, Date & Time, Auto-text etc, Creating Master Documents, Web page, Creating Tables- Table settings, Borders, Alignments, Insertion, deletion, Merging, Splitting, Sorting, and Formula, Drawing - Inserting Cliplart, Pictures, Files etc, Tools – Word Completion, Spell	10

Checks. Mail merge. Templates. Printing Documents – Shortcut keys.	
Unit-3	
MS Excel: Spread Sheet & its Applications. Opening Spreadsheet. Menus – main menu. Formula Editing. Formatting. Toolbars. Using Icons. Using help. Shortcuts. Spreadsheet types. Working with Spreadsheets- opening, saving files, setting Margins. Converting files to different formats (importing, exporting, sending files to others). Spread sheet addressing - Rows, Columns & Cells. Referring Cells & Selecting Cells – Shortcut Keys. Entering & Deleting Data. Entering data. Cut, Copy, Paste, Undo, Redo. Filling Continuous rows, columns. Highlighting values. Find, Search & replace. Inserting Data. Insert Cells, Columns, rows & sheets. Symbols. Data from external files. Frames, Clipart, Pictures, Files etc. Inserting Functions. Manual breaks. Setting Formulas - finding total in a column or row. Mathematical operations (Addition, Subtraction, Multiplication, Division, Exponentiation). Using other Formulae. Formatting Spreadsheets. Formatting layout for Graphics, Clipart etc. Worksheet Row & Column Headers. Sheet Name. Row height & Column width. Visibility - Row, Column, Sheet. Security. Sheet Formatting & style. Sheet background, Colour etc. Borders & Shading – Shortcut keys. Working with sheets – Sorting, Filtering, Validation, Consolidation, and Editorial. Creating Charts - Drawing, Printing, Using Tools	10
Unit-4	
MS Power point: Introduction to presentation – Opening new presentation. Different presentation templates. Setting backgrounds. Selecting presentation layouts. Creating a presentation – Setting Presentation style. Adding text to the Presentation. Formatting a Presentation – Adding style, Colour, gradient, fills. Arranging objects. Adding Header & Footer, Slide Background, Slide layout. Adding Graphics to the Presentation- Inserting pictures, movies, tables etc into presentation. Drawing Pictures using Draw. Adding Effects to the Presentation- Setting Animation & transition effect. Printing Handouts. Generating Standalone Presentation viewer.	10
Unit-5	

Internet and Web Browsers: Definition of Web Addressing-URL-Different types of Internet Connections: Dial up connection, Broad band (ISDN, DSL, Cable), Wireless (Wi-Fi, WiMax, Satellite, Mobile) naming convention, browsers and its types, internet browsing, searching - Search Engines - Portals - Social Networking sites- Blogs - viewing a webpage- downloading and uploading the web site. Creating an email-ID, e-mail reading, saving, printing, forwarding and deleting the mails, checking the mails, viewing and running file attachments, addressing with cc and bcc.	08

References:

1. Fundamentals of computers - V.Rajaraman - Prentice- Hall of India
2. Microsoft Office 2007 Bible - John Walkenbach,Herb Tyson,Faithe Wempen,Cary N.Prague,Michael R.groh,Peter G.Aitken, and Lisa A.Bucki -Wiley India pvt.ltd
3. Computer Fundamentals - P.K. Sinha Publisher: BPB Publications.
4. Computer & Internet Basics Step-by-Step - De-end the Clutter - Infinity Publishing
5. https://en.wikipedia.org
6. http://windows.microsoft.com/en-in/windows/windows-basics-all-topics

CHEMISTRY

DSC-3: Analytical and Organic Chemistry-II

Contact Hours: 56 Work load: 4 Hours/Week.

Credit Points: 4

Evaluation: Continuous

Internal Assessment- 40 Marks

Semester End Examination - 60 Marks

Course Objectives:

1) Interrelationship among frequency, wavelength and wave number and importance of validation parameters of an instrumental method will be taught
2) Principle, instrumentation and applications of spectrophotometry, nephelometry and turbidimetry will be taught
3) Fundamentals of separation methods and principles of paper, thin layer and column chromatography will be taught
4) Principle, types and applications of solvent extraction will be taught
5) Principle and mechanism of ion-exchange, types of resins and synthetic and industrial applications of ion-exchange chromatography will be taught
6) The concept of mechanism and its importance will be taught to the student
7) Concept and importance of intermediates in organic chemistry will be taught taking proper examples
8) The various techniques for identification of reaction mechanism will be taught to the student taking proper examples
9) Concept of stereochemistry and its importance will be taught
10) The various projection formulae and the techniques of designating the molecules into R, S, D, L will be taught taking proper examples
11) The theory and concept of Optical isomerism and its importance and the techniques to differentiate between them will be taught taking examples

Course Specific Outcomes

After the completion of this course, the student would be able to

1) Understand the importance of fundamental law and validation parameters in chemical analysis
2) Know how different analytes in different matrices (water and real samples) can be determined by spectrophotometric, nephelometric and turbidimetric methods

3) Understand the importance of chemical analysis by paper, thin layer and column chromatography.
4) Apply solvent extraction method for quantitative determination of metal ions in different samples.
5) Utilize the ion-exchange chromatography for domestic and industrial applications.
6) Explain mechanism for a given reaction.
7) Predict the probable mechanism for an reaction. Explain the importance of reaction intermediates. Its role and techniques of generating such intermediates.
8) Explain the importance of Stereochemistry in predicting the structure and property of organic molecules.
9) Predict the configuration of an organic molecule and able to designate it.
10) Identify the chiral molecules and predict its actual configuration

Unit-I

Quantitative analysis-Instrumental methods

Electromagnetic spectrum, absorption of electromagnetic radiation, Definition and units of frequency, wavelength, wave number, Beer's law, Bouguer-Lambert law derivation, deviations from Beer's law, limitations, construction of calibration graph (Plot of absorbance versus concentration), Evaluation Procedures: standard addition, internal standard addition, validation parameters-detection limit, sensitivity, dynamic/linearity range, Instrumentation: single beam and double beam spectrophotometers, quantitative applications of colorimetric Determination of Fe, Mn, Cu, Ti and PO_4^{3-} and numerical problems on application of Beer's law. 10 hrs

Nephelometry and Turbidimetry: Introduction, principle, instrumentation of nephelometry and turbidimetry, effects of concentration, particle size and wavelength on scattering, choice between nephelometry, applications of nephelometry and turbidimetry (determination of SO_4^{2-} and PO_4^{3-}) 04 hrs

Unit-II

Separation methods

Fundamentals of chromatography: General description, definition, terms and parameters used in chromatograms, Classification of chromatographic methods, criteria for selection of stationary and mobile phase and nature of adsorbents, Principles of paper, thin layer, column chromatograms, Column efficiency, factors affecting the column efficiency, van Deemter's equation and its modern version 08hrs

Paper chromatography: Theory and applications

Thin layer chromatography (TLC): Variation, Rf value, efficiency of TLC, types, methodology, selection of stationary and mobile phases, development, layer regents, identification and detection, quantitative applications 04 hrs

Solvent Extraction: Types, batch, continuous, efficiency, selectivity, distribution coefficient, Nernst distribution law, derivation, factors affecting the partition relationship between its extraction and multiple fraction. Numerical problems on batch extraction. Solvent extraction of Fe and copper 04hrs

Ion exchange chromatography: resins, types with examples, cation exchange and anion exchange resins, mechanism of cation and anion exchange process and applications of ion- exchange chromatography (softening of hard water, separation of ammonium, industrial applications) 03hrs

Unit-III

Reaction intermediates: Generation, Stability and Reactions of:

i) Carbocations: Pinacone-pinacol, and Pinacol-Pinacolone Rearrangement.

ii) Carbanions: Perkin Reaction, Aldocondensation, Claisen-Schmidt condensation.

iii) Free Radicals: Sandmeyer Reaction

iv) Carbenes and Nitrenes: Singlet and Triplet states, their relative stability and reactivity

v)

Aryne 06 hrs

Methods for Identifying Reaction Mechanism: Product analysis, isolation and identification Of Intermediates, Stereochemical Evidences, Effect of Catalyst, crossover Experiments, Isotope studies, Kinetic Studies. 06 hrs

Unit-IV

Stereochemistry of Organic Compounds:

Introduction: Fischer projection, Newman and Sawhorse projection formulae and their interconversions.

Geometrical Isomerism: Cis-trans and syn-anti isomerism, E/Z notations with C.I.P rules. Optical Isomerism: elements of symmetry, Optical activity, Specific rotation, Chirality, Asymmetry, Enantiomers, Molecules with two or more chiral centres, Diastereoisomers, meso structures, Racemic mixtures and Resolution, Relative and absolute configuration: D/L and R/S designations 14hrs

References:

1) Fundamental of Analytical Chemistry, D.A. Skoog, D.M. West, Holler and Crouch, 8th edition, Saunders College Publishing, New York (2004).
2) Analytical Chemistry, G.D. Christian, 6th edition, Wiley-India (2007).

3) Quantitative Analysis, R.A. Day and A.L. Underwood, 6th edition, PHI Learning Pvt Ltd, New Delhi(2009)
4) Vogel's Textbook of Quantitative Chemical Analysis, J. Mendham, R.C. Denney, J.D. Barnes and M.J.K. Thomas, 6th edition, Third Indian Reprint, Pearson Education Pvt. Ltd.(2007).
5) Organic Reaction Mechanism by V.K. Ahluwalia and R.K. Parashar (Narosa Publishers)
6) Organic Chemistry by S.M. Mukherji, S.P. Singh and R.K. Kapoor (Narosa Publishers)
7) Morrison R.N and Boyd R.N. Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education)
8) Finar I.L. Organic Chemistry (Volume I), Finar I.L. (Volume II) Stereochemistry and the Chemistry of Natural Products, Dorling Kindersley (India) Pvt.Ltd. (Pearson Education)
9) Kalsi P.S. Stereochemistry, conformation and Mechanism, New age International
10) Eliel E.L and Wilen S.H, Stereochemistry of Organic Compounds, Wiley London

PRACTICALS

Credit Points: 2 **Teaching Hours: 4 hrs**

Evaluation : Continuous

Internal Assessment- 20 marks

Semester End Examination: 30 marks

Course Objectives

1) To impart skills related to preparation of stock and working solutions and handling of instrumental methods
2) To know the principle of colorimetric analysis and construction of calibration plot
3) To understand the chemistry involved in colorimetric determination of metal ions and anions
4) To determine the values of different metal ions present in solution
5) To impart knowledge on the importance of functional groups in organic compounds
6) Techniques to identify the functional groups in an compound by performing physical and chemical tests
7) To record the melting point/boiling point
8) To prepare suitable derivative for the compound and to characterize it

Course specific outcomes

After the completion of this course, the student would be able to

1) Understand the importance of instrumental methods for quantitative applications

2) Apply colorimetric methods for accurate determination of metal ions and anions in water/ real samples

3) Understand how functional groups in an organic compound is responsible for its characteristic property

4) Learn the importance of qualitative tests in identifying functional groups

5) Learn how to prepare a derivative for particular functional groups and how to purify it

PART-A (Analytical Chemistry)

1) Colorimetric determination of copper using ammonia solution

2) Colorimetric determination of iron using thiocyanate solution

3) Colorimetric determination of nickel using DMG solution

4) Colorimetric determination of titanium using hydrogen peroxide

5) Colorimetric determination of nitrite in a water sample (Black coupling Reaction/ Griess reagent)

6) Colorimetric determination of phosphate as ammonium phosphomolybdate

7) Determination of R_f values of two or three component systems by TLC

8) Separation of different metal ions by paper chromatography/ Solvent extraction of Ni using dmg solution (Demonstration)

(At least six experiments should be carried out)

PART-B (Organic Chemistry)

Qualitative analysis of bifunctional Organic compounds such as Salicylic acid, p-Nitro benzoic acid, Anthranilic acid, p-Chloro benzoic acid, p-Cresol, p-Anisol, Resorcinol, p-Nitrophenol, p-nitrotoluene, o, p-Nitro aniline, p-Nitroaniline, p-Toluidine, p-Chloro aniline, p-Bromoacetanilide, Ethyl Salicylate, Salicylaldehyde, Acetophenone, p-Dichlorobenzene, p-Nitro toluene, Benzamide etc. (At least 6-8 compounds to be analysed in a semester)

References

1) Vogel's Textbook of Quantitative Chemical Analysis, J. Mendham, R.C. Denney, J.D.Barnes and M.J.K. Thomas, 6th edition, First Indian Reprint, Pearson Education (Asia) Pte. Ltd. (2002)

2) Vogel's Text Book of Qualitative Chemical Analysis (ELBS)

CHEMISTRY

DSC-4: Inorganic and Physical Chemistry-II

Contact Hours: 56 Work load: 4 Hours/Week.

Credit Points :4

Evaluation: Continuous

Internal Assessment- 40 Marks

Semester End Examination - 60 Marks

Course Objectives:

Students learn about

1. Different types of bonding in molecules/compounds/ions
2. The structures of molecules/compounds/ions based on different models/ theories
3. Properties of compounds based on bonding and structure
4. The fundamentals of thermodynamics including the laws, the concept of entropy and free energy functions and their applications
5. The concept of surface chemistry, catalysis and their applications
6. The theoretical and experimental aspects of chemical kinetics including basic theories of reaction rates and methods of determining order
7. Electrochemistry dealing with electrolytes in solution. Conductance measurements and applications. Concept of ionic mobility and their determination

Course outcomes: After the completion of this course, the student would be able to

1. Predict the nature of the bond formed between different elements
2. Identify the possible type of arrangements of ions in ionic compounds
3. Write Born – Haber cycle for different ionic compounds
4. Relate different energy parameters like, lattice energy, enthalpy, enthalpy and ionization energy in the formation of ionic solids
5. Explain covalent nature in ionic compounds
6. Write the M.O. energy diagrams for simple molecules
7. Differentiate bonding in metals from their compounds
8. Learn important laws of thermodynamics and their applications to various thermodynamic systems
9. Understand adsorption processes and their mechanisms and the function and properties of a catalyst

10. Apply adsorption as a versatile method for water pollution control.
11. Understand the concept of rate of a chemical reaction, integrated rate equations, energy of activation and determination of order of a reaction based on experimental data.
12. Know different types of electrolytes, usefulness of conductance and ion mobility measurements.
13. Determine the transport numbers.

Unit - I

Structure and Bonding -I

The ionic bond: Structures of ionic solids, Radius ratio rules, Calculation of some limiting radius ratio values. Coordination number 3 (plane triangle), Coordination number 4 (tetrahedral and square planar) Coordination number 8 (octahedral). Close packing

08hrs

Classification of ionic structures

Ionic compounds of the type AX (ZnS, NaCl, CsCl)

Ionic compounds of the type AX_2 (Calcium fluoride (fluorite) and Rutile structures)and structures CdI_2 Cadmium iodide structure Limitations of radius ratio concept. **02 hrs**

Lattice energy and Born-Haber cycle: Derivation of Born-Lande equation and its drawbacks. Kapustinskii equation, solvation energy and solubility of ionic solids, polarizing power and polarizability, Fajan's rules with applications. Numerical problems

05 hrs

Covalent bond: The Lewis theory, The octet rule, Exceptions to the octet rule, Sidgwick-Powell theory, Valence bond theory and its limitations, Valence shell electron pair repulsion (VSEPR) theory, Effect of lone pairs and multiple bonds, Limitations of principle. Examples using VSEPR theory: BF_3 and NF_3, Isolated ions: NH_4^+, H_3O^+, PO_4^{3-}, CO_3^{2-}, SF_4, I_3^- and Ig^+, IBr_2 and IF_7. Limitations of VSEPR.

04 hrs

Unit - II

Structure and Bonding -II

Concept of resonance, resonance energy, hybridization, types of hybridization: ex: sp^1, sp^2, sp^3, sp^3d^1, sp^3d^2, sp^3d^3 with one example each, and energetics of hybridization (qualitative). Bent's rule

03 hrs

Molecular Orbital theory

LCAO concept: s-s, s-p, p-p, s-d and p-d combinations of orbitals, bonding, nonbonding and antibonding molecular orbitals, non-bonding combinations of orbitals. Rules for linear combination of atomic orbitals

Examples of molecular orbital treatment for homonuclear diatomic molecules

Molecule H_2^+, H_2 molecule, He_2 molecule ion, O_2 molecule, Be_2 molecule & molecule

Complexes, N_2 molecule, N_2^+, O_2 molecule, B_2 and O_2^+

MO energy diagram of heteronuclear diatomic molecules with examples (NO, NO$^+$, CO and HCl). Calculation of bond order, relationship between bond order, bond energy and bond length, magnetic properties based on MOT. 07 hrs

Metallic Bonding

General properties of metals: Conductivity, Lustre, Malleability and ductile forms

Crystal structures of metals and Bond lengths

Theories of bonding in metals:

Free electron theory, Valence bond theory, Band theory of solids Prediction of conducting properties of conductors, insulators and semiconductors, extrinsic and intrinsic semiconductors using band theory. 04 hrs

UNIT III

First Law of Thermodynamics

Thermodynamic Impotent, Reversible and Irreversible Processes, Nature of Heat and Work, Internal Energy, First Law of Thermodynamics, Enthalpy of a System, Work done in isothermal and adiabatic expansion of an ideal gas, Numerical problems, Joule - Thomson Expansion, Relation between Joule Thomson coefficient and other thermodynamic parameters. 08 hrs

Second Law of Thermodynamics

Concept of entropy, thermodynamic scale of temperature, Statements of the Second Law of Thermodynamics, molecular and statistical interpretation of entropy, Calculation of entropy change for reversible and irreversible processes, Free Energy Functions: Gibbs and Helmholtz energy, Variation of S, G, A with T, V and P, Numerical problems, free energy change and constants, Gibbs-Helmholtz equation. 08 hrs

Third Law of Thermodynamics

Statement of third law, concept of residual entropy, calculation of absolute entropy of molecules. 03 Hrs

Surface Chemistry

Adsorption

Types of adsorption, isotherms, Freundlich adsorption isotherm (only equation), its limitations, Langmuir adsorption isotherm (derivation to be done) and BET equation (derivation not included). 02 hrs

Catalysis:

Types of Catalysis and theories with examples (intermediate compound theory and adsorption theory). Theory of acid base catalysis, Michaelis- Menten mechanism. Heterogeneous catalysis: surface reaction, unimolecular, bimolecular surface reactions. Autocatalysis with example. Applications: Design principles, synthesis of ionic compounds from industrial wastewater and treatment of surface water (qualitative). 04 Hrs

PART IV

Chemical Kinetics

Differential and integrated form of rate expressions up to second order reactions. Derivation of expression of rate constant of second order reaction (only one & it is) Problems on rate constant (only). Methods of determination of order of a reaction. Temperature dependence of reaction rates. Arrhenius equation, activation energy. Numerical problems on Arrhenius equation in calculating energy of activation and rate constants. Collision theory of reaction rates. Unimolecular mechanism, qualitative treatment of the theory of absolute reaction rates. Experimental determination of kinetics of (i) inversion of cane sugar by polarimetric method (ii) spectrophotometric method for the reaction between potassium persulphate and potassium iodide. 07 Hrs

Electrochemistry –I

Arrhenius theory of electrolytic dissociation. Merits and Demerits. Conductance, specific conductance, equivalent and molar conductance and their variation with dilution. Molar conductivity at infinite dilution. Numerical problems.

Kohlrausch's law of independent migration of ions and its applications, Debye-Huckel Onsager equation for strong electrolytes (no derivation). Debye-Huckel- Onsager equation, ionic mobilities and their determinations, transference numbers and their relation to ionic mobilities. Determination of transport numbers using Hittorff's and Moving Boundary methods.

Applications of conductance measurements: (i) degree of dissociation of weak electrolytes (ii) ionic product of water (iii) solubility and solubility product of sparingly soluble salts (iv) conductometric titrations (acid-base titrations only) and (v) hydrolysis constants of salts. Numerical problems. 07 Hrs

Reference Books

1. Advanced Inorganic Chemistry, 3rd ed., F.A. Cotton and G. Wilkinson, John Wiley and Sons, 1988
2. Inorganic Chemistry, Principles of structure and reactivity, 3rd ed., James E Huheey, Ellen E. Keiter and Richard L. Keiter, Harper Collins college Pub., 1993
3. Inorganic Chemistry, 3rd ed., Shriver and Atkins, Oxford University Press, 1999
4. Organometallic Chemistry, A Unified approach, R.C. Mehrotra and A. Singh, Wiley Eastern, New Delhi
5. Concepts and Models in Inorganic Chemistry, 3rd ed., Douglas, Mc Daniel and Alexander
6. A concise Inorganic Chemistry, J.D. Lee, ELBS Ed., 1991
7. Modern aspects of Inorganic Chemistry, H.J. Emeleus and A.G. Sharpe, ELBS
8. Chemistry of the elements, Greenwood and Earnshaw, Pergamon Press, Oxford, 1988
9. Solid state Chemistry and its application, A.R. West, John Wiley and sons
10. Theoretical Principles of Inorganic Chemistry, V ed., G.S. Manku, Tata, Mc Graw Hill, 1980
11. Peter Atkins & Julio De Paula, Physical Chemistry, 8th Ed., Oxford University Press(2010).
12. G.W. Castellan, Physical Chemistry, 4th Ed., Narosa (2004)
13. R.G. Mortimer, Physical Chemistry 3rd Ed., Elsevier, Noida, UP (2009).
14. B.R. Puri, L.R. Sharma and M.S. Pathania, Principal of Physical Chemistry, Vishal Publishing Co.
15. B.S. Bahl, G.D. Tuli and Arun Bahl, Essentials of Physical Chemistry, S Chand & Company Ltd.
16. A.S. Negi and S.C. Anand, A textbook of Physical Chemistry, New Age International Publishers
17. B.N. Dev, Advanced Physical Chemistry, S Chand & Company Ltd.
18. R.L. Madan, Chemistry for Degree Students, Semester I, II, III and IV, S Chand and Company Ltd.
19. S.L. Kapil, C.P. Dharmatti and U.N. Dash, Textbook of Physical Chemistry, Sultan Chand and Sons.

PRACTICALS

Credit Points: 2 Teaching Hours: 4Hrs

Evaluation: Continuous

Internal Assessment: 20 marks

Semester End Examination : 30 marks

Course objectives:

To attain practical knowledge about:

1. Analytical skills in detecting the constituents present in unknown samples by systematically carrying out the qualitative analysis.
2. The methods of determining rates of chemical reactions.
3. Designing electrochemical cells and making measurements related to it.
4. Determination of physical characteristics of electrolytes using conductivity measurements in solution.
5. Adsorption phenomenon, mechanism and basic models to explain adsorption.
6. Simple techniques like conductometry to obtain physicochemical parameters of electrolytes.

Course outcomes: At the end of the course student would be able to:

1. Understand the chemical reactions involved in the detection of cations and anions.
2. Explain basic principles involved in classification of ions into groups in semi-micro qualitative analysis of salt mixture.
3. Carryout the separation of cations into groups and understand the concept of common anion effect.
4. Understand the choice of group reagents used in the analysis.
5. Analyse a simple inorganic salt mixture containing two anions and cations.
6. Use instruments like conductivity meter to obtain various physicochemical parameters.
7. Apply the theory about chemical kinetics and determine the velocity constants of various reactions.
8. Learn about the reaction mechanisms.
9. Interpret the behaviour of interfaces, the phenomena of physisorption and chemisorptions and their applications in chemical and industrial processes.
10. Learn to fit experimental data with theoretical models and interpret the data.

Part A- Inorganic Chemistry Practicals

Qualitative semi-micro analysis of mixtures containing 2 anions and 2 cations.

Emphasis should be given to the understanding of different reactions.

The following cations and anions are suggested:

Cations: NH_4^+, Pb^{2+}, Bi^{3+}, Cu^{2+}, Sb^{3+}, Fe^{3+}, Cd^{2+}, Sn^{2+}, Sn^{4+}, Mn^{2+}, Zn^{2+}, Co^{2+}, Ni^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Mg^{2+}, Na^+, K^+ and Li^+

Anions: CO_3^{2-}, CH_3COO^-, Cl^-, Br^-, I^-, NO_3^-, SO_4^{2-}, $C_2O_4^{2-}$ and PO_4^{3-}

Spot tests and flame tests to be carried out wherever possible. (At least six salt mixtures to be analysed)

Part B- Physical Chemistry Practicals

1. Determination of the enthalpy of neutralization of a strong acid with strong base
2. Verification of Freundlich and Langmuir isotherms for adsorption of acetic acid on activated charcoal.
3. The study of kinetics of potassium persulphate and potassium iodide volumetrically.
4. Determination of velocity constant for acid catalysed hydrolysis of methyl acetate
5. Determination of velocity constant for the saponification of ethyl acetate ($n = 2$) volumetrically.
6. Determination of equivalent conductivity of strong electrolyte and verification of DHO equation.
7. Determination of dissociation constant of weak acid by conductivity method
8. Conductometric titration of strong acid and strong base
9. Conductometric titration of weak acid and strong base
10. Determination of the hydrolysis constant of aniline hydrochloride conductometrically
11. Determination of solubility product of sparingly soluble salt conductometrically

(At least experiments to be conducted)

References

1. Vogel's Qualitative Analysis, Revised by G. Svehla, Pearson education 2002
2. J.B Yadav, Advanced Physical Chemistry, Krishna Prakashan Media (P) Ltd Meerut
3. Ahluwalia, V. D., Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co., New Delhi (2011).
4. Garland, C. W., Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry 8th Ed., McGraw-Hill, New York (2009).
5. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed., W.H.Freeman & Co., New York (2003).

Semester-I

B.Sc. / B.Sc. (Theory)

Title of the Course: Open Elective: Electrochemistry, Corrosion and Metallurgy

Number of Theory Credits	Number of lecture hours/semester
3	42

Evaluation Scheme for Theory:

Continuous Internal Assessment (CIA) – 30 Marks

Semester End Examination (SEE) – 50 marks

This course provides a broad introduction to the fundamental principles of Electrochemistry, Corrosion and Metallurgy. The students will gain an understanding of basic and practical applications in various fields of Electrochemistry, Corrosion and Metals and Alloy behaviour and manufacturing processes. This course is a valuable prerequisite for taking more technically challenging courses that will be required for career development.

Course Objectives:

This course will deal with

1. Types of conductance, concept of electrolytes, electrolytic cells, redox reactions and EMF
2. Concept of different types of electrochemical cells, Types of electrodes and electrodechemistry. Application of electrochemical series
3. Basic principles and applications of conductometric, potentiometric and P titrations.
4. Different types of Batteries their principle construction and working - lead-acid storage cell, lithium ion battery. Study of fuel cells.
5. Concept of corrosion, types of corrosion and its prevention by different methods. Introduction to electroplating
6. Introduction to ores and minerals, extraction of metals from their ores and purification, Eg: Manganese, Titanium and Uranium
7. Study of alloys, classification, production and uses of alloys.

Expected Course Outcomes:

Upon completion of the course students will be able to

1. Understand the concept of conductance in electrolytic solutions, electrolytes and

[illegible] factors involved in electrode reactions.

2. Learn the different types of electrochemical cells, their symbolic representation and application of electrochemical series.
3. Apply concentration, potentiometric and pH titrations.
4. Know the principle, construction and working of batteries.
5. Understand different types of corrosion and its prevention by different methods.
6. Learn the methods of extraction of metals from their ores and purification.

UNIT-I

Electrochemistry

Conductance, specific and molar conductance Types of Electrolytes, Conductivity in electrolytic solution, Factors [illegible] Kohlrausch's law and its application, Numerical. Conductance of Weak electrolyte at infinite dilution.

Oxidation – reduction reactions, electrode potential, EMF of an electrochemical cell, cell reaction, Daniel cell, dry Cell – electrolytic and Galvanic cell. Representation of a cell. Standard electrode potential, Nernst equation (No derivation) and its application to chemical cell, Electrochemical series and its importance. Types of Electrodes.

Basic Principles of (i) Conductometric titrations- HCl Vs NaOH, CH3COOH Vs NaOH
(ii) Potentiometric titrations: Acid-base titration- HCl Vs NaOH, Redox titration(KMnO4 Vs $K_2Cr_2O_7$)

Determination of PH using glass electrode. **12 hrs**

Batteries- Primary and Secondary batteries, Battery components and their role. Working of the following Batteries- Lead acid, Lithium storage Batteries, Fuel cells. **2 hrs**

UNIT-II

Corrosion- Introduction, definition, Types of Corrosion, Corrosion rate, Factors affecting corrosion rate, Metallic factor-purity, electrode potential of metal, hydrogen over voltage, Nature of corrosion product, Environmental Factors-Temperature, pH of the medium, humidity, presence of impurities, electrical conductivity of the medium, velocity of the medium, concentration of the medium.

Prevention of Corrosion- Material selection – Metals and alloys, metal purification, non-metallic, Alteration of environment – Changing media, inhibitors, Design-will information, design rules, Coating-Metallic and other inorganic coatings, organic coating.

Electroplatings- Introduction, Electroplating of chromium (hard and decorative), Electro less plating- Introduction, distinction between electroplating and electroless plating processes, Electroless plating of copper. **24 hrs**

UNIT-III

Metallurgy

Introduction: Ore, minerals, important ores of some common elements in India. General Principles of pyrometallurgy: roasting, calcination, Sintering, Flux, Gangue, Smelting, Froth separation, Froth flotation process, leaching, Techniques employed for Purification of metal (Distillation process, Sublimation, Electrorefining, Van Arkel and De Boer's Treatment. 06 hrs

Extraction of metals: Extraction of Manganese (Pyrolusite), Titanium (Rutile) and Uranium. 04 hrs

Alloys: Introduction, Classification of alloys, commercially important alloys, gold karats,Production of ferro alloys, ferrochrome, Ferro Manganese, Uses of alloys. 04 hrs.

Reference Books

1. Barrow G.M. Physical Chemistry, Tata McGraw-Hill (2007)
2. An introduction to electrochemistry, Samuel Glasstone, East West edition New Delhi (1942)
3. Text book of physical chemistry, Samuel Glasstone 2nd Edition, Macmillan India Ltd (1991)
4. Principles and applications of Electrochemistry, D. R. Crow, 3rd edition, Chapman Hall London, (1988)
5. Fundamentals of electrochemical deposition, Milan Paunovic and Mordechay Schlesinger, Wiley Interscience Publications, New York, (1998)
6. Engineering Chemistry, V. R Kulkarni and C Ramachandra Reddy, New Age International (2013)
7. Electrochemistry and Corrosion Science, Nestor Perez, Springer (India) Pvt. Ltd. (2004)
8. Principles and Prevention of Corrosion, D. A Jones, Macmillan Pub. Co. (1996)
9. Essential of Materials Science and Engineering, Donald R. Askeland, Thomson Learning 3rd Edition, (2006)
10. Introduction to Engineering Materials, B. K. Agarwal, Tata McGraw Hill, 2nd Edition
11. Material Science and Engineering, V. Raghavan, PHI Learning, 5th Edition
12. Engineering Materials and Metallurgy, R. K. Rajput, S. Chand + Co Edition (2011)

Karnatak [illegible] University
Department of Chemistry
B.Sc. Chemistry V & VI Semesters Syllabus – 2023-2024 (NEP)
B.Sc. Course Pattern and Scheme of Examination under NEP approved by
UG-BOS in Chemistry held on 05-09-2023

Course Pattern: B.Sc. Chemistry V & VI Semesters Syllabus

Semester	Theory code	Hrs/ Week	Credits	Practicals code	Hrs/ Week	Credits	Total Credits per Semester
V	DSC-9 DSC-11	4 4	4 4	DSC-10 DSC-12	4 4	2 2	12
	Major- 2						12
	Cyber Security or Employability Skills	2	2	-	-	-	2
						Total	26
VI	DSC-13 DSC-15	4 4	4 4	DSC-14 DSC-16	4 4	2 2	12
	Major- 2						12
	Internship	4	2	-	-	-	2
						Total	26
Total Credits: V & VI SEMESTERS (26 + 26 = 52)							

Theory and Practicals (B.Sc. in Chemistry V Semester)

DSC - 09 : Selected Topics in Inorganic Chemistry- III
DSC - 10 : Inorganic Chemistry Practicals
DSC - 11 : Selected Topics in Organic Chemistry- III
DSC - 12 : Organic Chemistry Practicals

Theory and Practicals (B.Sc. in Chemistry VI Semester)

DSC - 13 : Selected Topics in Physical Chemistry- III
DSC - 14 : Physical Chemistry Practicals
DSC - 15 : Spectroscopy
DSC - 16 : Analytical and Industrial Chemistry Practicals

Examination Pattern: B Sc Chemistry V & VI Semesters

Semester	Theory code	Marks			Duration of Semester End Examination (hrs)
		Semester End Examination	Internal Assessment	Total Marks	
V	DSC-9	60	40	100	2
	DSC-10	60	40	100	2
	Practical code				
	DSEC-10	30	20	50	3
	DSC-12	30	20	50	3
	Value-2	-	-	-	-
	Skill Development in Employability Skills	-	-	-	-
Semester	Theory code	Marks			Duration of Semester End Examination (hrs)
		Semester End Examination	Internal Assessment	Total Marks	
VI	DSC-11	60	40	100	2
	DSC-12	60	40	100	2
	Practical code				
	DSC-14	30	20	50	3
	DSC-14	30	20	50	3
	Value-2	-	-	-	-
	Internship	-	-	-	-

Theory and Practicals of B.Sc. in Chemistry V Semester

DSC - 09 : Selected Topics in Inorganic Chemistry - III
DSC - 10 : Inorganic Chemistry Practicals
DSC - 11 : Selected Topics in Organic Chemistry - III
DSC - 12 : Organic Chemistry Practicals

Theory and Practicals of B.Sc. in Chemistry VI Semester

DSC - 13 : Selected Topics in Physical Chemistry - III
DSC - 14 : Physical Chemistry Practicals
DSC - 15 : Spectroscopy
DSC - 16 : Analytical and Industrial Chemistry Practicals

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DISCIPLINE CORE : SEMESTER - V

DSC-9: Selected Topics in Inorganic Chemistry-III — Theory-60 hours

UNIT-I — 15 hours

Chemical Bonding: VSEPR model, shapes of molecules ICl_2^-, I_3^-, ICl_4^-, IBr_2^-, IF_6, IOF_5, BrF_3, SbF_5^{2-}, TaF_7^{2-}, TaF_8^{3-}. Bent rule and energetics of hybridization, electronegativity and partial ionic character. Bonds- Multicenter, Synergic and Agostic bonding. Lattice energy: Born-Lande equation, Kapustinskii equation, polarizability and partial covalent character, calculations, structures of simple solids. Defect-lesselectronic relationship in solids. Molecular orbital theory: LCAO and MO diagram of heteronuclear diatomic (CO, NO, HF, OF) and triatomic molecules (CO_2 and NO_2).

UNIT-II — 15 hours

Chemistry of main group elements-Inorganic and coordination catenation, catenation, metallic character, Wurtzites, borates, phosphazenes, S_4N_4 compounds, Silicon-Zeolites, silicates, silicones, phosphate replacement, proteins, bound and vitreous silicates, zeolite and molecular sieves.

HSAB concept- Basis of HSAB concept, acid-base strength, hardness and softness, principles, applications of HSAB concept. Acids, base concept in non-aqueous media, reactions in BrF_3, SO_2, halogenous H_2SO_4, CH_3COOH, Lipoic and hemoglobin acids of W, Mo and V, paramagnetic properties, structure and applications.

Nanomaterials and Polymers - Nanomaterials: General characteristics, a brief and elementary account of synthetic methods, bottom-up method, top-down method, examples (detailed mechanism is not required), general applications of nanomaterials, polymers: Definition, classification, degree of polymerization, expressions for number average and weight average molecular weight. Determination of molar mass of polymers by viscosity method (General + mathematical method).

UNIT-III — 15 hours

AAAA type and metal atom cluster, halide cluster, bonding in $[Re_2Cl_8]^{2-}$, Metal carbonyl clusters-EAN rule and MNCC's. Electron counting in carbonyl clusters, Wades-Mingos and Lauhervalos.

Nuclear Chemistry-The atomic nucleus-elementary particles, quarks, classification of nuclides based on Z and N values, nuclear radius, nuclear potential, binding energy, Nuclear Models: Shell model-salient features, forms of the nuclear potential, filling of orbits, nuclear configurations, Liquid drop model, Fermi gas model, Collective model and Optical model. Radioactivity: radioactive decay kinetics, Parent-daughter decay-growth relationship-secular and transient equilibria, decays of α, β^-, β^+ and γ-decay, neutrino hypothesis, Auger effect.

UNIT-IV: — 15 Hours

Coordination Chemistry: Double salts, complex salts, definition of terms-complex ion, ligand, co-ordination number, coordination sphere. Types of ligands with example-monodentate, bidentate, polydentate, Ambidentate and macrocyclic ligands (crown ether, porphyrins). Chelates and chelate effect. Nomenclature of complex compounds. Isomerism in complex compounds: a) Structural isomerism-Ionization isomerism, hydrate isomerism, linkage isomerism and coordination isomerism, b) Optical and geometrical isomerism in complex compounds with coordination number 4 and 6.

Applications of complex compounds in (a) Metallurgy (in the extraction of nickel and gold) (b) Qualitative and quantitative analysis.

Valence Bond Theory (VBT): Valence bond theory is applied to complexes with and low spin complexes. The geometry of the following complexes is to be discussed: $[Ni(CO)_4]$, $[Fe(H_2O)_6]^{2+}$, $[Ni(CN)_4]^{2-}$, $[Co(CO)_4]$, $[Co(NH_3)_6]^{3+}$.
Modifications of VBT: Electroneutrality principle of $[Ni(CO)_4]$ and back bonding effect with respect to $[Ni(CO)_4]$.
Crystal Field Theory (CFT): Splitting of d-orbitals in octahedral and tetrahedral fields, effect of weak and strong field ligands, spectrochemical series of ligands, crystal field stabilization energy and calculations of CFSE for different cases.

References:

1. Advanced Inorganic Chemistry, 6th edition, F.A. Cotton and G. Wilkinson.
2. Inorganic Chemistry IV edition, J.E. Huheey, E.A. Keiter and R.L. Keiter, Addison Wesley (1997).
3. Inorganic Chemistry, II edition, D.F. Shriver, P.W. Atkins and C.H. Langford, ELBS Oxford University Press, 1994.
4. Chemistry of Elements, N.N. Greenwood and A. E. Earnshaw, Butterworth Heinemann (1997).
5. Concise Inorganic Chemistry, 5th edition, J.D. Lee (1996).
6. Essentials of Nuclear Chemistry, 4th edition, H.J. Arnikar, Wiley Eastern publishers (1995).
7. Nuclear and Radiochemistry, Friedlander, Kennedy and Miller.
8. Inorganic Chemistry, 3rd Edition, Gary L. Miessler and Donald A. Tarr (2007).
9. Principles of Inorganic Chemistry (ICSE Syllabus), B.R. Puri, L.R. Sharma, K.C. Kalia, Vallabhan Publications, New Delhi, India, 2004.
10. Advanced Inorganic Chemistry, by Gurdeep Raj and Chemical Kinetics.
11. Modern Inorganic Chemistry by R.D. Madan.
12. Advanced Inorganic Chemistry by Satyaprakash.

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DSC-10: Inorganic Chemistry Practicals

60 hours

PART-A: Gravimetric and Volumetric Analysis

1. Gravimetric determination of Fe as one ion in Fe_2O_3
2. Gravimetric estimation of Nickel as nickel oxide
3. Gravimetric estimation of Aluminium as aluminium oxide
4. Gravimetric estimation of magnesium as magnesium oxinate
5. Gravimetric determination of Cu using DMG as Cu and Ni mixture
6. Gravimetric determination of Fe using DMG (DMG as Fe and Ni mixture)
7. Gravimetric estimation of Cu using $[Fe(CN)_6]^{4-}$ as Cu and Zn mixture
8. Volumetric estimation of Cu and Mg as complex mixture
9. Volumetric estimation of Fe in Cu and Fe mixture

PART-B: Preparation of Co-ordination complexes

1. Preparation of hexaamminenickel(II) chloride
2. Preparation of Cis- and trans-potassium dioxalatodiaquachromate(III) complex (Estimation of oxalate and chromium)
3. Preparation of tris(oxalato)ferrate(III)
4. Preparation of hexaamminecobalt(III) chloride hexachlorozincate
5. Preparation of ammine nitrito cobalt(III) chloride
6. Preparation of Trans-potassium dioxalatodiaquachromate (III)
7. Preparation of tris(thiourea) copper (I) sulphate monohydrate
8. Preparation of pentaamminechloro cobalt(III) chloride

Note: The list of experiments is suggestive. Relevant faculties / academic bodies may add more experiments / replace/ change as per the need based on infrastructure facilities available in the institutions

DSC-II: Selected Topics in Organic Chemistry-III — Theory-60 hours

UNIT-I — 15 hours

Alcohols: (8 hours)

Monohydric alcohol:- Classification, nomenclature, preparation from alkyl halides, alkenes, amines, Grignard reagent, 1°, 2°, 3° alcohols by Lucas-Bervier method, Lucas method. Dihydric alcohol:- Nomenclature, preparation, chemical reactions with periodic acid, lead tetra acetate, pinacol-pinacolone rearrangement.

Trihydric alcohol:- Nomenclature, preparation of glycerol from fats, Synthesis from propene, Reactions of glycerol with oxalic acid at different temperatures, reaction with HIO_4, with boric acid. Uses of glycerol, preparation of nitroglycerine, preparation and uses of Picric acid & picrates.

Phenols: (7 hours)

Classification, nomenclature, Methods of preparation from Diazonium salts, from Cumene, Reactions with Acidity of phenols, comparison of phenols vs. carboxylic acid, compare the acidity of alcohol and phenol. Effect of substituent's on acidity of phenols, Electron withdrawing groups (-NO$_2$, -Cl, -CF$_3$, -CHO, -COOH), electron donating groups (-OR, -OCH$_3$, -CH$_3$).

Reactions of phenols: Fries, Claisen, Reimer-Tiemann, Lauter-Hasse reactions with mechanism. Synthesis of phenolphthalein, salicylaldehyde, vanillin, o-hydroquinone.

Unit-II — 15 hours

Aldehydes and Ketones: (5 hours)

Nomenclature, Structure and reactivity of carbonyl groups in aldehydes, ketones.

Reactions of aldehydes and ketones with hydroxyl amine, hydrogen cyanide, 2,4-DNP. Reaction mechanism of Aldol, Perkin's, Benzoin, Cannizzaro, Knoevenagel reaction. Clemmensen reduction, Wolff Kishner reduction.

Rearrangements: (5 hours)

Wolff, Hoffmann, Curtius, Lossen and Schmidt rearrangement. Benzil-benzilic acid rearrangement, Stevens, Wittig and Favorskii rearrangement, Baeyer Villiger oxidation, Fries rearrangement, Beckmann rearrangement.

Amino acids and proteins: (5 hours)

Definition and classification of amino acids, synthesis of amino acids by Gabriel phthalimide, strecker and Erlenmeyer's method of synthesis.

Properties and reactions. Zwitter ion and isoelectric point. Ninhydrin and Biuret test.

Peptides, peptide bond, carboxy-amino method of synthesis of peptides.

Proteins: Classification based on composition and structure, primary and secondary structure of proteins. Denaturation of proteins.

UNIT-III — 30 hours

Stereochemistry: (8 hours)

Walden inversion, asymmetric synthesis, Geometrical isomerism, Geometrical isomerism in maleic acid and fumaric acid. Determination of their configuration. Geometrical isomerism of oximes. Determination of configuration of oximes. Racemic resolution.

Conformational analysis: Conformational analysis of cycloalkanes : cyclohexane, cyclopentane, cyclohexane (unsubstituted e.g. methyl, isopropyl, tert-butyl and di-substituted cyclohexane e.g. dimethyl, dihalo, diol), and cyclopentane.

Carbohydrates: (8 hours)

Introduction, Kiliani-Fischer synthesis, Determination of configuration of the aldohexoses, conformational analysis of monosaccharides, Synthesis of ascorbic acid, D-Glucosamine, galactosamine, N-acetylneuraminic acid (NANA), N-acetylmuramic acid (NAMA), O and N-glycosides, Synthesis of Adenosine, Inosine, adenylic acids and nucleic structure elucidation of sucrose and maltose, Structure of lactose, preparation and reactions. Determination of ring size of glucose.

Retrosynthesis: (3 hours)

Retrosynthesis of bicyclo[3.3.0]octane, 1-methyl-bicyclo[3.3.0]octane, cuneane, Corey's approach. Cornforth rearrangement, synthon, synthetic equivalent and target molecule. General guidelines for disconnection.

Unit-IV: 14 hours

Heterocyclic compounds:

Nomenclature of heterocyclic compounds. Preparation and reactions of pyrrole, furan, thiophene, indole, pyridine, quinoline, isoquinoline. Aromaticity of pyrrole, furan, thiophene. Basicity of pyrrole and pyridine.

Structure, reactivity, synthesis and reactions of pyrazole, imidazole, oxazole, isoxazole, thiazole, isothiazole, pyrimidine, purine. Preparation and reactions of coumarin, indole, carbazole and quinoline.

References:

1. Advanced Organic Chemistry- Reactions, Mechanisms and Structure, John Wiley & Sons (2006).
2. Advanced Organic Chemistry, F.A Carey and R.J Sundberg Plenum (1990).
3. A Guide Book to Mechanisms in Organic Chemistry, Peter Sykes, Longman, (2003).
4. Structure and mechanisms of Organic Chemistry, CK Ingold, Cornell University Press (1969).
5. Organic Chemistry, RT Morrison and RN Boyd, Prentice Hall, (2002).
6. Modern Organic Reactions, HO House, Benjamin (1972).
7. Principles of Organic Synthesis, ROC Norman and JM Coxon, Blackie Academic and Professional, (1993).
8. Stereochemistry of Organic Compounds, D Nasipuri, New Age International, (1994).
9. Stereochemistry of Carbon Compounds, EL Eliel, SH Wilen and LN Mander, John Wiley, (1994).
10. Stereochemistry, Kemp, DS, Macmillan,1994
11. Organic Chemistry, T Graham S and FJ, Finar, Longmans,(1998).
12. Organic Chemistry, Bahl and Arun Bahl, S. Chand and Sons, (New Delhi, 2012.
13. Organic Chemistry, R. T. Morrison and R. N. Boyd, 6th Edition, Prentice-Hall of India Limited, New Delhi, 1992.
14. Organic Chemistry, B. S. Bahl, 12th Edition, Pearson Education Inc Singapore, New Delhi, reprint 2002.
15. Textbook of Organic Chemistry, P L Kalia, New Age, 2005.

DSC-12 : Organic Chemistry Practicals

PART-A : Preparation (one stage)

1. Cannizzaro reaction: Benzaldehyde
2. Friedel-Craft reaction: Acetylation
3. Friedel-Craft reaction: Benzanilide to Anthraquinone
4. Aldol condensation: Benzaldehyde to Dibenzalacetone
5. Perkin reaction: Benzaldehyde to Cinnamic acid
6. Oxidation of Cyclohexanol
7. Preparation of p-Benzoquinone from Hydroquinone
8. Synthesis of p-nitroacetanilide
9. Synthesis of 2-Phenyl-2-Hydroxypropanoic acid
10. Synthesis of 2,4,6-tribromoaniline
11. Synthesis of 2-Hydroxynaphthalene-1-azo-dye

PART-B : Organic Estimation (Quantitative analysis)

1. Titrimetric estimation of glucose
2. Determination of saponification value of oil
3. Estimation of glucose by Fehling's solution
4. Estimation of keto group
5. Estimation of phenol
6. Estimation of aniline
7. Iodine value of oil by chloramine-T method

Note: The list of experiments is suggestive. Respective faculty / academic body may add more experiments / references to incorporate suitable changes based on infrastructural facilities available in the Department.

Course outcomes (I-Semester):

After the completion of this course, the student would be able to:

1. Predict bonding in molecular compounds ions, multi centred bonds.
2. Understand the properties of ionic compounds like lattice energy and use the MO diagrams of different types of molecules.
3. Learn the important factors of ionic of the compounds of main group elements.
4. Know the BF-AB Concepts of acid, bases and they will learn the basics of nanomaterials and polymers.
5. Develop a thorough knowledge on the fundamental, bonding in metal atom clusters, various concepts models in nuclear chemistry and radioactivity.
6. Explain the broad and balanced data on the important concepts in Co-ordination Chemistry, application of theories to the complex compounds.
7. Predict the key concepts about the Classification, nomenclature, preparation, reactions of alcohols and phenols.
8. Acquire the thorough knowledge on Nomenclature, Structure and reactivity of carbonyl groups in aldehydes, ketones and certain rearrangement reactions.
9. Give the classification and properties of amino acids, structure properties and reactions of peptides and Proteins.
10. Understand the concept of stereochemistry and its importance will be taught with regard to the structural analysis.
11. Explain the fundamentals of structure, reactions and synthesis of Carbohydrates.
12. Learn general terms and guidelines for determination approach in retrosynthesis.
13. Develop an idea about the nomenclature, Structure, reactivity and synthesis of various heterocyclic compounds.
14. Acquire the ability to plan and carryout experiments on Gravimetric and Volumetric Analysis and Preparation of various co-ordination complexes under different conditions and using specific reagents independently and assess the significance of outcomes.
15. To plan and carryout the experiments on Practical knowledge on one step preparation of important organic compounds and Quantitative analysis estimation of organic compounds and to cater to the demands of chemical industries of well trained graduates.

DISCIPLINE CORE : SEMESTER - VI

DSC-13: Selected Topics in Physical Chemistry-III

Theory-60 hours

Unit-I 15 hours

Electrochemistry-II: (6 hours)

Definition of EMF of a cell, standard electrode potential, Nernst equation, Types of reversible electrodes with examples: gas-metal ion, gas-insoluble salt-anion and ion-selective electrode with examples – Quinhydrone electrode (To be executed).

Reference electrodes – Construction and working of SHE and calomel electrode. Concentration cell – Derivation of EMF using Nernst equation for electrolytic concentration cell without transference. Liquid junction potentials, elimination of liquid junction potential. Potentiometric titrations (acid-base, redox, precipitation systems (KMnO4 vs. FeSO4).

Quantum Mechanics: (9 hours)

Physical interpretation of the wave function, Operators: Laplacian, Hamiltonian, Linear and Hermitian operators. Angular Momentum operators and their properties. Commutation of operators. Postulates of Quantum mechanics. Schrödinger wave equation based on the postulates of quantum mechanics and its importance. Concepts of solutions of Schrödinger wave equation for a Particle in a one dimensional box, particle in a three-dimensional box. Quantum mechanical degeneracy, tunneling (no derivation). Application of Schrodinger equation to harmonic oscillator, rigid rotator. Eigen functions and eigen values of angular momentum. Ladder operator method for angular momentum. Schrödinger equation in its Angular part in spherical polar co-ordinates. Total wave functions of hydrogen atom, Quantum number and their characteristics. Lay diagram, functions for few optical cases of hydrogen like atoms.

UNIT-II: 15 hours

Chemical Dynamics-I

Macroscopic and microscopic aspects. Review of theories of reaction rate-Collision theory and Transition state theory. Comparison of collision theory with transition state theory. Arrhenius equation-Characteristics. Significance of energy of activation. Temperature coefficient and its evaluation. Thermodynamical formulation of reaction rates (Wynne-Jones and Eyring treatment). Factors influencing reaction rates in solutions – Influence of ionic strength on reaction rates (primary and secondary salt effects).

Concept of steady state kinetics: Chain reactions - chain length and chain additions, comparison of photochemical and thermal reactions. Mechanisms of thermal and photochemical reactions between hydrogen-bromine and hydrogen-chlorine. Comparative study of thermal and photochemical hydrogen-halogen reactions. Problems of explosions, Explosions of chain.

Kinetics of fast reactions: Introduction, Study of reactions by relaxation method (Temperature perturbation jump), flow method (Plug flow method and Stopped flow method), Flash photolysis and Shock tube method.

UNIT-III: 15 hours

Chemical Dynamics-II

Kinetics of heterogeneous catalysis-theory of unimolecular reaction, kinetics of solid-gas catalyzed reactions, Comparison of thermal catalyzed and photochemical catalyzed reactions. Mechanism, Lock and Key theory. Kinetics of enzyme catalyzed reactions - Michaelis-Menten mechanism, Significance of Michaelis-Menten constant, Lineweaver-Burk plot. Effect of enzyme concentration, pH, Temperature, Activators and Inhibitors on enzyme activity.

Theories of unimolecular reactions: Perrin theory and Kassel-Rice theory.

Surface chemistry: Adsorption: Effect of temperature on adsorption, Mechanism of adsorption, Derivation of BET equation, Estimation of surface area using BET equation. Gibb's adsorption isotherm and its significance, Surface tension and surface energy. Pressure difference across curved surface (Laplace equation), Vapour pressure of droplets, Kelvin equation, Surface tension of liquids (stalagmometric method), Catalytic activity of surfaces.

UNIT-IV: [illegible]

Thermodynamics: Nernst heat theorem, statement and concept of residual entropy, evaluation of absolute entropy. Third law of thermodynamics. Concept of fugacity and Duhem - van Laar equation of Van't Hoff's equation. Fugacity - its calculation and determination, activity and activity coefficient. Partial molar quantities, Concept of chemical potential, variation of chemical potential with temperature and pressure, derivation of Gibbs-Duhem equation, Duhem-Margules equation and its application.

Phase Rule: Derivation of phase rule from the concept of chemical potential. Application of Phase Rule to three component system. Principle of triangular diagram. Nernst distribution law and its application.

Statistical Thermodynamics: Energy, mean energy and momentum, Limitations of classical thermodynamics. Distinguish between classical mechanics and classical mechanics. Stirling approximation, derivation of Maxwell-Boltzmann statistics, ensemble, assumptions of ensemble, application of ensemble to gas-thermodynamic ideal gas (No derivation). Partition functions and thermodynamic parameters, expressions for translational, rotational, vibrational and electronic partition functions, enthalpy, entropy, Gibbs free energy.

Partition functions: Definition and significance, molar and molecular partition functions. Derivation of expression of partition function for rotational, vibrational, electronic and translational terms. Tolman Tolmedo Equation, Relation between equilibrium constant and partition function.

References:

1. Physical Chemistry, P.W. Atkins, Oxford Indian Edition, [illegible] edition, (1998)
2. Physical Chemistry: A Molecular Approach, McQuarrie and Simon, Viva, New Delhi, (2003)
3. Introduction to Quantum Chemistry, A.K. Chandra, Tata McGraw Hill, (1988)
4. Quantum Chemistry, Ira N. Levine, Prentice Hall, New Jersey, (2001)
5. Quantum Chemistry, R.K. Prasad, New Age International, 2nd edition, (2006)
6. Quantum Chemistry through problems and solutions, R.K. Prasad, New Age International, (1997)
7. Chemical Kinetics, K.J. Laidler, McGraw Hill, Inc. New York, (1965)
8. Principles of Chemical Kinetics, James E. Nix C Brooks Publisher, Boston, (1997)
9. Kinetics and Mechanism, A.A. Frost and R.G. Pearson, John Wiley, New York, (1961)
10. Chemical Kinetic Methods, G. Kalaichelvan, New Age International Publisher, New Delhi, (1997)
11. S.M. Mehta and C.P. Poonia, 4th Edn., Oxford and IBH publishing Co. Pvt. Ltd. New Delhi (1999)
12. Principles of Physical Chemistry, Puri, Sharma and Pathania, Vishal Publishing House
13. Essential of Physical Chemistry, Arun Bahl, B.S. Bahl and G.D. Tuli, S. Chand and Co.
14. Physical Chemistry, R.L. Madan, G.D. Tuli, S. Chand and Co
15. Elements of Physical Chemistry, Glasstone and Lewis, Macmillan
16. Text book of Physical Chemistry, S. Glasstone, Macmillan (India) Ltd.
17. Numerical Problems in Physical Chemistry, Daniel Books and Allied (P) Ltd.
18. Physical Chemistry, R. C. Rakshit, Y. Khosla (1988), Fourth Reprint (1997), New Book House, Calcutta
19. W. Kauzmann, Kinetic Theory of Gases, Thermal Properties of Liquid, Vol 2, Benjamin, Reading, Inc. 1966

DSC-14: Physical Chemistry Practicals

60 hours

PART-A

1. Conductometric titration of weak acid versus weak base.
2. Conductometric titration of a mixture of strong acid (HCl) and weak acid (CH3COOH) versus strong base.
3. Potentiometric titration of Fe^{2+} versus $K_2Cr_2O_7$.
4. Potentiometric titration of Fe^{2+} versus $KMnO_4$.
5. Potentiometric method of determination of dissociation constant of H_3PO_4.
6. Potentiometric titration of weak acid against a strong base using quinhydrone electrode and calculations of pK_a and K_a of the weak acid.
7. Determination of the acidic and basic dissociation constant and isoelectric point of an amino acid by pH-metry.

PART-B

1. Determination of rate constant of hydrolysis of ester in presence of two different concentrations of catalyst (HCl).
2. Determination of the constant of hydrolysis of ester catalysed by HCl at different temperatures.
3. Determination of rate constant of decomposition of H_2O_2 by platinum catalysed by $PtCl_4$.
4. Determination of degree of hydrolysis of aniline hydrochloride at room temperature and calculation of dissociation constant of the base by pH-metry.
5. Analysis of a binary mixture of two miscible liquids and to determine the composition of the given unknown mixture by Abbe's refractometer.
6. Determination of pH of acetic acid with sodium acetate buffer by pH-metry method.
7. Colorimetric estimation of Fe^{3+} ions using 1,10-phenanthroline.

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Note: The list of experiments is suggestive. Research Teachers / academic bodies may add more experiments / alternates to the given courses based on infrastructure facilities available in the Institutions.

DSC-15 : SPECTROSCOPY

Theory - 60 hours

Unit-I

12 hours

Symmetry and Group Theory in Chemistry: (7 hours)

Definition of groups, sub-groups, cyclic groups, multiplication multiplication, classes, simple theorems in group theory. Symmetry elements and symmetry operations, point groups, molecules belonging to point groups. Representations of groups by matrices, reducible and irreducible representations, characters of representations, Great Orthogonality Theorem (without proof) and its applications, group multiplication tables for C_{2v} (Example : water) C_{3v} (Example : ammonia), character tables for C_{2v} (consider C_2 and H_2O as an example) for C_{3v} point group, C_{4v} (consider C_{4v} and XeF$_4$ as an example for C_{4v} point group), D_{2h} (consider D_{2h} and B_2F_4 as an example for D_{2h} point group), point groups to be studied are

Molecular spectroscopy: (5 hours)

Interaction of electromagnetic radiation with molecules and various types of spectra, Born-Oppenheimer approximation.

Rotation spectroscopy: Selection rules, intensities of spectral lines, determination of bond lengths of diatomic and linear triatomic molecules, isotopic substitution.

Raman spectroscopy: Theory, Qualitative treatment of Rotational Raman effect, Vibrational Raman spectra, Stokes and anti-Stokes lines, their intensity difference, rule of mutual exclusion, Raman vs IR spectroscopy, Instrumentation.

Vibrational spectroscopy: Classical equation of vibration, computation of force constant, amplitude of diatomic molecular vibration, anharmonicity, Morse potential, dissociation energies. Fundamental frequencies, overtones, hot bands, degrees of freedom for polyatomic molecules, modes of vibrations, concept of group frequencies. Vibration-rotation spectroscopy: Isotopic shifting (mass), P-Q-R branches.

Unit-II

15 hours

Organic Spectroscopy:

General principles, Introduction to absorption and emission spectroscopy

UV Spectroscopy: Types of electronic transitions, λ_{max}, Chromophores and Auxochromes, Bathochromic and Hypsochromic shifts, Intensity of absorption, Application of Woodward Rules for calculation of λ_{max} for the following systems: Conjugated alkenes, alicyclic, homoannular and heteroannular, Conjugated polyenes, alkenes, carbonyl, acids and esters, Conjugated dienes, alicyclic, homoannular and heteroannular, Extended conjugated systems (polyenes, aldehydes, ketones and dienes), distinction between cis and trans isomers.

IR Spectroscopy: Fundamental and non-fundamental molecular vibrations, Range, Hooke's law, Factors influencing vibrational frequencies, Frequency and energy of IR radiations, Instrumentation of IR, Calculation of IR spectra of simple organic molecules, Sample handling, Finger print region, Applications of IR spectroscopy, Identification of functional groups (e.g. hydroxyl, amino, carbonyl, nitro and nitrile groups), Intramolecular hydrogen bonding, Effect of hydrogen bonding, Solvent effects, Comparison of IR spectra of simple molecules, CH stretching and –CH bending vibrations in cyclic alkanes, Calculation of vibrational frequencies using Hooke's law, Normal modes of vibrations, Calculation of vibrational frequencies using Hooke's law, Normal for the stretch of a spring, Sample handling in IR spectra of solid, gases and liquids.

Unit-III

18 hours

Nuclear Magnetic Resonance spectroscopy:

Nuclear magnetic resonance (NMR) spectroscopy, Absorption of electromagnetic radiation, proton NMR (^{1}H NMR), Magnetic properties of nuclei, population of energy levels, the Larmor precession, relaxation processes, chemical shift, the relationship between number of signals and their area, shielding mechanism, spin-spin interactions, rules governing the interpretation of first order spectra, effect of chemical exchange on spectra, NOE, spectra. Determination of the field position of a signal and simple cases of ^{1}H NMR spectra of organic molecules (ethanol, propane). Factors influencing chemical shift, anisotropic effect.

Atomic spectroscopy: Atomic absorption, atomic emission and atomic fluorescence. Instrumentation and getting sample into the plasma (flame, electrical discharge, plasma). Line-shape, separation and resolution. Dependence on temperature. Detection of radiation, considered viewing, signal noise, Interferences (atom-molecule and atom-atom), matrix effects, other interferences.

Unit-IV: 14 hours

Mass Spectrometry: Basic principles, Theory of mass spectrometry, nitrogen rule, isotopic mass spectra, the molecular ion peak, determination of molecular formula, Mc-Lafferty rearrangement, Metastable ion peaks and their importance, Fragmentation rules, Examples, General fragmentation modes, Examples, Retro-Diels-Alder reaction, Important features of mass spectra of hydrocarbons – alkanes, alkenes and cycloalkenes, alcohols, phenols, aldehydes, ketones, esters and acids.

Electron Paramagnetic Resonance (EPR) Spectroscopy: Basic principles, selection rules, resonance width, position of spectral line, multiple structure of EPR spectra, hyperfine interaction, g-factor and coupling, zero field splitting and Kramer's degeneracy, rules for assigning g-tensor, factors affecting the magnitude of values, Isotropic hyperfine interaction, applications to the study of free radicals, metallocene compounds, biological studies and role of electron exchange reactions.

Nuclear Quadrupole Resonance (NQR) Spectroscopy: Quadrupole nuclei, quadrupole moment, electric field gradient, the NQR experiment, nuclear information from NQR spectra.

References:

1. Chemical Applications of Group Theory, F. A. Cotton, Wiley Eastern (1971).
2. Molecular Symmetry, D. S. Schonland, Van Nostrand (1965).
3. Introduction to Molecular Spectroscopy, C. N. Banwell, TMH Edition (1994).
4. Introduction to Molecular Spectroscopy, G. M. Barrow, McGraw Hill Inc. Indian Edition (1962).
5. Molecular Spectroscopy, J. D. Graybeal, McGraw Hill Inc. Indian Edition (1988).
6. Spectroscopy, Vols. I, II, III, Merwedge and V. Rohatgi, Chapman Hall (1976).
7. Physical Methods in Chemistry – R.S. Drago, Saunder Corp.
8. Structural Methods in Inorganic Chemistry – E.A. Ebsworth, D. W.H. Rankin and S. Cradock, ELBS.
9. Spectra of Inorganic and Coordination Compounds – K. Nakamoto.
10. Infrared Spectroscopy – C.N.R. Rao.
11. Introduction to Spectroscopy – D.L. Pavia, G.M. Lampman and G.S. Kriz, Thomson Learning, Singapore (2001).
12. Spectroscopic Identification of Organic Compounds – R.M. Silverstein and F.X. Webster, 7th Edition, John Wiley and Sons, India Ltd. (2005).
13. Interpretation of Mass Spectroscopy – Mc Lafferty.
14. Organic Spectroscopy, William Kemp.

DSC-16 : Analytical and Industrial Chemistry Practicals

60 hours

Part-A: Separation techniques and pharmaceutical analysis

1. Separation of amino acids by paper chromatography and measuring R_f values.
2. Separation of Co^{2+} and Ni^{2+} by paper chromatography and measuring R_f values.
3. Separation of Zn^{2+} and Fe^{2+} by complexation with DMG, extraction of $M(DMG)_2$ complex in chloroform and determination of its concentration by colorimetry.
4. Separation of amino acids from organic acids by ion exchange chromatography.
5. Separation of Mg^{2+} and Fe^{2+} by ion exchange chromatography.
6. Determination of aspirin present in tablets volumetrically/ colorimetrically.
7. Determination of amino acids colorimetrically using ninhydrin.
8. Determination of Glucose / Sucrose / Dextrose colorimetrically using Fehling's solution.
9. Preparation of magnesium trisilicate (Antacid).

Part-B: Industrial Chemistry

1. Safety practices in the Chemistry laboratories.
2. Determination of calcium in dairy milk.
3. Determination of water of crystallization and Fe^{2+} in Mohr's salt by titrating with standard $KMnO_4$.
4. Preparation of phenol formaldehyde resin.
5. Preparation of urea formaldehyde resin.
6. Nitration of salicylic acid by green method (using calcium nitrate and acetic acid).
7. Preparation of Aspirin from salicylic acid.
8. Analysis of Calcium (Dolomite, Slaked and Calcium Oil).
9. Analysis of food adulterants in Tea (Powder, Coffee Powder, turmeric powder, Chilli Powder, oil/fat, milk, etc.
10. IR peak analysis for functional groups using provided IR spectra.
11. Preparation and characterization of rosin-wax from vegetable oil resin cooking oil.

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Note: The list of experiments is suggestive. However, teachers / academic bodies may add more experiments / replace as per requirements suitable according locally available facilities available at the Institution.

Course outcomes (VI-Semester):

After the completion of this course, the student would be able to:

1. Understand the electrochemical aspects types of electrodes, their construction and working, liquid junction potentials and potentiometric titrations.
2. Learn the fundamentals of Quantum Mechanics, applications of the Schrödinger equation to various systems.
3. Understand the concepts of molecularity and order of reactions, thermodynamical formulation of reaction rates, steady state kinetics and fast reactions.
4. Acquire a thorough knowledge on the topics in Kinetics of heterogeneous catalysis, theories involved and the various concepts in surface chemistry.
5. Know the basic concepts of entropy and the Third law of thermodynamics, partial molar properties and their applications in problem solving skills.
6. Understand the Phase rule and to distinguish between phase diagrams of various systems consisting of one, two and three pairs of partially miscible liquids.
7. Explain the concepts in statistical thermodynamics, derivation of statistical equations of distribution laws, partition functions and their applications, develop problem solving skills.
8. Develop an idea of various concepts in Symmetry and Group Theory, including definitions, symmetry elements, symmetry operations and group multiplication tables with specific examples (as Symmetry and Group Theory is the basis for many spectroscopic studies).
9. Understand and to explain the fundamentals of Molecular spectroscopy, which deals with the interaction of electromagnetic radiation with molecules, explanation about different types of molecular spectra like Rotation spectroscopy, Raman spectroscopy and Vibrational spectroscopy.
10. Explain the general principles, Introduction to absorption and emission spectroscopy, particularly about the fundamentals of UV Spectroscopy and IR Spectroscopy.
11. Outline the concepts in Nuclear magnetic resonance (NMR) spectroscopy, magnetic nuclei, NMR signals of simple molecules and also the fundamental knowledge of Raman spectroscopy.
12. Know the important principles involving theory of mass spectrometry, instrumentation, mass spectrum, the molecular ion peak, determination of molecular formula, important features of mass spectra of some molecules.
13. Understand the basic principles, selection rules, intensity, width, position of spectral line, multiplet structure of ESR spectra, instrumentation and applications.
14. Learn the fundamentals of NQR, NQR experiment, structural information from NQR spectra.
15. To plan and perform experiments on Conductometric titrations and potentiometric titrations involving neutralization and redox reactions, Abbe refractometer, pH metry and colorimetry and to understand the basic knowledge on these experiments.
16. Obtain the ability to plan and carryout experiments independently on Separation techniques involving chromatography and to carry on the demands of chemical industries.

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Question paper pattern for FIFTH and SIXTH Semesters

Paper Title and Code:

Time: 2 hrs] [Max Marks:50

Instructions to all candidates :

1. The question paper contains Four section A, B, C and D. Answer all Sections.
2. Section A contains multiple choice questions and should be answered in the first two pages of main answer book. The questions of section – A answered in any other part of the book will not be valued.
3. Write equations and neat diagrams wherever necessary.

SECTION – A

Each one of the following questions is provided with four answers a, b, c and d. Choose the correct answer among them and write it along with the respective answer in the main answer book. 10 – 1=10 Marks

1.

i) .....
a). b). c). d).

ii) .....
a). b). c). d).

iii) .....
a). b). c). d).

iv) .....
a). b). c). d).

v) .....
a). b). c). d).

vi) .....
a). b). c). d).

vii) .....
a). b). c). d).

viii) .....
a). b). c). d).

ix) .....
a). b). c). d).

x) .....
a). b). c). d).

SECTION – B

Answer any FIVE of the following questions : 5 – 3 =15 Marks

2. .....

3. .....

4. .....

5. .....

6. .....

7. .....

8. .....

9. .....

SECTION – C

Answer any THREE of the following questions : 3 × 5 = 15 Marks

10. a) .....
    b) .....
11. a) .....
    b) .....
12. a) .....
    b) .....
13. a) .....
    b) .....
14. a) .....
    b) .....

SECTION – D

I. Answer the following questions : 2 × 10 = 20 Marks

15. a) i) .....
    ii) .....
    iii) .....
    a) i) .....
    ii) .....

OR

b) i) .....
    ii) .....
    iii) .....
    a) i) .....
    ii) .....

16. a) i) .....
    ii) .....
    iii) .....
    a) i) .....
    ii) .....

OR

b) i) .....
    ii) .....
    iii) .....
    a) i) .....
    ii) .....

Note : Questions 15 & 16 may be sub-divided into a) i), ii), iii), b) i), ii), iii) OR a) i), ii), b) i), ii) carrying 3+3+4, 2+4+4 OR 3+7, 4+6, 5+5 marks depending on the weightage of the questions.

.....

Note:

Internal Assessment for Theory Papers	
Mode of Assessment	Marks
Internal Assessment Test 1	[illegible]
Internal Assessment Test 2	[illegible]
Quiz/Assignment/Small Project	[illegible]
Seminar	[illegible]
Total	40

Internal Assessment for Practical Papers	
Mode of Assessment	Marks
Internal Assessment Test	[illegible]
Practical Record	[illegible]
Total	25

[illegible]

Model Curriculum

Name of the Degree Program: B.Sc (Honors) Chemistry with Analytical Specialization

Discipline Core: Chemistry Total Credits for the Program: 176 Starting year of implementation: 2021-22

Program Outcomes:

By the end of the program the students will be able to:

(Refer to literature on outcome based education (OBE) for details on Program Outcomes)

1. PO 1: To create enthusiasm among students for Analytical chemistry and its application in various fields of life
2. PO 2: To provide students with broad and balanced knowledge and understanding of key concepts in Analytical chemistry
3. PO 3: To develop in students a range of practical skills so that they can safely plan and assess risks and work safely measures to be followed in the laboratory
4. PO 4: To develop in students the ability to apply standard methodology to the solution of problems in chemistry
5. PO 5: To provide students with knowledge and skill to enable employment in higher education in Analytical chemistry or multi-disciplinary areas having Analytical element
6. PO 6: To provide students with the ability to plan and carry out experiments independently and assess the significance of outcomes and to cope up to the demands of various industries of well-trained graduates
7. PO 7: To develop in students the ability to adapt and apply methodology to the solution of unfamiliar types of problems
8. PO 8: To instil critical awareness of advances in the content of chemical sciences to prepare students effectively for professional employment or research degree in chemical sciences and to develop an independent and responsible work ethos

Assessment:

Weightage for assessments [in percentage]

Type of Course	Formative Assessment / IA	Summative Assessment
Theory	40	60
Practical	15	35
Projects	-	-
Experiential Learning (Internship,etc.)	-	-

Curriculum Structure for the Undergraduate Degree Program
BSc (Honors) Chemistry with Analytical Specialization

Total Credits for the Program: 178 Starting year of implementation: 2021-22

Name of the Degree Program: B. Sc (Honors) Discipline Subject: Chemistry

Program Articulation Matrix:

This matrix lists only the core courses. Core courses are essential to earn the degree in that discipline/subject. They include courses such as theory, laboratory, project, internships etc. Elective courses may be interdisciplinary.

Semester	Title/Name of the course	Program outcomes that the course addresses(not more than 5 per course)	Pre-requisite courses	Pedagogies	Assessments
1	DSC I: Analytical and Organic Chemistry-I	• The concepts of chemical bonding, physical and colligative properties • Understand the principles of titrimetric analysis and their applications • Understand the mechanism of hydrocarbons reactions	PCC with Chemistry	Assignment, Class work	Home Exams, Continuous Evaluation, Semi Exams
	DSC lab I: Analytical and Organic Chemistry-I	• The students will be able to perform the experiments based on theoretical concepts • The students will be able to prepare inorganic compounds and determine the percentage purity of them • The students will be able to analyse the composition of the given		Assignment, Class work	Home Exams, Continuous Evaluation, Semi Exams

		[illegible]			
2	DSC-2: [illegible]	• [illegible] • [illegible] • [illegible]	[illegible]	Assignment, Class work	[illegible]
	DSC Lab 2: [illegible]	• [illegible] • [illegible] • [illegible]		Assignment, Class work	[illegible]
3	DSC 3: [illegible] DSC Lab 3: [illegible]		[illegible]	Assignment, Class work	[illegible]
4	DSC 4: [illegible] DSC Lab 4: [illegible]			Assignment, Class work	[illegible]
5	DSC 5: [illegible] DSC Lab 5: [illegible] DSC 6: [illegible] DSC Lab 6: [illegible]		[illegible]	MOOC, Problem solving	Internal Test, Assignment, Quiz

6	[illegible]			[illegible]	[illegible]
7	[illegible]		[illegible]	[illegible]	[illegible]
8	[illegible]			[illegible]	[illegible]

*

** Pedagogy for student engagement is predominantly active learning, the practices enabling active student engagement is to be recommended to each course. For all in-class active learning, course projects, problem or project-based learning and flipped classroom are examples of active learning.

$ Daily online tests to include assessment for higher order thinking skills (applying, analyzing, evaluating, creating). However, the course may consider another assessment methods to be fully formative assessment (i.e. assessment for learning).

BSc Chemistry (Honors) with specialization in Analytical Chemistry

Semester 1

Course Title: DSC-1 Analytical and Organic Chemistry-I	
Total Contact Hours: 60	Course Credits: 4
Formative Assessment: Marks: 30	Duration of ESA/Exam: 3 hrs
Model Syllabus Authors: Chairman	Summative Assessment Marks: 70

Course Pre-requisite(s): Mention only course (es) from the curriculum that are needed to be taken by the students before registering for this course

PUC with Chemistry

Course Outcomes (COs):

At the end of the course the student should be able to:

(Write 3-7 course outcomes. Course outcomes are statements of observable student actions that serve as evidence of knowledge, skills and values acquired in the course)

1. [illegible]
2. [illegible]
3. [illegible]
4. Handling of toxic chemicals, concentrated acids and organic solvents and practice safety procedures
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs: 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	1	2	3	4	5	6	7	8	9	10	11	12
1	x											
2	x											
3	x											
4	x											
5	x											
6	x											
7	x											
8	x											

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is expected in the course. Mark 'X' in the appropriate box if a course outcome addresses a particular program outcome

BASSc/BCom/BSASCA

B.Sc Semester 1 – Chemistry (Hons) with specialization in Analytical Chemistry

Title of the Course: BSC-1: Analytical and Organic Chemistry – I

Number of Theory Credits	Number of lecture hours/ semester	Number of practical Credits	Number of practical hours/ semesters
4	56	2	60

Content of Theory Course I	Units
Unit –1	14
Language of analytical chemistry: Definitions of analysis, determination, measurement, techniques and methods. Classification of analytical techniques. Choice of an analytical method – accuracy, precision, sensitivity, selectivity, method versus system. Figures of merit of analytical methods and limit of detection (LOD), Limit of quantification (LOQ), dose domain, range, working range. Errors and treatment of analytical data: Importance of analytical methods – Errors: Determinate and indeterminate errors, accuracy and precision, minimization of errors. Statistical treatment of finite samples: mean, median, range, standard deviation and variance, Normal standard deviation curve / Gaussian equation (least squares method), correlation coefficient, 't' test. Numerical problems. Basic laboratory practices: cleanliness of glassware (hygiene, science and chemistry lab), cleaning (acids and bases), weighing, drying (desiccators and oven), Rules of work in analytical laboratory, Cautions / rules for performing quantitative determinations, volumetric and gravimetric, safety in chemical laboratory, Rules for the prevention of accidents, First aid, Precautions to be taken while handling toxic chemicals, Solvents/reagents/ acids and organic solvents.	
Unit - 2	14
Titrimetric analysis: Basic principle of titrimetric analysis, Classification, Preparation and purity of reagents/ solutions, Normality, Molarity and molar solution, Use of pH / pH-Meter, Principle, Preparation of buffer and indicators, their solubility and pH range, Universal indicator. Acid-base titrimetry: Titration curves for strong acid vs strong base, weak acid vs strong base and weak base vs strong acid titrations, Titration curves, Quantitative applications – selection and determination of pH, Non-aqueous titrations / titrations in mixed solvents. Complexometric titrimetry: Introduction to EDTA titrations – theory of metal ion indicators, titration curves, improving selectivity and sensitivity of EDTA titrations, masking and demasking methods, Applications – determination of hardness of water. Redox titrimetry: Balancing redox equations, calculation of the equilibrium constant of redox reactions, titration curves, theory of redox indicators, calculation of potential at the equivalence point, Nernst equation, Applications. Precipitation titrimetry: Titration curves, Volhard, and Mohr's, Fajan's titrations, titrations involving silver nitrate, Volhard's and Mohr's methods and their differences. Gravimetric Analysis: Principles of gravimetric analysis, Precipitation, Factors influencing precipitation, Coprecipitation, Postprecipitation, Advantages of organic reagents over inorganic reagents, Reagents used in gravimetric analysis, Ostwald-Walker and Lumsden-Dunstan Equations, Numerical problems on the above topics.	
Unit - 3	14
Classification and nomenclature of organic compounds, Hybridization, Shapes of organic molecules, Influence of hybridization on bond properties. Nature of bonding in Organic molecules Formation of Covalent bond, Types of chemical bonding, Localized and delocalized bonding, conjugated and cross conjugated dienes, Concept of resonance, resonating structures, its applications and limitations, Hyperconjugation and its applications, Tautomerism, Inductive effect, Electromeric effect, Resonance and Hyper conjugation, Cross conjugated systems with examples, Concept of aromaticity, aromatic nuclei, anti-aromatic systems with examples, Structure of organic acid and bases, Comparative study of strengths of acids and bases, Effect of structure and other factors on acidity and basicity, Buffer solutions, Applications of buffer action in biological systems, Acid-base titrations, Theory of acid-base titrations, Titration curves for strong acid-strong base, strong acid-weak base and weak acid-strong base titrations and their curves, Theory of indicators, Selection of indicators and their limitations.	

Mechanisms of Organic Reactions Notations used to represent electron movements and reactions of reactions, curly arrows, bond energies. Types of bonds: covalent, ionic and coordinate. Types of reagents/species: nucleophiles, nucleophilicity and basicity. Types of organic reactions: substitution, addition, elimination, rearrangement and pericyclic reactions, oxidation and reduction. Chemistry of Aliphatic Hydrocarbons: Carbon-Carbon Sigma bonds Generation of reactive intermediates: Formation of carbocations, free radicals, carbenes, their relative stabilities, nucleophilic substitution, electrophilic substitution, halogenation, nitration and sulphonation. Carbon-carbon pi bonds Formation of alkenes and alkynes by elimination reactions: mechanism of E1, E2, E1cb reactions. Saytzeff and Hofmann eliminations, Hofmann elimination, Cope elimination, Chugaev elimination. Reactivity: effect of alkyl group, conjugation and stereochemistry. Reactions of alkenes: Electrophilic additions: mechanism, regioselectivity and relative rates of addition, hydroboration, oxymercuration-reduction, halogenation, hydrohalogenation, hydration and epoxidation of alkenes, epoxides via ylides. Cycloaddition reactions: [2+2] and [4+2] addition reactions in hydrocarbon systems. Diels-Alder reaction. Allylic and benzylic bromination and mechanism of this reaction. Oxidation of alkenes: Hydroxylation and oxidative cleavage.	
Unit - 4	14
Nucleophilic substitution at saturated carbon: mechanism of S_N1 and S_N2 reactions with suitable examples. Effect of substrate structure, nucleophilicity and leaving group. Ambident nucleophiles: reactions of enolate ions. Aromatic Electrophilic substitution reactions: mechanisms of nitration, halogenation, sulphonation, Friedel Crafts alkylation and acylation with their mechanism. Activating and deactivating groups. Orientation effects, ortho/para ratio. Aromatic nucleophilic substitution reaction: S_NAr and Benzyne mechanism with suitable examples.	

Text Books:

1. Vogel's Textbook of Quantitative Chemical Analysis, J. Mendham, R.C. Denney, J.D. Barnes and M. J.K. Thomas, 6th edition, First Indian Reprint, Pearson Education (LPE) (2007)
2. Fundamentals of Analytical Chemistry, D.A. Skoog, D.M. West, Holler and Crouch, 8th edition, Saunders College Publishing, New York (2004).
3. Analytical Chemistry, G.D. Christian, 6th edition, Wiley-India (2007).
4. Principles of Instrumental Analysis, Skoog & Holler & Nieman, Thomson Brooks/Cole, 5th edition (2007).
5. Vogel's A. I. & Bass, R. S., Organic Chemistry, Longman Group Limited, Pre-1st, Pearson Education
6. Morrison, R. T. & Boyd, R. N., Organic Chemistry, Longman Group Limited, Pre-1st, Pearson Education
7. McMurry, J. E., Fundamentals of Organic Chemistry, 7th Ed., Cengage Learning India Edition, 2013.
8. Organic Reaction mechanism by V. K. Ahluwalia and R. Kumar, Narosa Publishers
9. Organic Chemistry by S. M. Mukherji, S. P. Singh and R. P. Kapoor, Narosa Publishers
10. A Guide book to mechanism in Organic Chemistry by Peter Sykes Pearson

References:

Reading:

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Internal Test	40
Skill Enhancement	30
Total	100

Date Course Co-ordinator Subject Committee Chairperson

Content of Practical Course I: List of Experiments to be conducted

PART-A Analytical Chemistry

1. Calibration of glassware (volumetric flask, burette and volumetric pipet)
2. Determination of sodium carbonate and sodium bicarbonate in a mixture
3. Determination of alkali present in soap/detergent
4. Determination of cobalt using potassium ferrocyanide
5. Determination of oxalic acid using potassium permanganate solution
6. Standardization of EDTA solution and determination of hardness of water
7. Determination of Fe^{2+} as Fe_2O_3
8. Determination of Ni^{2+} as $Ni(DMG)_2$ complex

PART-B Organic Chemistry

1. Selection of suitable solvents for Purification (crystallization) of organic compounds
2. Preparation of acetanilide from aniline using Zn dust/ acetic acid (Green method)
3. Synthesis of p-nitro acetanilide from acetanilide using nitrating mixture
4. Bromination of acetanilide (i) Conventional method and (ii) with using ammonium nitrate and potassium bromide (Green method)
5. Hydrolysis of methyl m-nitrobenzoate to m-nitrobenzoic acid (Conventional method)
6. Synthesis of cyclohexylidene from aniline (conventional method)
7. Preparation of phenanthrazone (Green method)
8. Diels Alder reaction between furan and maleic acid (Green method)

B.Sc Semester I – Chemistry (Hons) with specialization in Analytical Chemistry

Title of the Course DE-1: CHEMISTRY IN DAILY LIFE

Number of Theory Credits	Number of lecture hours/ semester	Number of practical Credits	Number of practical hours/ semesters
3	42	-	42

Content of Theory Course I	42 Hrs
Unit:–I	14
Dairy Products: Composition of milk and milk products, Analysis of fat content, rancidity of milk and butter, Estimation of added water in milk, Sewerage, Analysis of caffeine in coffee and tea, detection of impurity in coffee, metal hydride in tea, determination of metallic impurity in Ayurvedic medicines Food additives: adulterants and contaminants: Food preservatives like benzoates, propionates, sorbates, sulphites, Artificial sweeteners, Antioxidants, BHT, BHA, Emulsifiers and sodium cyclamate, Racemic vitamin, pro vitamin, multivitamin and mineral supplements Artificial food colorants: Coal tar dyes and non-permitted colors and metallic salts, Analysis of pesticide residues in food	
Unit – 2	14
Vitamins: Classification and nomenclature, Sources, deficiency diseases and structures of vitamin A1, vitamin B1, vitamin C, vitamin D, vitamin E & vitamin K Oils and fats: Composition of edible oils, detection of purity, rancidity of fats and oils, Tests for adulterants like argemone oil and mineral oil, Hydrogenation Soaps & Detergents: Definition, classification, manufacturing of soaps and detergents, comparison and uses	
Unit - 3	14
Chemical and Renewable Energy Sources Principles and applications of primary & secondary batteries and fuel cells, Basics of solar energy, Solar energy cells Polymers: Basic concept of polymers, classification and characteristics of polymers, applications of polymers as plastics in electronic, automotive components, medical fields, and packaging materials, Problems of plastic waste management, Strategies for the development of environmentally biomass	

Text Books

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]

References

Hedging))

Formative Assessment	
Assessment Occasion type	Weightage in Marks
Internal Test	[illegible]
Self Study Exam	[illegible]
Total	[illegible]

Date Course Co-ordinator Subject Committee Chairperson

B.Sc Semester 2 – Chemistry (Hons) with specialization in Analytical Chemistry

Title of the Course: DSC – 2: INORGANIC AND PHYSICAL CHEMISTRY – I

Number of Theory Credits	Number of lecture hours/semester	Number of practical Credits	Number of practical hours/ semester
4	56	2	56

Content of Theory Course 2	Marks
Unit – I	14
Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de Broglie equation, Heisenberg uncertainty Principle and its significance. Schrödinger wave equation, significance of ψ and ψ². Quantum numbers and their significance Normalized and orthogonal wave functions. Sign of wave functions. Radial and angular wave functions for hydrogen atom. Radial and angular distribution curves. Shapes of s, p, d and f orbitals. Contour boundary and probability diagrams. Pauli's Exclusion Principle, Hund's rule of maximum multiplicity, Aufbau's principle and its limitations. Electronic configurations of the elements (Z=1-31), effective nuclear charge, shielding/screening effect, Slater's rules, variation of effective nuclear charge in Periodic Table.	
Unit - II	14
s, p, d and f block elements, the long form of periodic table. Detailed discussion of the following properties of the elements: (a) Atomic and ionic radii and lanthanide contraction (b) Ionization enthalpy (c) Electron gain enthalpy (d) Valence (e) Oxidation states (f) Electronegativity, Pauling's, Mulliken's, Allred Rochow's and Huheey's electronegativity scales, variation of electronegativity with bond order, partial charge, hybridization, group electronegativity Detailed study of the chemistry of the compounds of groups 13 to 17 (halides, hydrides, oxides and oxoacids) and its trends.	
Unit - 3	14
Gaseous State Elementary aspects of kinetic theory of gases, real and ideal gases, Boyle temperature (derivation not required). Molecular velocity (derivation required), Maxwell's distribution of molecular velocities (derivation not required), most probable velocity, average velocity and root mean square velocity. Calculation of these velocities, their interrelation and dependence on temperature. Collision number, collision diameter and mean free path and collision frequency. Collision in gases and its importance in chemical reactions. Degrees of freedom, law of equipartition of energy. Behaviour of real gases. Deviation from ideal gas behaviour, compressibility factor (Z) and its variation with pressure for different gases. Causes of deviation from ideal behaviour, van der Waals equation of state for real gases and application in explaining real gas behaviour. Critical phenomena – critical constants of CO2, critical constants and their calculation from van der Waals equation. Continuity of state, law of corresponding states, numerical problems. Liquid state	

Surface Tension: Definition and its determination using drop number, effect of temperature and impurity on surface tension Viscosity: Definition, Coefficient of viscosity: Determination of viscosity of liquid using Ostwald viscometer. Effect of temperature, size, weight, shape of molecules and intermolecular forces. Refraction: Specific and molar refraction, variation and advantages. Determination of refractive index by Abbe's Refractometer. Adsorption: Types, constructive processes. Parachor: Definition, Atomic and structural constants. Evaluation of structure of benzene and tautomerism. Viscosity and molecular structure. Molar refraction and chemical constitution. Numerical Problems.	
Unit:- 4:	14
Liquid Crystals Separation, classification into enantiotropic, thermotropic, lyotropic and polymeric. Structures of nematic and cholesteric phases/mesophases in polymeric and thermotropic liquid crystals. Applications of liquid crystals in LCDs and thermal sensing. Solids: Forms of solids: Unit cell, lattice space lattice, symmetry of crystals, size and shape of crystals. Laws of Crystallography: Law of constancy of interfacial angles, Law of rational indices, Law of symmetry, Symmetry elements, Crystal systems, Bravais lattice types and identification of lattice planes. Miller indices and its calculation. X-ray diffraction by crystals, Bragg's law and derivation of Bragg's equation. Single crystal and powder diffraction methods. Defects in crystals, crystals and liquid crystals, numerical problems. Distribution Law Nernst Distribution Law :- Statement and its derivation, Distribution constant, factors affecting distribution constant, Limits of Distribution Law, modification of distribution law when molecular change in association or dissociation. Application of Distribution Law in solvent extraction, derivation for simple and multiple extraction. Principle of extraction, Derivation for fraction of drug extracted in 'n' extractions.	

Text Books

1. Concise Inorganic Chemistry, J.D Lee, 4th Edn. (Wiley) (2001).
2. Fundamental Concepts of Inorganic Chemistry, Vol 1 and 2, 2nd Edition, Asim K. Das, CBS Publishers and Distributors, (2013).
3. Basic Inorganic Chemistry, F. A. Cotton, G. Wilkinson and P. L. Gaus, 3rd Edition (Wiley India).
4. Inorganic Chemistry, 2nd Edn. Catherine E. Housecroft and A.G. Sharpe, Pearson Prentice Hall (2005).
5. Atkins' Physical Chemistry 8th Edition, Peter Atkins & Julio De Paula Oxford University Press.
6. Physical Chemistry by Samuel Glasstone (ELBS) (1970).
7. A Text book of Physical Chemistry, A. S. Negi & S. C. Anand, New age International Publishers (2007).
8. Principles of Physical Chemistry, Puri, Sharma & Pathania, Vishal Publishing Co.
9. A Text Book of Physical Chemistry, K.L. Kapoor, Vol. 1, 2nd Edition, Macmillan India Ltd., Delhi (2009).
10. Advanced Physical Chemistry, Gurdeep Raj, Goel Publishing House (2013).

References

Pedagogy

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Internal Test	30
Semi Skill Exam	20
Total	50

Date Course Co-ordinator Subject Committee Chairperson

Content of Practical Course 2: List of Experiments to be conducted

PART-A Inorganic Chemistry

Volumetry

1. Determination of carbonate and hydroxide present in a mixture
2. Determination of oxalic acid and sodium oxalate in a given mixture using standard $KMnO_4$ / NaOH solution
3. Standardization of potassium permanganate solution and determination of nitrite in a water sample
4. Standardization of Hypo solution and determination of chloride in a water sample (Argentometric)
5. Determination of available chlorine in bleaching powder using iodometric method

Gravimetry

1. Determination of Fe^{3+} as Fe_2O_3
2. Determination of Cu^{2+} as CuSCN

PART-B Physical Chemistry

1. Safety Practices in the Chemistry Laboratory. Knowledge about common toxic chemicals and safety measures in handling, storing and drying of glassware.
2. Determination of density using specific gravity bottle and viscosity of liquids using Ostwald's viscometer (Dihydric alcohols, Toluene, Chloroform, Cyclohexane or any other non-hazardous liquids)
3. Study of the variation of viscosity of aqueous solution with the concentration of a solute
4. Determination of the density using specific gravity bottle and surface tension of liquids using Stalagmometer (Ethyl acetate, Toluene, Chloroform, Cyclohexane or any other non-hazardous liquids)
5. Study of variation of surface tension of detergent solution with concentration
6. Determination of specific and molar refraction by Abbes Refractometer (Ethyl acetate, Methyl acetate, Ethylene Chloride)
7. Determination of the composition of liquid mixture by refractometry (Toluene & Alcohol, Water & Alcohol)
8. Determination of partition/distribution coefficient – i) Acetic acid in water and cyclohexane ii) Acetic acid in Water and Butanol iii) Benzoic acid in water and Toluene.

B.Sc Semester-2 – Chemistry (Hons) with specialization in Analytical Chemistry

Title of the Course: GE – 2: Molecules of Life

Number of Theory Credits	Number of lecture hours/semester	Number of practical Credits	Number of practical hours/semester
3	42	-	45

Content of Theory Course-2	42 Hrs
Unit – 1	14
Carbohydrates Classification of carbohydrates: reducing and non-reducing sugars. General properties of glucose and fructose, their open chain structure. Epimers, mutarotation and anomers. Linkages between monosaccharides, structure of disaccharides (sucrose, maltose, lactose and cellobiose), polysaccharides (starch and cellulose) including their structural differences. Amino acids, Peptides and Proteins Classification, physical properties, zwitterion structure and isoelectric properties of amino acids. Peptide bond. Primary, Secondary, Tertiary and Quaternary structure of proteins. Determination of primary structure of peptides.	
Unit - 2	14
Enzymes and coenzymes with drug action Classification and nomenclature, factors affecting enzyme action. Coenzymes and cofactors and their role in biological reactions. Specificity of enzyme action, allosteric regulation. Enzyme inhibitors and their importance, mechanism of inhibition (Competitive and non competitive inhibition including Lineweaver Burk plot). Drug administration theory: Structure-activity relationship of drug molecules, briefly role of –OH group, –NH, group, double bond and aromatic ring. Lipids Introduction to lipids, classification, Biological importance of triglycerides, phospholipids, glycolipids and steroids (cholesterol).	
Unit - 3	14
Nucleic acids Components of nucleic acids: Purine, pyrimidine, nucleoside and nucleotide (structure only), other components of nucleic acids: nucleosides and nucleotides (nomenclature), Structure of polynucleotide, Structure of DNA (Watson-Crick model) and RNA (types of RNA). Genetic Code, Biological role of DNA and RNA: Replication, Transcription and Translation. Concept of Energy in Biosystems Chemical nature of food, Importance (acid, content of carbohydrates, proteins and fats, Oxidation of foodstuffs, Inorganic constituents (e.g. source of energy for body, importance of Vitamins (relationship, deficiency with the diseases), Concept of calorific energy, RQ (principle and free energy change), Conversion of food into energy, Outline of respiratory pathways of Carbohydrates, Glycolysis, Fermentation, Krebs Cycle, Oxidation of fatty acids, Oxidation of Keto acid, Ketosis, Interrelationships in the metabolic pathways of Proteins and Lipids, Common Diseases.	

Text Books

1. Morrison, R. T. & Boyd, R. N. Organic Chemistry, Sixth Edition. India: Pearson Education.
2. Finar, I. L. Organic Chemistry (Volume 1). Delhi: Pearson Education.
3. Finar, I. L. Organic Chemistry (Volume 2). Delhi: Pearson Education.
4. Bahl, B. S. & Bahl, A. Advanced Organic Chemistry. India: S. Chand.
5. Wade, L. G. Organic Chemistry. Pearson Education, 2006.

References

Pedagogy

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Mid Sem Test	40
Semi End Exam	60
Total	100

Date | Course Coordinator | Subject Committee Chairperson

Question Paper Pattern for B.Sc. III Semester Theory Examination
Subject: CHEMISTRY

Paper: DSC-3, DSC-4: ——————————

Time: 3 hour] Max. Marks: 60

Instructions: 1) Answer any FIVE sub-divisions from Part-A and any TWO questions each from Part-B and Part-C

2) Figures to the right indicate marks.

Part-A

Q-1. Answer any FIVE out of EIGHT sub-divisions: (5 × 2 = 10)

(1/2 Questions should be drawn from each Unit)

a), b), c), d), e), f), g) and h)

Part-B

Answer any TWO questions of the following: (2 × 12 = 24)

(The questions to be drawn from Unit-1 and Unit-2 by giving equal weightage to each unit)

Q-2.	a – b – c	4 + 4 + 4 = 12	or	4 + 4 + 4 = 12
Q-3.	a – b – c	4 + 4 + 4 = 12	or	4 + 4 + 4 = 12
Q-4.	a – b – c	4 + 4 + 4 = 12	or	4 + 4 + 4 = 12

Part-C

Answer any TWO questions of the following: (2 × 12 = 24)

(The questions to be drawn from Unit-3 and Unit-4 by giving equal weightage to each unit)

Q-5.	a – b – c	4 + 4 + 4 = 12	or	4 + 4 + 4 = 12
Q-6.	a – b – c	4 + 4 + 4 = 12	or	4 + 4 + 4 = 12
Q-7.	a – b – c	4 + 4 + 4 = 12	or	4 + 4 + 4 = 12

[illegible]

Question Paper Pattern for B.Sc. III Semester Theory Examinations
Subject: CHEMISTRY

Elective Paper: OE-3/OE-3: [illegible]

Time: 3 hour] [Max. Marks: 80

Instructions: 1) Answer any FOUR subdivisions from Part-A and any FOUR questions from Part-B by selecting at least ONE full question from each Unit.

2) Figures to the right indicate marks.

Part-A

Q-1. Answer any FOUR out of SIX subdivisions. (4 × 2 = 08)

(C) Questions to be drawn from each Unit

a), b), c), d), e) and f)

Part-B

Answer any FOUR questions by selecting at least ONE full question from each Unit (4×12 = 48)

Unit-I

Q-2.	a) [illegible]	b) [illegible]	or	a) [illegible] b) [illegible]
Q-3.	a) [illegible]	b) [illegible]	or	a) [illegible] b) [illegible]

Unit-II

Q-4.	a) [illegible]	b) [illegible]	or	a) [illegible] b) [illegible]
Q-5.	a) [illegible]	b) [illegible]	or	a) [illegible] b) [illegible]

Unit-III

Q-6.	a) [illegible]	b) [illegible]	or	a) [illegible] b) [illegible]
Q-7.	a) [illegible]	b) [illegible]	or	a) [illegible] b) [illegible]

[illegible]

Question Paper Pattern for B.Sc. I-II Semester Theory Examination
Subject: CHEMISTRY

Paper: DSC-1/DSC-2

Time: 3 hour] [Max. Marks: 60

Instructions: i) Answer any FIVE sub-divisions from Part-A and any TWO questions each from Part-B and Part-C
ii) Figures to the right indicate marks.

Part-A

Q-1 Answer any FIVE out of EIGHT sub-divisions: (5 × 2 = 10)

(Q2 Questions should be drawn from each Unit)

a), b), c), d), e), f), g) and h)

Part-B

Answer any TWO questions of the following (2 × 13 = 26)

(The questions to be drawn from Unit-1 and Unit-2 by giving equal weightage to each unit)

Q-2	a + b + c	4 + 4 + 5 = 13	or	3 + 5 + 5 = 13
Q-3	a + b + c	4 + 4 + 5 = 13	or	3 + 5 + 5 = 13
Q-4	a + b + c	4 + 4 + 5 = 13	or	3 + 5 + 5 = 13

Part-C

Answer any TWO questions of the following (2 × 12 = 24)

(The questions to be drawn from Unit-3 and Unit-4 by giving equal weightage to each unit)

Q-5	a + b + c	4 + 4 + 4 = 12	or	3 + 4 + 5 = 12
Q-6	a + b + c	4 + 4 + 4 = 12	or	3 + 4 + 5 = 12
Q-7	a + b + c	4 + 4 + 4 = 12	or	3 + 4 + 5 = 12

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Question Paper Pattern for B.Sc. III Semester Theory Examination
Subject: CHEMISTRY

Elective Paper: OE-1/OE-2: ————————————

Time: 3 hours | Max. Marks: 60

Instructions: i) Answer any FOUR subdivisions from Part-A and any FOUR questions from Part-B by selecting at least ONE full question from each Unit.
ii) Figures to the right indicates marks.

Part-A

Q-1. Answer any FOUR out of SIX subdivisions: (4 × 2 = 08)

(02) Questions to be drawn from each Unit.

a), b), c), d), e) and f)

Part-B

Answer any FOUR questions by selecting at least ONE full question from each Unit. (4 × 13 = 52)

Unit-I

Q-2. a ⟶ b ⟶ c (4 + 4 + 5 = 13) OR (3 + 5 + 5 = 13)
Q-3. a ⟶ b ⟶ c (4 + 4 + 5 = 13) OR (5 + 5 + 3 = 13)

Unit-II

Q-4. a ⟶ b ⟶ c (4 + 4 + 5 = 13) OR (3 + 5 + 5 = 13)
Q-5. a ⟶ b ⟶ c (4 + 4 + 5 = 13) OR (5 + 5 + 3 = 13)

Unit-III

Q-6. a ⟶ b ⟶ c (4 + 4 + 5 = 13) OR (3 + 5 + 5 = 13)
Q-7. a ⟶ b ⟶ c (4 + 4 + 5 = 13) OR (5 + 5 + 3 = 13)

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KUVEMPU UNIVERSITY

NEP-2020

curriculum structure and Syllabus

Bachelor of Science (Basic and Honors) Programme with Computer Science as Major and Minor Courses

And

Open Elective courses in Computer Science

W.e.f Academic Year 2021-22 onwards

UG BOS IN COMPUTER SCIENCE

The objectives of the Program

1. The primary objective of this program is to provide a foundation of computing principles for effectively using information systems and writing software.
2. It helps students acquire the requirements for system programming and exposes students to information systems.
3. This programme provides students with options to specialize in various software system.
4. To produce outstanding Computer Scientist who can apply the theoretical knowledge into practice in the real world and develop challenging projects themselves.
5. To provide opportunity for the study of modern methods of information processing and its applications.
6. To develop strong problem solving techniques and the problem solving skills through programming.
7. To prepare students who wish to go on to further studies in computer science and related subjects.
8. To equipment students to work effectively with a range of current standard office Productivity software applications.

Program Outcomes

1. **Discipline knowledge:** Applying knowledge on basics of Computer Science and ability to apply to design principles in the development of solutions for problems of varying complexity.
2. **Problem Solving:** Improved reasoning with strong mathematical ability to identify, formulate and analyze problems related to computer science and exhibiting sound knowledge on data structures and algorithms.
3. **Design and Development of Solutions:** Ability to design and development of algorithmic solutions to real world problems.
4. **Programming a computer:** Exhibiting strong skills acquired to program a computer for various areas and problems of day-to-day scientific applications.
5. **Application Systems Knowledge:** Possessing a extensive knowledge to practice existing computer applications software.
6. **Communication:** Possessing a reasonably good communication knowledge both in oral and writing.
7. **Ethics as Profession, Environment and Society:** Exhibiting professional ethics to maintain the integrity in a working environment and also have concern on societal impacts due to computer-based solutions for problems.
8. **Lifelong Learning:** Should become an independent learner to learn to learn in today.
9. **Motivation to take up Higher Studies:** Motivated to continue educational towards advanced studies on Computer Science.

Additional Program Outcomes for B.Sc. (Hons.) in Computer Science

The four years Bachelor in Computer Science (Hons.) program enables students to attain the following additional outcomes besides the above mentioned outcomes:

1. Apply standard Software Engineering practices and strategies in real-time software project development
2. Design and develop computer programs/computer-based systems in the area related to AI, algorithms, networking, web design, cloud computing, IoT and data analytics
3. Acquaint with the contemporary trends in industry/research settings and thereby innovate novel solutions to existing problems
4. The ability to apply the knowledge and understanding of the core CS theories in the given application domains
5. The ability to work independently on a substantial software project and as an effective team member

Curriculum Structure

Program: B.Sc. (Basic and Honors) Subject: Computer Science

1. Computer Science as MAJOR with another Subject as MINOR (Syllabus of Major Components)

Sem	Discipline Specific Core Course (DSC)	Number of Periods per Week		Discipline Specific Elective Courses (DSE), Generic Elective Courses (GE)	Credits of Theory / Practical
		Theory	Lab		
1	DSC-1: Computer Fundamentals and Programming in C	4			
	DSC-1Lab: C Programming Lab		4		
2	DSC-2: Data Structures using C	4			
	DSC-2Lab: Data Structures Lab		4		
3	DSC-3: Object Oriented Programming Concepts and Programming in C++	4			
	DSC-3Lab: C++ Lab		4		
4	DSC-4: Database Management Systems	4			
	DSC-4Lab: DBMS Lab		4		
5	DSC-5: Programming in JAVA	3		SEC-1:	
	DSC-6: Computer Networks	3		Any one from Discipline Centric/ Generic Elective – 3	3
	DSC-5Lab: JAVA Programming Lab		4		
	DSC-6Lab: Computer Networks Lab		4		
6	DSC-7: Internet Technologies	3		SEC-2:	
	DSC-8: Operating System Concepts	3		Any one from Discipline Centric/ Generic Elective – 3	3
	DSC-7Lab: CGI Scripts, HTML, CSS Lab		4		
	DSC-8Lab: OS Programming Lab		4	Internship	2
7	DSC-9: Object Oriented Analysis and Design	3		DSE-1:	
	DSE-1/: Design and Analysis of Algorithms	3		Any one from Discipline Specific Elective/ Generic Elective – 4	3
	DSE-2/: Software Engineering	3		DSE-2:	
	DSC-9Lab: Computer Graphics and Visualization Lab		4	Any one from Discipline Specific Elective/ Generic Elective – 4	3
	DSE-1/Lab: Algorithms Lab		4		
				Project or Field Work	3
8	DSE-3/: Architecture, Systems and applications	3		DSE-3:	
	DSE-4/: Computer Organization and Architecture	3		Any one from Discipline Specific Elective/ Generic Elective – 3	3
	DSE-3/4: Data Warehousing and Data Mining	3			
	DSE-3/4Lab: AI Lab		4	Research Project	6

2. Computer Science as MINOR with another Subject as MAJOR (Degree Programme Curriculum)

Sem	Discipline Specific Core Courses (DSC)	Course Teaching Week	
		Theory	Lab
1.	DSC-1: Computer Fundamentals and Programming in C	4	
	DSC-1Lab: C Programming Lab		4
2.	DSC-2: Data Structures using C	4	
	DSC-2Lab: Data structures Lab		4
3.	DSC-3: Object Oriented Programming Concepts and Programming in JAVA	4	
	DSC-3Lab: JAVA Lab		4
4.	DSC-4: Database Management Systems	4	
	DSC-4Lab: DBMS Lab		4
5.	DSC-5: Programming in PYTHON	4	
	DSC-5Lab: PYTHON Programming Lab		4
6.	DSC-6: Internet Technologies	4	
	DSC-6Lab: JAVA Script, HTML, CSS Lab		4

Vocational Courses

Group-1:	Group-2:
• DTP, GIS and Multimedia • Hardware and Server Maintenance • Web Content Management Systems • E-Commerce • Web Designing	• Health Care Technologies • Digital Marketing • Office automation • Multimedia Processing • Accounting Package

Discipline Specific Elective Courses

Group-1:	Group-2:	Group-3:
• IoT • Cyber Law and Cyber Security • Web Programming - PHP and MySQL • Clouds, Grids, and Clusters • Software Testing	• Information and Network Security • Data Compression • Wireless Networks • Optimization Techniques • Multimedia Computing • Big Data	• Data Analytics • Storage Area Networks • Pattern Recognition • Digital Image Processing • Parallel Programming • Digital Signal Processing

Open Electives in Computer Science

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible] • [illegible] • [illegible] • [illegible]
[illegible]	[illegible]	[illegible] • [illegible] • [illegible] • [illegible]
[illegible]	[illegible]	[illegible] • [illegible] • [illegible]
[illegible]	[illegible]	[illegible] • [illegible] • [illegible]

Syllabus for B.Sc. (Basic and Honors)

Semester: I

Course Code: [illegible]	Course Title: Computer Fundamentals and Programming in C
Course Credit: 3+1	Hour of Teaching: [illegible]
Total Contact Hours: 51	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 3

Course Content

Content	Hours
Unit - 1	
Fundamentals of Computer: Introduction to Computers – Computer Definition, Characteristics Computers, Evolution and History of Computers, Types of Computers, Basic Organization of a Digital Computer. Number Systems – different types, conversions from one number system to another, Computer Codes – BCD, Gray Code, ASCII and Unicode. Boolean algebra – Boolean Operators with Truth Tables. Types of Software – System Software and Utility Software. Computer Languages – Machine Level, Assembly Level & High Level Languages. Translator Programs – Assembler, Interpreter and Compiler. Planning a Computer Program – Algorithm, Flowchart and Pseudo code with Examples. (at least 5 hrs)	10
Unit - 2	
Introduction to C Programming: Over View of C, History and Features of C, Structure of a C Program with Examples, Creating and Executing a C Program, Compilation process in C. **C Programming Basic Concepts:** Character Set, C tokens – keywords, identifiers, constants, and variables, Data types, Declarations & initialization of variables, Symbolic constants. **Input and output with C:** Formatted I/O functions – *printf* and *scanf*, control strings and escape sequences, output specifications with *printf* function, Unformatted I/O functions to read and display single character and a string – *getchar*, *putchar*, *gets* and *puts* functions.	8
Unit - 3	
C Operators & Expressions: Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment & Decrement operators, Bitwise operators, Conditional operator, Special operators, Operator Precedence and Associativity, Evaluation of arithmetic expressions, Type conversion. **Control Structures:** Decision making Statements – *if*, *if-else*, nested *if-else*, *else-if* ladder, *switch* statements, *goto* statement & problems with *goto*. Looping Statements – *while*, *do-while* and *for* statements, nesting of loops, Jump statements – *break*, *continue*, *exit*, *return*. Infinite loops.	11
Unit - 4	

Arrays: One Dimensional arrays - Definition, Initialization and Memory representation; Two Dimensional arrays - Definition, Initialization and Memory representation. Strings: Declaring & Initializing string variables, String handling functions - strlen, strcpy, strcat, strcmp, strrev, strupr, strlwr, Character handling functions - isalpha, isdigit, isalnum, isupper, islower, isspace, ispunct. Pointers in C: Understanding pointers - Declaring and initializing pointers, accessing address and values of variables using pointers, Pointers and arrays, Pointer Arithmetic, Advantages and disadvantages of using pointers.	12
Unit - 5:	
User Defined Functions: Need for user defined functions, Format of C user defined functions, Components of user defined functions - return type, name, parameter list, function body, return statement and function call, Categories of user defined functions - With and without parameters and return type. **User defined data types:** Structures - Structure Definition, Advantages of structure, declaring structure variables, accessing structure members, structure constant, initialization, nesting of structures, Array of structures, Unions - Union definition, difference between structures and Unions.	12

Text Books

1. Pradeep K. Sinha and Priti Sinha: Computer Fundamentals (Sixth Edition), BPB Publications
2. E. Balaguruswamy: Programming in ANSI C (TMH)

References

1. Kernighan & Ritchie: The C Programming Language (PHI)
2. Yashavant Kanetkar: Let us C
3. P.B. Kumar: Programming in C (Sapna Book House)

Course Code: BSC-1Lab	Course Title: C Programming Lab
Course Credits: 02	Hours of Teaching: [illegible] hr
Total Contact Hours: 30	Formative Assessment Marks: 30
Exam Marks: 70	Exam Duration: 03

Practice Lab

The following activities are carried out / discussed in the lab during the initial period of the semester

1. Basic Computer Activities
   a. Familiarization of Computer Hardware Parts
   b. Basic Computer Operations and Maintenance
   c. Do's and Don'ts, Safety Guidelines in Computer Lab
2. Familiarization of Basic Software – Operating System, Word Processors, Spreadsheets, Integrated Development Environment (IDE) with Examples
3. Type Program Code, Debug and Compile basic programs covering C Programming fundamentals discussed during theory classes.

Programming Lab

Part A:

1. Write a C Program to read radius and find area and volume of a sphere
2. Write a C Program to read three numbers and find the biggest of three
3. Write a C Program to demonstrate all the bitwise operators (at least 5)
4. Write a C Program to read a number find the sum of the digits, reverse the number and check if the palindrome
5. Write a C Program to read numbers from keyboard continuously till the user presses 999 and to find the sum of only positive numbers
6. Write a C Program to read percentage of marks and to display appropriate grade (using switch case)
7. Write a C Program to find the roots of quadratic equation (Take both)
8. Write a C program to read up to values in 2 subjects for 4 students and find the average of marks and overall (Demonstration of single dimensional array)
9. Write a C Program to remove duplicate elements in a single dimensional array
10. Program to perform matrix addition and subtraction of numbers

Part B:

1. Write a C Program to find the length of a string without using built-in function
2. Write a C Program to demonstrate string functions (at least 5)
3. Write a C Program to the concatenate problem in 2
4. Write a C Program to generate Fibonacci number by defining user-defined function
5. Write a C Program to find the sum of n square roots using function
6. Write a C Program to read, display and multiply two matrices using functions
7. Write a C Program to read a string and to find the number of alphabets, digits, vowels, consonants, spaces and special characters
8. Write a C Program to Reverse a String using Pointer
9. Write a C Program to demonstrate student structure to read & display records of n students
10. Write a C Program to demonstrate the difference between structure & union

Note: Student has to execute a minimum of 8 programs in each part to complete the Lab course

Privatization Scheme to: Lets Brainstorm

[illegible]	[illegible]
Program 2 [illegible]	[illegible]
Program 3 [illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Total	[illegible]

Semester: II

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

Course Outcomes (CO):

After completing this course students will be able to:

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

Course Content:

Content	Hours
Unit - I	
[illegible]	[illegible]
Unit - II	
[illegible]	[illegible]

Unit- 3	
Stacks: Basic Concepts – Definition and Representation of stacks, Operations on stacks, Applications of stacks: infix, postfix and prefix notations, Conversion from infix to postfix using stack, Evaluation of postfix expression using stack, Application of stack in function calls. Queues: Basic Concepts – Definition and Representation of queue, Types of queue – Simple queues, Circular queues, Double ended queues, Priority queues, Operations on Simple queues.	12
Unit – 4:	
Dynamic memory allocation: Basic concepts of Dynamic memory allocation, Memory allocation and de-allocation functions - malloc, calloc, realloc and free. Linked list: Basic Concepts – Definition and Representation of linked list, Types of linked lists - Singly linked list, Circularly linked list, Header linked list, Doubly linked list, Representation of Linked list in Memory. Operations on Singly linked lists – Traversing, Searching, Insertion, Deletion, Memory allocation, Garbage collection.	12
Unit- 5:	
Trees: Definition, Tree terminologies, node, root node, parent node, ancestors of a node, siblings, terminal & non-terminal nodes, degree of a node, level, edge, path, depth. Binary tree: Type of binary trees – strict binary tree, complete binary tree, binary search tree and heap tree, Array representation of binary tree, Examples of binary tree, operations (inserting and removing nodes) on binary tree, Reconstruction of a binary tree when any two of the traversals are given.	12

Text Book(s):

1. Tanmay Baruah, Fundamentals of Data Structures

Reference(s):

1. Yashavant Kanetkar, Data structures using C (Pearson Education)
2. Reema Thareja, Introduction to Data structures (Pearson Education)
3. Y. Kanetkar, Data Structures Using C (BPB)
4. Ellis Horowitz, Sartaj Sahni, Fundamentals of Data Structures in C, 2nd Edition, Universities Press (India) Private Limited, 2008

Course Code: [illegible]	Course Title: [illegible]
Course Credits: [illegible]	Hour of Teaching: [illegible]
Total Contact Hours: [illegible]	Semester Examination Marks: [illegible]
Exam Marks: [illegible]	Exam Duration: [illegible]

Programming Lab

Part A:

1. Write a C Program to find GCD using recursive function
2. Write a C Program to display Pascal Triangle using a recursive function
3. Write a C Program to generate a Fibonacci number using recursive function
4. Write a C Program to implement Towers of Hanoi
5. Write a C Program to implement insertion sort to find smallest and largest element of the array.
6. Write a C Program to read the names of cities and arrange them alphabetically using strings
7. Write a C Program to sort the given list using selection sort technique
8. Write a C Program to sort the given list using insertion sort technique

Part B:

1. Write a C Program to sort the given list using quick sort technique
2. Write a C Program to sort the given list using merge sort technique
3. Write a C Program to search an element using linear search technique and determine binary search technique
4. Write a C Program to implement Stack.
5. Write a C Program to convert an infix expression to postfix
6. Write a C Program to implement single queue.
7. Write a C Program to implement linked list.
8. Write a C Program to implement the concept of a binary tree

Evaluation Scheme for Lab Examination

[illegible]	[illegible]	[illegible]
Program 1 from Part A	Write up of the program 1	2
Program 2 from Part B	Write up of the program 2	5
Execution and formatting of the programs		13
Viva Voce based on the exercises		2
Total		25

BSc-Semester-III

Course Title: Object Oriented Programming Concepts and Programming in Java	Course code: DSC-3
Total Contact Hours: 60	Course Credits: 04
Formative Assessment Marks: 40	Duration of ESE (Exam): 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- Understand the features of Java and the architecture of JVM.
- Write, compile, and execute Java programs that may include basic data types and control flow constructs and how type casting is done.
- Identify classes, objects, members of a class and relationships among them needed for a specific problem and demonstrate the concepts of polymorphism and inheritance.
- The students will be able to demonstrate programs based on interfaces and threads and explain the benefits of JAVA's Exceptional handling mechanism compared to other Programming Language.
- Write, compile, execute Java programs that include GUIs and event driven programming and also programs based on files.

DSC-3: Object Oriented Programming Concepts and Programming in Java

Units	Descriptions	Hours
1.	**OOPs Concepts: Basics of OOPs**: Object, Class, Data abstraction, Data Hiding, Polymorphism, Inheritance. **Introduction to Java**: Basics of Java programming, Data types, Variables, Operators, Control structures, Branching, Looping, Labeled Loop, Arrays (1D, 2D).	12
2.	**Object and Classes**: Basics of Objects and Classes, Constructors: Definition and Types, Destructors, Finalize(), Nested, modifiers: Java Overloading, Inheritance, String, Character, String Buffer.	08
3.	**INHERITANCE AND INTERFACES: Inheritance**: Definition, Types: Single, Multilevel, Hierarchical, **Interfaces**: Definition, Creating & implementing Interface, Recent Programming, Introduction to Package in Java.	20
4.	**Multithreading and Exceptions**: Creating a thread, Extending the thread class, starting and blocking the thread, Thread life cycle, Runnable interface, Exception handling with try-catch-finally, Throwing and Rethrowing exceptions classes, Multiple catch statements, Nested class.	20

5	Event and GUI programming: Event handling: Event types, Mouse and key events, GUI Basics, Panels, Frames, Layout Managers, Flow Layout, Border Layout, Grid Layout, GUI components, Buttons, Check Boxes, Radio Buttons, Labels, TextFields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Menus, Dialog Boxes, Applet and its life cycle, Introduction to swings	12

Text Books

1. Programming with Java By E Balagurusamy – 3 Reprint, Fourth Edition, Tata McGraw Hill Education Private Limited
2. Complete Volume I – Fundamentals, Sir Cay S. Horstmann, Pearson Ed.
3. Object Oriented Programming with Java, Sivasubramanya M.T., Guna B.S., Manjunatha K.S

Reference Books:

1. Java 2 - The Complete Reference – Herbert, BPB publications.
2. Java - The Complete Reference, 7th Edition, By Herbert Schildt, McGraw Hill publications.

Course Code: [illegible]	Course Title: [illegible]
Course Credits: [illegible]	Hour of Teaching: [illegible]
Total Contact Hours: [illegible]	Formative Assessment Marks: [illegible]
Exam Marks: [illegible]	Exam Duration: [illegible]

Course Outcomes (COs):

After completing this course successfully, a student will be able to

- Implement object oriented programming concept using basic syntaxes of control structures
- Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem
- Demonstrate how to achieve reusability using inheritance
- Demonstrate understanding and use of interfaces, packages, different exception handling mechanisms and concept of multithreading for robust faster and efficient application development
- Identify and describe various user interface components to design GUI in Java using Applet & AWT along with response to events

Practice Lab

1. Program to print the following
   triangle of numbers :
   1
   1 2
   1 2 3
   1 2 3 4
   1 2 3 4 5
2. Program to compile Java application to print the message "Welcome to Java"
3. Program to display the month of a year. Months of the year should be held in an array.
4. Program to find the area of a triangle.
5. program to demonstrate a division by zero exception
6. Program to create a user defined exception for Pay Out of Bounds

Programming Lab

PART A: Java Fundamentals: OOPs in Java

1. Program to add two integers and five floating numbers. When no arguments are supplied, give a default value to calculate the sum. Use function overloading.
2. Program to perform mathematical operations. Create a class called Addition with methods to add and subtract. Create another class called MultDiv that extends from Addition class to use the inherited data of the super class. MultDiv should have methods to multiply and divide. A main function should accept the values and perform the mathematical operations.
3. Program with class variable that is available for all instances of a class. Use static variable declaration. Observe the changes that occur in the values of member variables and class.

4. Program to create a student class with following members: Rollnumber, Name, Mark of n1, Mark of n2, average and a method getdata(). Each of the data must be obtained only when the data given is of the correct type (ie, valid data for each subject is 0-100). If an incorrect data is given, the mark for that subject must be defaulted to zero. Using this method, write a constructor for the class. Write separate functions for assigning and displaying marks of each. In the main method, create an array with ten objects and display the results.
5. In a college first year class are taking the following enrolled hours of the class: {22, 25, 30, 35}. Name of the class is stored in the class_name of students in the class. Define a class called first_year with these attributes and define a suitable constructor. Also write a method called less_hours() which prints a first year object and returns the student with the highest enrolled hours. In the main method, define a first_year object and find the best student of this class
6. Program to define a class called employee with the name, last name of appointment. Create two employee objects as an array and sort them as per their date of appointment in ascending order using bubble sort.

PART B: Exception Handling & GUI Programming

1. Program to catch Negative Array Size Exception. This exception is raised when the array is initialized to negative values.
2. Program which creates and displays a message on the window.
3. Program to draw several shapes on the created window.
4. Program which creates a frame with two textboxes (father and mother). When we click the button before the name of the father, his age and occupation should appear. While we click mother button details of mother also appear.
5. Program to name any two shapes according to the actions key pressed.
6. Program to create a window when we press M or m the window displays Good Morning. A or a the window displays Good After noon. E or e the window displays Good Evening. N or n the window displays Good Night.
7. Demonstrate the various mouse handling events using suitable example.
8. Program to create menu bar with pull-down menus.

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program 1 from Part A	Writing up of the program 1	5
Program 1 from Part B	Writing up of the program 2	5
Execution and formatting (for one program)		10
Viva Voce based on Lab activities		10
Total		30

BSc-Semester-IV

Course Title: Database Management Systems	Course Code: [illegible]
Total Contact Hours: 52	Course Credits: 04
Formative Assessment Marks: 40	Duration of SEE Exam: 03 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

At the end of the course, students will be able to:

- Explain the various database concepts and the need for Database systems.
- Identify and define database objects, enforce integrity constraints on a database using DBMS.
- Demonstrate a Data model and Schemas in RDBMS.
- Identify entities and relationships and draw ER diagrams for a given real-world problem.
- Convert an ER diagram to a database schema and decide on the desired normal form.
- Formulate queries in Relational Algebra, Structured Query Language (SQL) for database manipulations.
- Explain the transaction processing and concurrency control techniques.

Database Management Systems (DBMS)

Unit	Description	Hours
1	**Database Architecture:** Introduction to Database system applications, Characteristics and Purpose of database approach, People associated with Database system, Data models, Database schema, Database architecture, Data independence, Database language, and classification of DBMS.	10
2	**ER Model:** Entity Relationship modeling 1 – ER Model Concepts, Entity, Entity types, Entity sets, Attributes, Types of attributes, key attribute, null, domain of an attribute, Relationships, between the entities, Relationship types, roles and structural constraints, Degree and cardinality ratio of a relationship, Weak entity types, E -R diagram.	12
3	**Relational Data Model:** Relational model concepts, Characteristics of relations, Relational model constraints, Domain constraints, key constraints, primary & foreign key constraints, integrity constraints and null values, Relational Algebra, Basic Relational Algebra operations, Set theoretical	11

4	SQL and Data Normalization: SQL – DDL, DML, DCL and TCL Commands, Aggregate Functions and Grouping, Nested Sub Queries, Views, Normalization – Anomalies in relational database design, Decomposition, Functional dependencies, Normalization, First normal form, Second normal form, Third normal form, Boyce-Codd normal form.	12
5	Introduction to PL/SQL programming, Limitations in PL/SQL, Features and Advantages, PL/SQL Blocks – basic syntax, Variables and data types, Constants, Literals, Data Type Qualifiers, Expressions, Operators. **Control Execution Flow** – Conditional Control: IF Statement, CASE Statement – Iterative Control: Basic Loops, WHILE and FOR Loops, Nested FOR LOOP Statement, Named Loops, Labeling in PL/SQL Loop, exception handling **CURSORS**: Declaring String Variables, String Functions and Operators, **ARRAYS**: Creating a Varray Type, Cursors – Explicit and Implicit Cursors, Cursor Attributes, parameterized Cursor, Functions and procedure – creation and usage	12

References:

1. Fundamentals of Database Systems, Ramez Elmasri, Shamkant B. Navathe, 7th Edition, Pearson, 2015
2. An Introduction to Database Systems, Bipin Desai, Galgotia Publications, 2015.
3. Introduction to Database Systems C J Date, Pearson, 1999.
4. Database Systems Concepts, Abraham Silberschatz, Henry Korth, S Sudarshan, 6th Edition, McGraw Hill, 2010.
5. Database Management Systems, Raghu Ramakrishnan and Johannes Gehrke, 3rd Edition, McGraw Hill, 2003.
6. Oracle Database 11g PL/SQL Programming

Course Code: DSE41xx	Course Title: DBMS Lab
Course Credits: 02	Hour of Teaching: [illegible]
Total Contact Hours: 32	Formative Assessment Marks: 25
Exam Marks: 50	Exam Duration: 02

Course Outcomes (COs):

After completing this course successfully, a student will be able to

- Formulate query using SQL statements for a broad range of query and data update problems
- Using SQL for database creation and maintenance
- Design a commercial relational database system (Oracle, MySQL) by writing SQL using the system
- Use a desktop database package to create, populate, maintain, and query a database
- Analyze the information storage problem and derive an information model expressed in the form of ER model
- Formulate PL/SQL query blocks using cursor

Programming Lab

PART A: SQL Queries

1. Implementation of DDL and DML commands of SQL with suitable examples
   a) Create table b) Alter table c) Drop Table e) Insert f) Update g) Delete
2. Implementation of different types of constraints
3. Implementation of different types of Joins
   a) Inner join b) Outer join c) Natural join
4. Study and Implementation of
   a) Group By & having clause b) Order by clause
5. Implementation of Views
6. Execute DCL and TCL Commands

PART B: PL/SQL

1. Create a library table with attributes book_id, author_name, publisher, price and edition. Write PL/SQL code block to accept the publisher's name and count number of books under that publisher and display it. Also display the publisher who maximum publications.
2. Write a function to display employee name with maximum salary.
   For eg:
   If A's salary is 100
   B's salary is 200
   If B salary is 200 display either (a or c) and b
3. Write a function to rank the employees based on their salary (use RANK function)
4. Write a function to validate the Employee email id
5. Write a procedure to capture the error log in a table in case of an exception using

[illegible]

Evaluable Scheme for Lab Examination

Assessment Criteria		Marks
Program-1 from Part-A	Write up of the program-1	3
Program-2 from Part-B	Write up of the program-2	3
Execution and formatting (for one program)		10
Viva (Four times in the entire lab)		10
Total		26

Syllabus for Open Electives in Computer Science:

Course Code: CSOE-1	Course Title: Computer Fundamentals
Course Credits: 03	Hours of Teaching / Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to

- Introduction to computers: classification of computers, history of computer, constituents and architecture, microcontrollers
- Operating systems: Windows, operating system, classification of operating system, kernel, shell, basics of Unix, shell programming, booting
- Databases: Why databases are used, views, SQL, data types in SQL, connection of queries – select, alter, update, delete, truncate, using where and or, set in
- Internet basics, Website, Applications, Services, internet service providers, domain name system, browsing, email, searching
- Web Programming basics, introduction of HTML and CSS programming
- Introduction of computers, classification of computers, history of computer, constituents and architecture, microcontrollers

Course Content

Content	Hours
Unit - 1	
Fundamentals of Computers: Introduction to Computers – Computer Definition, Evolution And History of Computers, Basic Organization of a Digital Computer, Number Systems – different types, conversion from one number system to another, Computer Codes – BCD, Gray Code, ASCII and Unicode, Boolean Algebra – Boolean Operations, with Truth Tables, Types of Software – System Software and Utility Software, Computer Languages – Machine Level, Assembly Level & High Level Languages, Translators, Programs – Assembler, Interpreter and Compiler, Planning a Computer Program – Algorithm, Flowchart and Pseudo code with Examples (Hint: 5 hours of teaching)	11
Unit-2	

Introduction to Computers: Characteristics of computers, Classification of Digital Computer Systems: Microcomputers, Minicomputers, Mainframes, Super computers. Anatomy of Computer: Introduction, Functional & Components of a Computer: Central Processing Unit, Storage units, Input and output Devices, Role of CPU and memory, words, Program execution with Examples, Introduction to microprocessors	10
Unit-3	
Operating System Fundamentals: Operating System: Introduction, Functions of an operating System, Classification of Operating Systems, System programs, Application programs, Utilities, The Unix Operating System, Basic Environment, Microkernel Based Operating System, Booting	08
Unit-4	
Introduction to Database Management Systems: Database, DBMS, Why Database - File system vs DBMS, Database applications, Database users, Introduction to SQL, Data types, Classification of SQL-DDL, Data constraints, DML, DCL, TCL	08
Unit-5	
Internet Basics: Introduction, Features of Internet, Internet applications, Services of Internet, Logical and physical addresses, Internet Service Providers, Domain Name System. Web Basics: Introduction to web, web browsers, http, https, URL, HTML, CSS	08

Text Books:

1. Pradeep K. Sinha and Priti Sinha, Computer Fundamentals (Sixth Edition), BPB Publications.
2. David Riley and Kenny Hunt, Computational Thinking for modern solver, Chapman & Hall, CRC.

References:

1. J. Glenn Brookshear, Computer Science: An Overview, eighteen Edition, Pearson.
2. B.A. Forouzan, "Introduction to Computer Science", TMH.

Course Code: CSE-2	Course Title: Problem Solving and C Programming Concepts
Course Credits: 02	Hours / Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):

After completing this course successfully, a student will be able to:

1. Introduction to computers, classification of computers, anatomy of computer, motherboard and architecture microcontrollers
2. Operating systems, functions of operating system, classification of operating systems, Linux, shell, basics of Linux shell programming, testing
3. Database, why database are used, users, SQL, data types in SQL, introduction of queries - select, alter, update, delete, truncate, using queries and so on so on
4. Internet basics, features, applications, services, internet service providers, domain name system, browsing, email, searching
5. Web Programming basics, introduction to HTML and CSS programming
6. Introduction of computers, classification of computers, anatomy of computer, motherboard and architecture microcontrollers

Course Content:

Content	Hours
Unit - 1	
Problem Solving Techniques: Problem solving techniques – problem definition, algorithm, flowchart, debugging, testing, documentation and top down design. Tools - ALGORITHM - definition, characteristics, advantages and disadvantages. FLOWCHART - definition, symbols, advantages and disadvantages. Writing an algorithm and flowchart, area of circle, arithmetic operations, simple interest and compound interest, quadratic equation, largest of three numbers, sum of N natural numbers, factorial of number, Fibonacci series, prime number, reverse a given number, exchange of values (two and three variables), etc.	10
Unit - 2	

Introduction to C Programming: Overview of C, History and Features of C, Structure of a C Program with Examples, Creating and Executing a C Program, Compilation process in C C Programming Basic Concepts: C Character Set, C Tokens - Keywords, Identifiers, constants, and variables, Data types, Declaration & Initialization of variables, Symbolic constants, Formatted I/O functions - printf and scanf	10
Unit-3	
C Operators & Expressions: Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment & Decrement operators, Bitwise operators, Conditional operator, Special operators, Operator Precedence and Associativity, Evaluation of arithmetic expressions, Type conversion.	10
Unit-4	
Decision making, branching and looping: Decision making - if and if-else statements, nested if, else if ladder, switch statements, conditional operator, goto statement, Looping - while, do-while and for, nested for, break and continue statements, Programming Examples	12
Unit-5	
Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation, Two Dimensional arrays - Declaration, Initialization and Memory representation.	06

References:

1. Computer Concepts and Programming, Pradip Dey
2. Let us C, Yashavanth Kanetkar
3. Ansi C, Balaguruswamy
4. Problem solving with C, M. T. Somashekara and D. S. Guru

Course Code: CSOE02	Course Title: Office Automation
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 45	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Content

Contents	Hours
Unit – I	
Windows Desk top - GUI: Reference, Standards, Consists, Features, Icons, GUI Menus, GUI Share Data – Desktop icons and their functions: My computer, My documents, Network neighborhood, Recycle Bin, Quick Launch, and Start, System tray, Start menu, Task bar – Dialog Boxes: List Box, Type Ground, Box Slide, Drop-down list, Radio buttons, Check box, Text box, Tool Bar – System Tray – Quick launch tool bar – Start button – Parts of Windows – Title bar, Menu bar – Scroll bar, Status bar, Minimize, close and Resize a Window – Windows – Icon, Menu –Help, Menu, Pointer, Menu, Light & Shadows – Keyboard Accelerators, Key board short keys or hotkeys	08
Unit-2	
MS Word – Working with Documents, Opening & Saving files, Editing text documents, Inserting, Deleting, Cut, Copy, Paste, Undo, Redo, Find, Search, Replace, Formatting page & setting Margins, Converting files to different formats, Importing & Exporting Documents, Sending files to others, Using Toolbars, Rulers, Using Undo, using Help, Formatting Documents – Getting Font styles, Font selection – style, size, colour etc, Type face – Bold, Italic, Underline, Case settings, Highlighting, Special symbols, Setting Paragraph style, Alignments, Indents, Line Space, Margins, Bullets & Numbering, Setting Page style – Processing Page, Page tab, Margins, Layout settings, Paper size, Border & Shading, Columns, Header & footer, Setting Pointer & spell check – Shortcut Keys, Inserting manual page break, Column break and line break, creating sections & Frames, Anchoring & Wrapping, Setting Document styles, Table of Contents, Index, Page Numbering, date & Time, Author etc, Creating Master Documents, Web page, Creating Tables, Table Manage, Borders, Alignments, Insertion, Deletion, Merging, Splitting	10

Setting and Formula: Drawing – Inserting Clipart, Pictures, Files etc. Tools – Word Completion, Spell Check, Mail merge Templates, Printing Worksheets – Shortcut keys.	
Unit-3	
MS Excel: Current Sheet, New Application, Opening Spreadsheet Menus – cell menu, Formula Editing, Formatting Toolbars, Data Entry Techniques, Common Spreadsheet Types, Working with Spreadsheets: opening, saving files, setting Margins, converting files to different formats (importing, exporting, sending files to others), Spread sheet addressing – Rows, Columns & Cells, Referring Cells & Selecting Cells – Shortcut Keys; Entering & Deleting Data: Entering Data, Cut, Copy, Paste, Undo, Redo, Filling Continuous rows, columns, highlighting values, Find, Search & replace; Inserting Data, Insert Cells, Columns, rows & sheets; Formats; Data from external files, Manual, Clipart, Pictures, Files etc; Inserting Functions, Manual breaks; Editing Formula – Adding totals in a series of row; Mathematical operations (Addition, Subtraction, Multiplication, Division, Exponentiation); Using other Formulae; Formatting Spreadsheets, formatting layout for Dropdown, Clipart, etc.; Worksheet Row & Columns, Headers, Sheet Name, Row height & Column width, Visibility; Row, Column, Sheet (visible), Sheet Formatting & style, Sheet background, Colour etc; Borders & Shading – Shortcut keys, Working with sheets – Sorting, Filtering, Validation, Consolidation, and Subtotal; Creating Charts – Drawing, Printing, Using Tools	24
Unit-4	
MS Power point: Introduction to presentation – Opening new presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts, Creating a presentation – Getting Presentation ready, Adding text to the Presentation, Formatting a Presentation – Adding style, Color, gradient, fill, Arranging objects, Adding Header & Footer, Slide Background, Slide layout, Adding Graphics to the Presentation: Inserting pictures, movies, videos etc into presentation, Drawing Pictures using Draw, Adding Effects to the Presentation: Setting Animation & transition effect, Printing Handouts, Reviewing Presentation, Presentation views.	22

Unit-5	
Internet and Web Browsers: Definition of web addressing, URL, Different types of Internet Connections, Dial up connection, Email basic, DSL, ISDN, Cable, Wireless (Wi-Fi, WiMax, Satellite, Hybrid), Setting connection, browsers and its types, Internet browsing searching, Search Engines, Forms, Setting favorites, Sites, Blogs - viewing a webpage, downloading and uploading the website, Creating an email ID, email reading, saving, printing, composing and sending the mails, checking the mails, viewing and saving the attachments, attaching mails, cc and bcc.	08

References:

1. Fundamentals of computers - V Rajaraman - Prentice Hall of India
2. Microsoft Office 2007 Bible - John Walkenbach, Herb Tyson, Faithe Wempen, Cary N. Prague, Michael R. Groh, Peter G. Aitken, and Lisa A. Bucki - Wiley India pvt ltd.
3. Computer Fundamentals - P. K. Sinha Publisher: BPB Publications
4. Computer & Internet Basics Step-by-Step - Edward Jones - Infinity Publishing
5. https://en.wikipedia.org
6. http://windows.microsoft.com/en-in/windows-vista/what-is-the-internet

Open Elective

THIRD SEMESTER

ELECTRONIC COMMERCE

Course Code: 23OE04	Course Title: E-Commerce
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):

- Compare how internet and other information technologies support business processes.
- Demonstrate an overall perspective of the opportunities of application of internet technologies in business administration.
- Explain the basic customer management concepts.
- Demonstrate the basic technical concepts relating to E-Commerce.
- Identify the security issues, issues and challenges of E-Commerce.

Content	Hours
Unit - 1	
Introduction to E-Commerce and Technology Infrastructure Working of Web – HTML Markup for Structure – Creating simple page – Marking up text – Adding Links – Adding Images – Table Markup – Forms – XHTML	8
Unit-2	
Building an E-Commerce Website, Mobile Site and Apps: Systematic Approach to build an E-Commerce Website, Online Architect System Design, Building the system, Testing the system, Implementation and Maintenance, Optimize Web Performance – Choosing hardware and software – Other E-Commerce Site tools – Developing a Mobile Website and Mobile App	18
Unit-3	
E-Commerce Security and Payment Systems: E-Commerce Security Environment – Security threats in E-Commerce – Technology Solutions, Encryption, Securing Channels of Communication, Protecting Networks	16

Protecting Servers and Clients – Management Policies Firewall Policies and Public Zone- Payment Systems	
Unit-4	
Business Concepts in E-Commerce: Digital Economy Marketing and Advertising strategies and tools – Internet Marketing Technologies – Social Marketing – Mobile Marketing – Location based Marketing – Ethical Issues Political Issues in E-Commerce	12
Unit-5	
Project Case Study: Case Study: Identify Key components, strategy, B2B, B2C Models of E-commerce Business model of any e-commerce website - Real Project: Develop E-Commerce project in any one of Platforms like Wix Commerce, Magento or OpenCart	12

Text Books:

1. [illegible]

References:

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]

WEB DESIGNING

Course Code: CSP505	Course Title: Web Designing
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Course Outcomes (COs):

- Students can understand the basics of internet technology
- Demonstrate the various tags used to create a web page
- Write HTML and understand how to effectively implement it in the web environment
- Write CSS effectively to create well organized, stylish web pages

Content	Hours
Unit – I	
Internet Basics: Basic concepts, understanding of the Internet, Internet Domains, Internet server locations – Registering a domain name, Internet Domain Name Extensions, establishing connection to the internet, IP Address – How Client IP Address are assigned, How ISP allows the lack of assigning IP Address, How IP Address work, Introduction of TCP/IP and its services – Internet Protocol, Transmission control protocol – world wide web, FTP, Telnet.	08
Unit- II	
Introduction to HTML: Introduction, File creation, Web server, Web browser – understanding tags, a browser communicates with a web server, establish connection, Client sends a request and sends a response, server terminates the connection.	10
Unit- III	
HTML: HTML tags, Paired tags, Singular tags, Structure of HTML program – Head, Body, Title and Comment, Text Formatting tags – Paragraph breaks, line breaks, Read refer, Preserving Lines, Text Styles – Bold, Italic, Underline, Centering (Text, Images, etc) **Lists**: Types of Lists: Unordered list (Bullets), Ordered list (Numbering), Definition list **Adding Graphics to HTML documents**: Using the border attribute, width and height attribute, align attribute, alt attribute, Tables, Introduction, the caption tag, Using the width and border attributes, cellspacing attribute, cellpadding attribute, the background color property, the colspan and Rowspan attributes.	08

Unit-4:	
Linking Documents: External Context reference, Image, Document reference, Hyper linking to a HTML File, Image as Hyperlink **Frames:** Introduction to frames, frameset tag, Frame tag	08
Unit-5:	
Dynamic HTML (DHTML): CSS (Creating Style Sheet), Font attributes, color and Background attributes, Text attribute, Border attribute, Margin attribute, List attribute, Using the span and div tags, External Style Sheets	08

Text Books:

1. [illegible]

References:

1. [illegible]
2. [illegible]
3. Web Design With HTML & CSS, HTML 5 CSS Complete Beginner's Guide - Press Kenzo

Pattern of continuous Evaluation and Semester End Examination

Total Marks for each course = 100
Continuous assessment (CA1) = 20 marks
Continuous assessment (CA2) = 10 marks
Semester End Examination (CE) = 70 marks

1. Formative evaluation process (Internal Assessment)

a. The first component (CA1) of assessment is for 20 marks. This shall be based on two assignments, seminars, case studies, field visits, projects work etc. This assessment and score process should be completed after completing 30% of the syllabus of the course / and within 45 working days of the semester program.

b. The second component (CA2) of assessment is for 10 marks. This shall be based on the test, assignments, seminar, case study, field visit, internship / industrial practicum/ project work etc. This assessment and score process should be based on the completion of the remaining 70 per cent of the syllabus of the courses of the semester.

Summative evaluation process (Semester End theory Examinations)

During the 17th – 19th week of the semester, a semester end examination shall be conducted by the University for each course. The three the third and final component of assessment (CE) and the maximum marks for the final component will be 60 marks.

Practical Examinations: For the practical course of full credits, marks shall be split 60 marks awarded as follows:

Internal Assessment for 25 Marks: 15 Marks for maintaining Practical record and 10 marks for practical test. Test shall be conducted after the completion of Practical Classes.

End Semester Practical Examination: End Semester Practical examination shall be conducted for 35 marks.

[illegible]

[illegible]

First Semester [illegible] Degree Examination, April/May 2023

[illegible]

Paper: [illegible]

Time: 02 Hours [illegible] Max. Marks: 60

I. Select the most appropriate answer from the options provided: [illegible]

1) [illegible]

a) [illegible] b) [illegible] c) [illegible] d) [illegible]

2) [illegible]

a) [illegible] b) [illegible] c) [illegible] d) [illegible]

[illegible]

10) [illegible]

a) [illegible] b) [illegible] c) [illegible] d) [illegible]

II. Answer in Write short notes on any FIVE of the following: [illegible]

1) [illegible]

2) [illegible]

3) [illegible]

4) [illegible]

5) [illegible]

6) [illegible]

7) [illegible]

8) [illegible]

III. Answer any THREE questions. Write the following: [illegible]

1) [illegible]

2) [illegible]

3) [illegible]

4) [illegible]

5) [illegible]

IV. Answer the following* [illegible]

1) [illegible]

(OR)

2) [illegible]

(OR)

*Use [illegible] pattern if required

Syllabus Distribution for Question Paper Setting		
Section-I	Ten Questions of each carrying 02 marks	Two questions from each unit
Section -II	Eight Questions of each carrying 02 marks	At least two questions from each unit and remaining questions from those units which have higher number of lines
Section -III	Five Questions of each carrying 07 marks	At least one question from each unit
Section-IV	Four Questions of each carrying 14 marks	First question from unit-I OR Second question from unit-II --- Third question from unit-III OR Fourth question from unit-IV from unit-I

Government of Karnataka

Curriculum Framework for Undergraduate Programme in Colleges and Universities of Karnataka State

5th and 6th Semester Model Syllabus

for

BA. and BSc. in

Economics

Submitted to
Vice Chairman
Karnataka State Higher Education Council
30, Prasanna Kumar Block, Bengaluru City University Campus,
Bengaluru, Karnataka—560009

Model Curriculum

of

BA in

Economics

5th & 6th Semester

Karnataka State Higher Education Council

Karnataka State Higher Education Council

Note: If any Elective or Vocational course involves theory-cum-practical, then IA to Exam. Marks will be in the ratio of 50:50. The practical part is to be evaluated as part of IA. Semester end examination is only in theory component and questions from practical part, if any.

Note: If any Elective or Vocational course involves theory-cum-practical, then IA to Exam. Marks will be in the ratio of 50:50. The practical part is to be evaluated as part of IA. Semester end examination is only in theory component and questions from practical part, if any.

Pedagogy

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks :
Internal Test	50%
Assignment	20%
Presentation/Project	30%
Total	100
Formative Assessment as per University guidelines are compulsory	

Note: Strictly follow the Practicum

Pedagogy Evaluation process IA MARKS

FORMATIVE ASSESSMENT			
	CT	CT	Total
Assessment Occasion/type			
Internal Test	10	10	20
Assignment/ seminar	5	-	05
Quiz GD	5	-	05
Presentation/Project etc	-	10	10
Total	20	20	40
Semester End Exam Theory			60

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Public Economics			
Course Code:	ECO C9		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 hours
Formative Assessment Marks		40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

CO1. Understand introductory Public Finance concepts.

CO2. Study the causes of market failure and corrective actions.

CO3. Understand the impact, incidence and shifting of tax.

CO4. Study the Economic Effects of tax on production, distribution and other effects.

CO5. Enable the students to know the Principles and Effects of Public Expenditure.

CO6. Understand the Economic and functional classification of the budget, Balanced and Unbalanced budget.

CO7. Understand the Burden of Public debt and know the Classical, Ricardian views, Keynesian and post-Keynesian views.

CO8. To acquaint with the advantages and disadvantages of Deficit Financing.

MODULES	DESCRIPTION	60 Hours
Module I	**Introduction to Public Economics**	**15**
	Public Economics: Meaning, definitions, Scope and Significance, Public Finance and Private Finance: Meaning, and Distinction, Public good and private good: Meaning, Characteristics, and Distinction, Principle of Maximum Social Advantage, Market Failures: Meaning, causes-role of externalities, Market failure and role of government: Corrective actions.	
Practicum	Group Discussions on Public Finance and private finance, public good and private good Assignment on Market failure and government intervention	
Module II	**Public Revenue and Public Expenditure**	**13**
	Meaning and sources of revenue, Taxation –Canons of taxation, Characteristics of a sound tax system, Impact, Incidence– Division of Tax burden, Shifting of tax, Economic Effects of tax on production, distribution and other effects, Progressive and Regressive, Proportional Tax, Direct and Indirect Taxes –Merits and Demerits, Taxable Capacity: Meaning and determinants. Public Expenditure, Meaning, classification, principles, Types & Canons, Reasons for the growth of public expenditure, Wagner's	

	law of increasing state activities, Peacock-Wiseman hypotheses, Effects of public expenditure: Production, Distribution &Other effects	
Practicum	Mini-project study to ascertain the impact of GST on retailers-wholesalers in your vicinity A case study on the taxable capacity of the different sections of society in the vicinity Assignment on Effects of public expenditure: Production, Distribution & Other Effects	
Module III	**Public Debt**	**12**
	Public Debt: Meaning, Purpose, Types & Effects; Sources of Public Borrowing; Burden of Public Debt -Classical/ Ricardian views, Keynesian and post-Keynesian views; Intergenerational equity of public debt; Causes of the Rise in Public Debt; Methods of debt redemption, Debt management	
Practicum	Studying the burden of public debt through a project/ case study Assignment on Debt Management	
Module IV	**Public Budget, Fiscal Policy and Fiscal Deficit**	**15**
	Budget: Meaning, process & Types of budget, Economic and functional classification of the budget, Balanced and unbalanced budget, Types of Budget Deficits; Fiscal Policy Meaning objectives & Tools, Fiscal deficit: Meaning, Computation Deficit Financing- Meaning, Advantages and Disadvantages	
Practicum:	Calculation of various types of budget deficit using the budget data Group discussion on the advantages and disadvantages of deficit financing	

References	
1	Lekhi R.K., Joginder Singh (2018) Public Finance, Kalyani publication, New Delhi
2	Tyagi B.P. (2014) Public Finance published by Jaya Prakash Nath and CO, Meerut
3	Hindriks J. and G. Myles (2009), Intermediate Public Economics, MIT Press.
4	Bhatia H.L (2018): Public Finance. Vikas Publishing House
5	Musgrave, R.A. (1989), The Theory of Public Finance, McGraw Hill
6	Musgrave R.A. and P.B. Musgrave (1989), Public Finance in Theory and Practice, McGraw Hill.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Development Economics			
Course Code:	ECO C10		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the basic concepts and measurements of Development.
- CO2. Learn some classical and partial theories of Development economics and identify the difference.
- CO3. Identify the differences between Developed and Developing Countries.
- CO4. Analyse and tackle the Development issues effectively.

MODULES	DESCRIPTION	60 Hrs
Module 1	**Introduction to Economic Development**	14
	Concept - Definitions - Distinction between Economic Growth and Development - Indicators of Growth and Development, Measures of Economic Development: Gross National Product (GNP) - Physical Quality of Life Index (PQLI), Human Development Index (HDI), Happiness Index, Inequality and Poverty: Meaning, causes, indicators – Gini Coefficient Index, Human Poverty Index (HPI)	
Practicum:	Assignment on various indicators of growth and development Group discussions about the characteristic features of different countries and their development levels	
Module 2	**General Theories of Economic Growth and Development**	16
	Adam Smith's Theory, David Ricardo's Theory, T.R. Malthus' Theory, Karl Marx's Theory, Schumpeter's Theory and Rostow's Growth Theory – Harrod-Domar Model.	
Practicum:	Assignment on different theories and their relevance to developing Countries. Debate on present stage of India's growth and estimated stage it may reach by 2047	
Module 3	**Partial Theories of Economic Development**	16
	Lewis Labour Surplus Model - Rodan's Big Push Theory - Liebenstein's Critical Minimum Effort Approach – Balanced Vs. Unbalanced Growth, Factors in the Development Process: Capital Accumulation - Capital-Output Ratio - Technology and Economic Development.	

Practicum:	Group Discussion on Balanced and unbalanced growth strategies in Developed and developing countries Assignment on the Factors in the Development Process Capital Accumulation	
Module 4	**Sustainable Development**	14
	Inclusive Development - Millennium Development Goals - Sustainable Development Goals, Targets and Achievements with reference to India.	
Practicum	Seminar on MDGs and SDGs and the challenges	

References	
1	Higgins Benjamin & W.W. Norton Economic Development New York & Company, Inc.
2	Mishra S.K and Puri V.K, Economic Development and Planning, Himalaya Pub. House, Mumbai
3	Taneja M.L and Meier G. M, Economics of Development and Planning, S. Chand and Co, New Delhi
4	Thirlwall A.P, Growth and Development: With Special Reference to Developing Economies, Palgrave Macmillan, New York
5	Todaro, M.P & Orient Longman Economic Development in the Third World, United Kingdom
6	Sustainable Development Reports

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Economics of Human Resource Management			
Course Code:	ECO C11		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the meaning, nature, scope and value of the contemporary approach to human resource management with reference to Economics.
- CO2. To describe an organisation of a human resource management functionary in an establishment, and to identify attributes of a successful personnel manager.
- CO3. To impart knowledge and techniques in human resource planning, Job-Analysis, and Job-Design.
- CO4. To explain various methods of recruitment, selection, induction and placement.
- CO5. To develop the importance and methods adopted for training and development of employees in two days environment in the workplace.

MODULES	DESCRIPTION	60 Hours
Module I	**Introduction to Human Resource Management**	**15 hrs**
	Human Resource Management: Concept, Nature, scope, objectives, importance, functions of Human Resource Management with reference to Economics, Organization of personnel department, Qualities of Personnel Manager, role of Personnel Manager, Status of Personnel Manager, Characteristics of a Human Resource Manager, HRD – Responsibility of managers.	
Practicum	Group Discussions on Human Resource Management as a Profession. Assignment on Qualities of Personnel Manager.	
Module II	**Procurement of Human Resources**	**15 hrs**
	Human Resource Planning – Concept and objectives, importance, process, problems and guidelines; Job Design and Analysis: Concept, process, job description and job specification; Recruitment and Selection Meaning and process of recruitment, recruitment policy and organization, sources and techniques of recruitment, meaning and process of selection.	
Practicum	Assignment on recruitment and selection Group discussion on Techniques of Recruitment	
Module III	**Training and Job Evaluation**	**15 hrs**

	Training: Concept, objectives, importance, identifying training needs. Designing training programmes, methods of training, evaluating training effectiveness, retraining Concept, process and objectives of job evaluation, advantages and limitations, essentials of successful job evaluation, methods of job evaluation. Wage and Salary Administration. Objectives and principles, essentials of sound wage structure, factors affecting wages, methods of wage payment, and wage policy in India, executive compensation.	
Practicum	Project on training and job evaluation	
Module IV	**Performance Appraisal**	**15 hrs**
	Performance appraisal: Concept, objectives, uses, process, problems, essentials, methods and techniques, appraisal interview. Transfers, promotions and separations: Purpose of job changes, concept and objectives of transfers. Types of transfer, transfer policy, concept and basis of promotion, promotion policy, demotion, types of separations.	
Practicum	Seminar on transfers and promotions Group discussion on Performance appraisal	

References	
1	Koontz, Weirich & Aryasri, (2004) **Principles of Management**, Tata McGraw-Hill, New Delhi.
2	Tripathi & Reddy, (2008) **Principles of Management**, Tata McGraw-Hill, New Delhi, Laurie
3	Meenakshi Gupta, (2009) **Principles of Management**, PHI Learning, New Delhi.
4	Gupta (2016), **Human resource Management**, S Chand Publisher, New Delhi
5	Aswathappa K. (2020) **Human resource Management**, Tata Mc Graw Hill Publishing Co. Ltd.
6	Prasad L. M. (2017) **Organisational Behaviour**, S. Chand Publishers, New Delhi.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fifth Semester
Course Title	Indian Banking and Finance		
Course Code	ECO C12	No. of Credits	4
Contact hours	60 Hours	Duration of SEA Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the structure of Indian banking and the role of banks in monetary policy
- CO2. Analyze the functioning of banks and different types of accounts and other services offered by banks.
- CO3. Evaluate recent developments in the Indian banking sector, including digital banking, payment banks, and non-performing assets.
- CO4. Describe the overview of the Indian financial system, including financial markets, financial instruments, and financial regulation.
- CO5. Analyze the challenges faced by Indian banks and the implications of banking reforms for the Indian economy.
- CO6. Develop critical thinking and analytical skills in evaluating various financial products and services banks and capital markets offer.

MODULES	DESCRIPTION	60 Hours
Module I	**Introduction to banking: India**	**15**
	Indian Banks: Evolution, structure, functions, types and features- Public sector, private sector, foreign, Cooperative, RRB, Small finance banks, payment banks; Role and importance of banks in the Indian economy; Credit creation and financial intermediation; Central Bank and banking regulation; Regulatory and supervisory powers; Monetary policy and banking channel of credit control; Policy rates and banking, repo, reverse repo, MCLR, Bank rate, CRR, SLR, MSF, Issues in banking sector; NPA crisis; impact of global events on Indian banks	
Practicum	Compare and contrast the different types of banks, highlighting their strengths and weaknesses- Presentation Conduct a class discussion and compare and contrast the different scenarios on various loans, highlighting the risks involved and the measures taken by banks to manage these risks.	
Module II	**Banking services**	**15**

	Banking services: Bank deposits: Types and features of bank accounts: account opening and importance of KYC, Bank loans: types, features, documents required, eligibility, interest rates, maturity, loan default and consequences; Other services: Locker facility, payment and remittance services and channels; currency exchange, debit cards, credit cards, pre-paid cards; ATMs; internet and mobile banking; Modern banking products: Insurance on deposits and loans, Investment services in capital market-stocks, bonds and mutual funds; advisory services; retirement products.	
Practicum	Group discussion on bank accounts and loan products and making recommendation to different classes. Comparison of banking services by visiting bank branches.	
Module III	**Modern Banking**	**15**
	Modern banking facilities: Digital banking, Digital Wallets, Digital account opening, Biometrics, contact less payment system, instant payments, personal finance management tools; Use of artificial intelligence and machine learning in banks; Cyber security in banking, Credit scoring; Direct lending; Corporate banking, Investment Banking	
Practicum	Survey bank customers to understand their usage and satisfaction levels with digital banking services. Analyse the adoption rates of digital banking services across different age groups and demographic segments.	
Module IV	**Financial Market**	**15**
	Introduction to Indian financial markets, Equity markets and stock exchanges; Debt markets and bond markets; Currency markets and forex trading; Commodity markets and trading; Derivatives markets, Mutual funds; Insurance products Investing in capital market products- access, channels, risk in capital market investments, Role of SEBI, Fintech and innovation in capital markets.	
Practicum	Debate: Investing in capital market products. Assignment on Indian financial markets.	

References	
1	Khan, M. Y. (2019). Indian Financial System (11th ed.). McGraw Hill Education (India) Private Limited.
2	RBI (2022) report on the trend and Progress of Banking in India
3	Pathak, B. V. (2018). Indian financial system. Pearson Education.
4	Principles and Practices of Banking (2023), Indian Institute of Banking & Finance (IIBF), MacMillan.
5	Shekhar, K. C. & Shekhar, L. (2015). Banking Theory and Practice, 21st Edition
6	Taxmann's Digital Banking, Indian Institute of Banking & Finance (IIBF), Bharat Law House
7	Reserve Bank of India. (2017). Basic Financial Literacy Guide.

	https://www.rbi.org.in/Scripts/BS_FaqGuidelines.aspx
8	Securities and Exchange Board of India. (2021). Handbook of Statistics on Indian Securities Market. https://www.sebi.gov.in/reports-and-statistics/publications/dec-2021/handbook-of-statistics-2021_66158.html
9	Financial Education Handbook (2021) National Centre for Financial Education (NCFE) https://www.ncfe.org.in/resources/downloads
10	Investor Education material by National Stock Exchange (https://www.nseindia.com/invest/how-to-invest-in-capital-market)

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Economics of GST			
Course Code	ECO E1A		No. of Credits	3
Contact hours	45 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the indirect tax structure in India and challenges
- CO2. Develop an informed view on the rationale of choosing Goods and Services Tax.
- CO3. Understand the GST laws, tax slabs, GST council and the framework of implementation
- CO4. Demonstrate ability to explain time of supply, place of supply and value of supply
- CO5. Analyze the concept of input tax credit and valuation of supply with examples
- CO6. Explain the GST registration process and GST filing procedure

MODULES	DESCRIPTION	45 Hours
Module I	**Indirect Taxes and GST**	**15**
	Indirect taxation before GST- Introduction to Indirect Taxes: Meaning and Features, Types of Indirect Taxes in India: Excise Duty, VAT, Service Tax, etc., VAT types and methods, Drawbacks of the existing Indirect Tax System; Introduction to Goods and Services Tax, Rationale and Key Features for GST, Experience from uniform tax structure in other countries, Advantages and disadvantages of GST framework	
Practicum:	Discussions on the limitation of tax structure before introduction of GST. Assignments on GST tax collection since introduction at state-level. Explain the differences between the old tax system and GST, and how the GST system has impacted the economy of India.	
Module II	**Fundamentals of GST**	**15**
	Structure of GST in India- Central GST, State GST, UT GST, Integrated GST, Subsuming of Taxes, GST Rate Structure in India, Levy and Collection of GST, Discussion on definition of goods, service, supply: Supply under GST and types of supply: taxable, exempt, zero-rated, and non-taxable, Time of supply, place of supply and valuation of supply: transaction value, open market value, and other methods, Input tax credit with illustration.	
Practicum:	Identify the different types of supply and the valuation methods used under GST for a specific product. Assignment on computing the value of supply or input tax credit for a given scenario and explain how the time and place of supply affect the tax liabilities under GST.	

Module III	**GST Compliance**	**15**
	GST framework- GST Registration: eligibility, procedure, and threshold limits, exemptions, GST Returns: types, due dates, and penalties, GST Payment, GST Audit, GST Refund: eligibility, procedure, and time limits, GST Council- Structure, objectives, functions, decisions, GST Network, GST & Indian Economy- Compensation to states- Trends of GST collection in India- national level and state level- Challenges and compliance, impact of GST on Economic growth.	
Practicum	Demonstrate GST registration process for different types of business or GST returns filing procedure. Assignment of trends and progress in GST collection in India	

References	
1	Mehrotra, H.C. & Agarwal V. P. (2022). Goods and Services Tax, Sahitya Bhawan Publications
2	Balachandran, V. (2023). Textbook of GST & Customs Law, Sultan Chand & Sons
3	Datey V. (2023). Taxmann's GST Ready Reckoner (2023), Taxmann Publications Pvt. Ltd.
4	Singhania, V.K. Student's Guide to GST & Customs Law, Taxmann Publication (P) Ltd.
5	Agrawal, R. K. (2023). Bharat's Handbook on G.S.T. (Goods & Service Tax) for May 2023 Exam. Mumbai, India: Bharati Law House.
6	Ahuja, G., & Gupta, R. (2019). Systematic Approach to Income Tax. New Delhi, India: Wolters Kluwer India Pvt Ltd.
7	Central GST Act (2017), Central Board of indirect Taxes and Customs
8	Integrated GST Act (2017), Central Board of indirect taxes and Customs
9	Union Territory GST Act (2017), Central Board of indirect taxes and Customs
10	GST (Compensation to States Act), 2017

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fifth Semester
Course Title	Economics of Insurance		
Course Code	ECO E1B	No. of Credits	3
Contact hours	45 Hours	Duration of SEA Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Gain knowledge on economics of insurance
- CO2 Understand the Insurance Planning
- CO3 Understand the essential and fundamentals of Life and Health Insurance

MODULES	DESCRIPTION	45 Hrs
Module I	Introduction to Economics of Insurance	15
	Definition of insurance, Scope of economic of insurance, Importance of insurance, Brief history of insurance, Perils and risks in insurance, Classification of risks, hazards: How insurance works, Classes of insurance and assumptions, Risk pooling and risk transfer in insurance, Social vs. private insurance, Life vs. non-life insurance	
Practicum:	Identify how insurance works and analyse risk pooling and risk transfer in insurance Assignment on importance of insurance and risks in insurance	
Module II	Insurance Planning	15
	Types of Insurance Planning- Wealth accumulation plan, lifecycle planning, Planning for wealth accumulation, Tax advantage and tax non-advantage Retirement Planning - Essential of individual retirement planning, Investing pension plan, basic principles of pension plans, Pension plans in India. General Insurance Structure - General Insurance, concept of General Insurance, Types of General Insurance, Marine Insurance, Motors Insurance, Agricultural Insurance, Fire Insurance, Personal Accident Insurance	
Practicum:	Compare and contrast the different types of Insurance Planning, highlighting their strengths and weaknesses. Assignment on types of general Insurance	
Module III	Personal insurance / Health Insurance	15
	Essential of Life and Health Insurance- Fundamentals of Life and Health Insurance, functions of Life and Health Insurance, Health Insurance and Economic Development, Insurance and Farmer Security, Insurance Documentation - Health Insurance products, Health Insurance underwriting, Health Insurance claims , Insurance Legislation - The insurance act, 1938- Registration- Accounts and	

	Returns, Investments, Limitation on expense of Management, Regulation of Insurance, Insurance regulation in India, role and need of regulation, history of insurance regulation in India, Insurance Reforms Development Authority (IRDA), performance of IRDA, Indian Insurance in global platform, future potential in Indian Insurance Business.	
Practicum:	Conduct a survey to know the knowledge about life and health insurance in the neighborhood. Assignment on performance of IRDA.	

References	
1	Chambers, R. (1983): Rural Development: Putting the Last First, Longman, Harlow.
2	Dandekar, V.M. and N. Rath (1971): Poverty in India, GIPE, Pune.
3	Dantwala, M. L. (1973): Poverty in India: Then and Now, 1870-1970, Macmillan, Bombay.
4	Gupta, K. R. (Ed) (2003): Rural Development in India, Atlantic Publishers and Distributors, New Delhi.
5	Jain, Gopal Lal (1997): Rural Development, Mangal Deep Publications, Jaipur.
6	Singh, Katar (1986): Rural Development: Principles, Policies and Management, Sage Publications, New Delhi. (Second Edition).
7	Karaley, G. N. (2005): Integrated Approach to Rural Development: Policies, Programmes and Strategies, Concept Publishing Company, New Delhi.
8	Maheshwari, S. R. (1985): Rural Development in India, Sage, Publications, New Delhi.
9	Satya Sundaram, I. (1997): Rural Development, Himalaya Publishing House, Delhi.
10	Mehta, Shiv R. (1984): Rural Development Policies and Programmes, Sage Publications, New Delhi.
11	Tyagi, B. P. (1998): Agricultural Economics and Rural Development, Jai Prakash Nath and Co, Meerut.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Rural Economics			
Course Code	ECO EIC		No. of Credits	3
Contact hours	45 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the meaning, concepts, objectives, nature, feature and scope of Rural Economics
- CO2.Know the various indicators and their Measurement of Rural development.
- CO3. Understand the policies and strategies of rural development.
- CO4. Understand the rural Natural Resources, Rural income and Rural poverty and indebtedness

Modules	DESCRIPTION	45 Hours
Module I	**Introduction to Rural Economy**	**15**
	Rural Economics- Definition, Meaning, Objectives, Nature and Scope. Need, Causes and consequences of the Rural Economy. Pattern, Characteristics and Importance of Rural Economy	
Practicum	Assignment on Characteristics and importance of Rural Economy Survey to know the characteristics of rural economy in the neighborhood	
Module II	**Measurement, Policies and Strategies of Rural Development**	**15**
	Introduction to measurement of Rural Development – Objectives of measurement of rural development Indicators of Measurement of Rural development: Poverty, GNP per capita, distribution of Income, Per capita rural expenditure, PQLI, Income inequality, Importance and Need for Rural Development Policies - Freedom, Control and Public Policy - Goals of Rural Development Policy - Hierarchy of Policy Goals - Rural Development Policies. Strategies of Rural Development: Growth Welfare, Responsive Oriented and Integrated or Holistic Strategy – Liberalization and Rural Development.	
Practicum	Undertake evaluation study on rural development programmes and prepare an assignment. Field visit to nearby village and study the employment opportunities and present situation.	
Module III	**Rural Resources Rural Income, Poverty and Indebtedness**	**15**
	Natural Resources: Land, Water, Mineral and Forest Resources. Utilization and Potential. Capital and Human Resources - Levels of Technology. Rural Income. Sources of Household Income - Contribution of Agriculture and Allied Activities to National Income - Animal Husbandry - Income Differences between Rural and Urban Sectors - Problems of Rising Rural Incomes. Rural Poverty: Causes and Consequences - Rural Credit:	

	Magnitude of Rural Credit - Multi-Agency Approach to Rural Credit. Rural Indebtedness: Extent of Rural Indebtedness - Nature of Indebtedness - Causes of Rural Indebtedness - Effects of Indebtedness – Government Measures	
Practicum	Debate on Problems of Rising Rural Income Assignment on Causes and consequences of Rural Poverty	

References	
1	Agarwal A N and Singh S P, The Economics of Under Development, OUP, New Delhi.
2	Dalip S Thakur, Poverty, Inequality and Unemployment in Rural India, S R Pub., Corporation, New Delhi.
3	Ekans Richard S and K S Parikh, Planning and Growth: Multi-sectoral, Inter-temporal Models Applied to India, The MIT Press, Massachusetts.
4	Higgins Benjamin, Economic Development: Principles, Problems and Policies, Central Book Depot, Allahabad.
5	Jain Gopal Lal, Rural Development, Mangal Deep Publications, Jaipur
6	Katar Singh, Rural Development: Principles, Policies and Management, Sage Publications, New Delhi
7	Parthasarathy G – Economic Reforms and Rural Development
8	Satya Sundaram I, Rural Development, Himalaya Publishing House, New Delhi.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fifth Semester
Course Title	Economics of Marketing		
Course Code	ECO EID	No. of Credits	3
Contact hours	45 Hours	Duration of SEA Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. To understand the basics concepts of marketing and asses the marketing environment
- CO2. Analyze the issues in rural markets.
- CO3. To study rural consumers behaviors.
- CO4. Outline the recent development in the field of marketing.

Modules	DESCRIPTION	45 Hours
Module I	**Introduction of Marketing**	**15**
	Marketing: Definition, Meaning, Nature & Scope, Objectives, Importance, Marketing & Selling, Concept and Importance of Market Segmentation, Role of Marketing in Economic Development, Modern Marketing.	
Practicum	Seminar on the Role of Marketing in Economic Development Assignment on Modern Marketing	
Module II	**Consumer Behavior and Rural Marketing**	**15**
	Consumer Behavior: Nature, Importance, buying Decision, Factors influencing consumer buying behaviour. Rural Consumers Behavior: Nature, importance, Characteristics, Influencing Factors. Rural Marketing: Meaning, Definition, Nature & Scope, Features, Importance, Types, Problems and Remedies of Rural Market. Co-Operative Marketing Societies, Importance of Regulated Market	
Practicum	Survey consumers to Know the factors influencing their buying Behavior. Debate on best remedies to solve the problem of rural market.	
Module III	**E-Marketing and Service Marketing**	**15**
	E-Marketing: Meaning, Concept, Advantages & Disadvantages, Challenges. Types – Digital, Mobile Marketing, Online, social media – Meaning, Concept, Benefits, Importance, Challenges, Advantages & Disadvantages. Service Marketing: Meaning, Concept, and Difference between the marketing of goods Vs Service Marketing, Importance, Problems.	
Practicum	Analyse the adoption of E-Marketing across different types of demographic segments. Debate on Advantages & Disadvantages of e-marketing	

References:	
1	Philip Kotler (2015), Principles of Marketing, 15th edition, Pearson Education.
2	Saxena Rajan, (2017) Marketing Management, Tata McGraw-Hill Publishing Company Ltd., New Delhi, Fifth Edition.
3	Kumar Arun & Meenakshi N (2016), Marketing Management, Vikas Publishing House Pvt. Ltd., New Delhi, Third Edition.
4	Panda Tapan (2008), Marketing Management, Excel Books, New Delhi, Second Edition.
5	Gibabra, T.N., and S. K. Grover, Marketing Management, Fourth Edition.
6	Marketing Management- A South Asian Perspective-15e – Pearson, Philip Kotler, Keven Keller.
7	Abraham Koshy, Mithileshwar Jha 7 Principles of Marketing-15e Pearson, Philip Kotler, Gary Armstrong, Prafulla Agnihotri, Ehtasamul
8	Haque Marketing Management- Indian Context-Global Perspective, Ramaswamy and Namakumari, sixth edition, SAGE Publication.
9	Valarie A Zeithmal & Mary Jo Bitner, Dwayne D. Gremler and Ajay Pandit, 7/e, McGH, (2018) Service Marketing, Integrating Customer Focus Across the Firm.
10	Valarie A Zeithmal & Mary Jo Bitner, 5/e, (2011) e-Marketing-TMH.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fifth Semester
Course Title	Entrepreneurial Economics		
Course Code	ECO V1A	No. of Credits	2+1
Contact hours	30+30 Hours	Duration of SEA Exam	2 Hours
Formative Assessment Marks	50	Summative Assessment Marks	50

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1: Acquire the operational procedures knowledge of entrepreneurship
- CO2: To know how to Start your own business as a young Entrepreneur
- CO3: Enabling the students to find various procedures of operations of the business

MODULES	DESCRIPTION	60 Hrs
Module I	**Entrepreneurship and Launching Business**	**15**
	Entrepreneur and Entrepreneurship – Issues of considering for Entrepreneurship, identifying business opportunity and choosing right business, Plan a new entrepreneurship- create a business plan- contents of Business plan- marketing plan-operational plan- financial plan-risk analysis and risk management plan. Choose a business structure, Setting Business Entity & incorporation of the company, Formulation of Memorandum of Association (MOA), Formulate Article of Association (AOA), approving stamp and sign of Business Entity, Registering for e-filing, Applying for Director Identification Number (DIN), Digital Signature Certificate (DSC), and Permanent Account Number (PAN).	
Practicum	Identify career opportunities in business and create a Business Plan Demonstration on Registering for e-filing Assignment on Formulation of Memorandum of Association (MOA)	
Module II	**Procedure for Start-up Business**	**15**
	Operational Procedures- Get Government of India, State Government (Karnataka) and Local Government tax IDs, -Apply for all concerned licenses and permits, - Open a business bank current account, - Apply for Business Insurance, – Appraisal of Technical Feasibilities, Economic and Financial viability - Bottom line	
Practicum	Identify the and write a small report on procedure to open a business bank current account and applying for business Insurance	

Experiential Learning Practicum	Visit a Startup/MSME and write a report of 15-20 pages about consisting of the following:	30
Format of the Report	1. Name and Address of the Startup/Micro Enterprise Visited 2. Certificate from the MSME/Startup Stating the students visit and learning about the entrepreneurship and enterprise 3. Certificate from the concerned HOD & Concerned teacher 4. Brief Profile of the MSME Startup 5. Lessons Learnt about Launching a Business, Product Marketing, Sources of finances, Challenges faced, Strategies to Overcome it, etc.	

References:	
1	Donald F Kuratko (2014), "Entrepreneurship – Theory, Process and Practice", 9th Edition, Cengage Learning.
2	Khanka. S.S (2013) "Entrepreneurial Development" S.Chand & Co. Ltd., RamNagar, New Delhi.
3	Kuratko and Rao, Entrepreneurship: A South Asian Perspective, Ferrell,Fraedrich, Ferrell, Business Ethics, Cengage Learning
4	Singh, Nagendra P. Emerging Trends in Entrepreneurship Development. NewDelhi: ASEED
5	Marc J Dollinger, Entrepreneurship – Strategies and Resources, PearsonEducation
6	Venkateshwara Rao and Udai Pareek, (Eds)Developing Entrepreneurship-A Handbook
7	Donald F Kuratko (2014), "Entrepreneurship – Theory, Process and Practice", 9th Edition, Cengage Learning.
9	https://www.sba.gov/business-guide/launch-your-business/open-business-bank-account
10	https://www.businessnewsdaily.com/4686-how-to-start-a-business.html
11	https://www.forbes.com/advisor/in/business/how-to-start-a-business
12	https://services.gst.gov.in/services
13	https://www.jotform.com/pdf-templates/proposal
14	https://www.visme.co/templates/proposals/

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Digital Economics			
Course Code	ECO V1B		No. of Credits	2+1
Contact hours	30+30 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	50		Summative Assessment Marks	50

Course Objectives: After the completion of the course, the students will be able to understand the structures of the digital economy, how the community and firms interact in digital markets and how digital markets should be designed and regulated.

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. To be able to apply the concepts of business models to digital economy and understand distinguishing features of the digital economy
- CO2. To link the specific distinguishing characteristics of digital economy to market structures and market outcomes.
- CO3. To understand implications of business models and behaviors in the digital economy
- CO4. To analyze the structural incentives of digital economy.

MODULES	DESCRIPTION	60 Hrs
Module I	**Features of the Digital Economy**	**15**
	Introduction to the Digital Economy – Digitization of the Economy, The Digital Economy Ecosystem, Multi-sided Platforms, Two-sided Markets, Network Effects and Positive Feedbacks, Lock-in and Switching Costs, Formation of Monopolies in Digital Economy, The "Long Tail", Importance of Data – Prediction Vs. Causality, Privacy, Search and Matching – Low Search Costs and Prices, Search Engines, Recommendations and Matching, Ethical Challenges in the digital economy – Challenges for Society, Challenges for ethics, Recent Legal Developments towards digital economy.	
Practicum	Group Discussion on the Digital Economy Ecosystem Assignment on Importance of Data – Prediction Vs. Causality.	
Module II	**Digital Markets**	**15**

	Main Types of Digital Economy Market Players – Specific Features, Behaviour, Goals Stakeholders and relationships in digital markets, Competition, Cooperation and Coopetition, Digital Innovations, Main types of Digital Economy Business Models, The layered internet model, Strategic Positioning – Business Strategies of Different types of Digital Economy Market Players, Digital Economy and Traditional Companies – Digital Technologies as a risk factor for traditional Companies, Business Models of Traditional Companies in Digital Economy, Coexistence Models of Digital and Traditional Companies, Individual Markets: Media – Copyrights and Streaming, News and Social Media, Advertising, E-commerce – Customization, Auctions, Payment Systems, The sharing gig economy – Ride-hailing, Labour Markets, Lodging	
Practicum	Seminar on e-commerce sites Debate on the sharing gig economy	
Experiential Learning/ Practicum	**Conduct a Survey using Interview Schedule on Perception of the consumers who are using digital payments**	**30**
Format of the Report	1. Brief Profile on Digital Payments 2. Different Modes of Digital Payments 3. Collecting the data from the 30 respondents who use Digital Payments, Using the pre designed interview schedule 4. Analysis of the data using simple statistical tools 5. Interview Schedule must consist of the following i. Name, Occupation, income and Expenditure ii. Socio-Economic Background of the Consumers iii. From when they are using Digital Payments iv. Products/ Services for which they are using Digital Payments v. Benefits of Digital Payments vi. Difficulties faced by Digital Payments vii. Suggestions to improve.	

References	
1	Overby Harald, Jan. A. Audestad (2013), *Digital Economics: How Information and Communication Technologies is Shaping Markets, Businesses and Innovation*, Create Space Independent, Scotts Valley, CA USA.
2	Overby Harald, Jan. A. Audestad (2021), *Introduction to Digital Economics – Foundations, Business Models and Case Studies*, Springer Nature, Switzerland.
3	Peitz M & Waldfogel J. (2012), *The Oxford Handbook of the Digital Economy*, Oxford University Press
4	Kahin, B & Brynjolfsson, E (2000), Understanding the Digital Economy: Data, Tools and Research, Cambridge, Mass: The MIT Press

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Economics of Dairy Farming			
Course Code:	ECO VIC		No. of Credits	2+1
Contact hours	30+30 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	50		Summative Assessment Marks	50

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Know the animal husbandry and significance, employment opportunities in dairy farming
- CO2. Acquire the knowledge about dairy farm management
- CO 3. Understand the facilities of dairy farming
- CO4. Start the self-dairy farm business.

MODULES	DESCRIPTION	60 Hrs
Module I	**Introduction**	15
	Animal husbandry, livestock in India, scope and prosperity, dairy development in India, Dairy facilities-selection of site, housing system, classification of dairy plants, layouts and design equipment and utilization, cost aspects of dairy farming, records to be maintained in a dairy farm, finance to Dairy farming	
Practicum:	Visit dairy farm- Survey on Dairy facilities Survey on cost and revenue aspect of dairy farming	
Module II	**Management of a Dairy Farm**	15
	Operation flood in India- Definition of Milk and Nutritive value of milk, Classification of dairy animals-breeds and control, breeding management, Pest, disease and control, care of new born calf, major responsibilities of a dairy farmer, cooling, cleaning and sanitization of dairy farm, basic principles of feed, importance of Feed ingredients, feed formulation and feed mixing Milk product and bio-products, procurement of marketing of milk, clean milk production and handling-processing and testing quality Control of milk, storage and distribution of processed milk. Government policies, schems for dairy business	
Practicum:	Understand the animal breeds and management, diseases and its control, cleaning and sanitization Basic principles of feed and marketing	

Experiential Learning Practicum	Visit a milk federation dairy co-operative society/ Milk Union	30
Format of the Report	1. Name and Address of the milk federation dairy co-operative society/ Milk Union Visited 2. Certificate from the milk federation dairy co-operative society/ Milk Union Stating the students visit and learning about the Dairy Management 3. Certificate from the concerned HOD & Concerned teacher 4. Brief Profile of the milk federation/dairy co-operative society/ Milk Union Visited 5. Lessons Learnt about Managerial Functions, Operational Functions –Reception of the milk, Milk Testing, Testing of milk, dispatch of milk, Payments, Accounting, Cleanliness, Standardization of milk and other functions, dairy Product Marketing, Sources of finances, Challenges faced, Strategies to Overcome it, etc.....	

References	
1	Banerjee G. C (2010) -Textbook of Animal Husbandry, Oxford Publication,IBH Publishing Co. Pvt Ltd. New Delhi
2	Mullat C/C, The Dairy Farming Handbook, Directorate Animal Science Researchand Technology Development Services.
3	Dairy India 2007, 6th Edition
4	Principles and Practices of Dairy Farm – Jagadish Prasad.
5	Economics of Milk Production – Bharati Pratima Acharya Publishers.
6	Saras Applied Zoology- Fifth Edition 2011, Saras Publication, Tamilnadu.
7	Dilip Dutt, Chairman, National Dairy Development Board- Good Dairy HusbandryPractices.
8	Fao Animal Production And Health- Guide To Good Dairy Farming Practice, Publishedby food and agriculture organization of the united nations and international dairy federation, Rome, 2011.
9	Dairying- 2019, www.cstaricalcutta.gov.in

6th Semester

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	International Economics			
Course Code	ECO C13		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the international trade theories and their application in international trade
- CO2. Explain the concept of terms of trade and demonstrate the effect of trade barriers; and display the ability to analyse the stages of economic integration
- CO3. Understand the concept of BoP and assess the BoP position and examine the changes in forex rate.
- CO4. Analyse the role of International trade and financial institutions
- CO5. Demonstrate good inter-personal and communication skills through class participation and contributing to critical discussion on trade issues

MODULES	DESCRIPTION	60 Hours
Module I	**International Trade Theories**	**15**
	Meaning and Importance of International trade. Differences between Internal and International Trade. Trade Theories: Mercantilist view; Absolute cost and comparative cost advantage theories, Haberler's Opportunity cost theory, Hecksher-Ohlin theory, Leontief's paradox.	
Practicum	Assignment on Ricardo's Comparative cost advantage and Leontief's paradox.	
Module II	**Terms of Trade and Commercial Policy**	**17**
	Terms of trade- Concept and Types, Factors determining Terms of Trade; Commercial Policy: Free trade v/s Protection; Tariffs: Types and effects; Quotas; Anti-dumping; Economic Integration: Meaning and stages.	
Practicum	Debate: Free trade v/s Protection. Mini project: Trace the evolution of India towards Economic Integration.	
Module III	**Balance of Payment and Capital Flow**	**13**
	Balance of Payment: Concept, Components; Disequilibrium in Balance of Payment: Causes and Measures to correct disequilibrium. Foreign Exchange rate: Meaning and types; determination of Foreign exchange rate: Demand for and Supply of Forex, Purchasing Power Parity (PPP) theory. Capital Flow: Meaning and concept of Foreign Investment: Forms of FDI; Advantages and disadvantages of FDI.	
Practicum	Prepare India's Balance of Payment statement using recent Economic Survey. Assignment on Forms of FDI	

Module IV	International Finance and Trade Institutions	15
	Bretton Woods Institutions: IMF and IBRD -IDA and IFC Organization, Objectives, Functions and their role in developing countries. Evolution of WTO: GATT –principles and objectives, WTO Organization, Objectives, Functions, Agreements and current issues. WTO and developing countries.	
Practicum:	Group Discussion: Effectiveness of IMF and IBRD in developing countries. Seminar: Agreements of WTO or current issues of WTO	

References

1	Sodersten, B. (1993): International Economics, MacMillan, 3 Edition, London.
2	Salvatore, D. (2016): International Economics, 12 Edition, Wiley Publication
3	Vaish, M. C. and Sudama Singh (1980): International Economics, 3 Edition, Oxford and IBH Publication, New Delhi.
4	Gerbaugh, R. J. (1999): International Economics, International Thompson Publishing, New York.
5	Dana, M. S. (2000): International Economics: Study Guide and work Book, 5 Edition, Routledge Publishers, London.
6	Kenen, P. B. (1994): The International Economy, Cambridge University Press, London.
7	Krugman, P.R. and M. Obstfeld (1994): International Economics: Theory and Policy, Addison-Wesley Publications.
8	Jackson, JD. (1998) The World Trading System, Cambridge University Press, Mass. Chennilam, International Economics, TMH, New Delhi.
9	D M Mithani, International Economics, Himalaya, Mumbai.
10	Jhingan M.L. (2016): International Economics, Vrinda Publications Pvt Ltd-Delhi
11	Dwivedi D.N. (2013): International Economics Theory & Policy, Vikas Publishing House Pvt Ltd.
12	K.C. Rana & K.N. Verma (2017): International Economics, Vishal Publishing Co.
13	Krishnamurthy H.S. (2019) : Antarrashtreeya Arthashastra ; (Kannada version), Sapna, Bengaluru.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Indian Public Finance			
Course Code	ECO C14		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the structure of Indian Public Finance
- CO2. Enable the students to know the Source and nature of public revenue and expenditure
- CO3. Understand the Budget and different concept of deficits
- CO4. Know the Public debt and its management
- CO5. Understand the fiscal and monetary policy and their tools and importance
- CO7. To enable the students to know the Indian federal financing system and Financial Commissions

MODULES	DESCRIPTION	60 Hours
Module I	**Public Revenue**	**15**
	Direct Tax Revenue – Sources of Revenue-Tax and Non-Tax Revenue; Trends and Patterns of Tax Revenue in India; Direct and Indirect Taxes in India; Personal Income Tax Rates and Slabs; Corporate Tax- Tax Rate and Slabs; **Indirect Tax Revenue** - Indirect Taxes – Earlier Taxes-VAT and MODVAT; Goods and Services Tax (GST)- Objectives and Classification of GST; Tax Rates of GST; Trends and Patterns of GST; Impact of GST on Indian Economy; Tax Reform Commissions	
Practicum	Collection and analysis of data on Direct tax. Collection and analysis of GST from businesses	
Module II	**Public Expenditure**	**15**
	Revenue Expenditure - Classification of Public Expenditure in India; Revenue Account Expenditure- Trends and Patterns; Capital Account Expenditure-Trends and Patterns; Fiscal Responsibility and Budget Management (FRBM) Act; Impact of Public Expenditure on Indian Economy; Expenditure Reforms Commission (ERC) in India. **Union Budget and Its Analysis** - Meaning and Classification of Budgets, Zero-Based Budget, Composition of Union Budget, Union Budget Analysis (current one); Different Concept of Deficits– Revenue, Fiscal, Primary Deficits	
Practicum	Analysis of Union Budget (Current one) Group Discussion on Budget Deficits	

Module III	**Public Debt and Its Management**	14
	Public Borrowings and Debt - Meaning and Nature of Public Debt; Sources of Public Borrowings; Classification of Public Debt; Trends and Patterns of Central Government Debt; Main Characteristics of Indian Public Debt; Crowding out of Private Investment; Causes of Public Debt in India; **Burden of Public Debt and Management in India** - Meaning of Burden of Public Debt; Importance of Public Management; Principles of Public Debt Management; Repayment of Public Debt in India; Impact of Public Debt on Indian Economy; Finance Commissions in India	
Practicum	Assignment to write on Indian Public Dept and sources of repayment Group Discussion on Burden of Public Debt	
Module IV	**Fiscal and Monetary Policies and Federal Finance in India**	13
	Fiscal and Monetary Policy India - Meaning and Objectives of Fiscal Policy; Importance of Fiscal Policy; Tools of Fiscal Policy; Meaning and Objectives of Monetary Policy; Importance of Monetary Policy; Tools of Monetary Policy; **Indian Federal Finance** - Meaning and Importance; Stages of Growth; Allocation of Resources- Division of Functions and Resources; Principles of Federal Finance; Shortcomings of Federal Financing; Finance Commission and Their Recommendations.	
Practicum	Group Discussion about the Role of Fiscal and Monetary Policies in controlling inflation Assignment to write the State List, Union List and Concurrent list	

References	
1	Bhatia H.L (2021): Public Finance, S. Chand and Co., New Delhi
2	Lekhi R.K (2020): *Public Finance*, Kalyani Publishers, New Delhi.
3	Musgrave R.A and Musgrave P.A (2017): *Public Finance in Theory and Practice*, Mcgraw-Hill Kogakusha, Tokyo.
4	Om Prakash (2021): *Public Economics: Theory a practice*, Vishal Publishing Co. Ludhiana
5	S.K. Singh (2019): *Public Economics: Theory and Practice* S. Chand and Co., New Delhi
6	Tyagi B.P (2018): *Public Finance*, Jai Prakash Nath and Company, Meerut, India

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	Economic Thoughts of Dr.B.R Ambedkar			
Course Code	ECO C15		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. derive inspiration from the life and works of B.R.Ambedkar
- CO2. Appreciate the socio-economic scenario during Ambedkar' period and compare it with present day
- CO3. Comprehend the contributions of Ambedkar on various economic aspects
- CO4. Assess the economic views of Ambedkar in the light of present-day socio-economic problems
- CO5. develop the traits of critical thinking and critiquing

MODULES	DESCRIPTION	60 Hours
Module 1	**Ambedkar's views on Economy, Society and Equity**	**15 Hrs**
	Socio- Economic-Political Context of India during Ambedkar's period; Brief outline of Ambedkar's life and career; Ambedkar's views on: a) economy and society; b) role of state c) Socialism and State Socialism; d) Women Empowerment , e) Objectives of economy: growth & equity; Socio-economic inequality: Economics of Caste, discrimination and deprivation, reforms suggested there in by Dr Ambedkar. Constitutional Provisions, Hindu code Bill	
Practicum	Assignment: Socio-economic inequality and status of affirmative actions in India	
Module 2	**Thoughts of Ambedkar on Agriculture**	**15Hrs**
	Ambedkar's views on: Agrarian Economy; Consolidation of land holdings and land revenue; Comparison with Ricardian view; Collective farming; views on land-ownership and land lessness; Nationalisation of land and ceiling on land holdings; Surplus labour utilisation in agriculture and capital formation.	
Practicum	Mini Project: Using the Agriculture census data (http://agcensus.dacnet.nic.in), chart the average size of operational holdings (by group) for different social classes in your tehsils and district (for2001-2 and 2015-16); compare with the corresponding figures of state and nation	
Module 3	**Ambedkar on Industrialisation and Planning**	**15 Hrs**
	Ideas on Industrialisation; views on types of industries Labour: views on labour exploitation and labour reforms; Social security Planning: Measures to develop Irrigation and Power sector, River linking;	
Practicum	Debate 1): Small & cottage industries of rural areas vs large scale industries in	

	urban areas Debate 2) Industrialize or perish v-s Industrialise and perish	
Module 4	**Ambedkar's contribution to Fiscal and Monetary Economics**	**15 Hrs**
	Fiscal Economics: study of sources of revenue; canons of expenditure Monetary Economics: Price stability and exchange rate stability; Currency reforms	
Practicum	Seminar: Ambedkar's views on 'The Problem of Rupee'	

References (In order of importance of usage)	
1	Heggade O D (1998) – Economic Thoughts of B R Ambedkar
2	Heggade O D – ಡಾ|| ಬಿ. ಆರ್. ಅಂಬೇಡ್ಕರ್ ಅವರ ಆರ್ಥಿಕ ಚಿಂತನೆಗಳು, Arjun Pub. House, Mysuru
3	Speeches and writing of Dr. B R Ambedkar, W.R.Mugawar (4 Volumes)
4	ಡಾ|| ಬಿ.ಆರ್.ಅಂಬೇಡ್ಕರ್ ರವರ ಸಮಗ್ರ ಲೇಖನಗಳು ಮತ್ತು ಭಾಷಣಗಳು – Vol 1, Vol 2 Part 1& 2, Vol 5, Vol 6 Part 1& 2, Vol 10 Part 1, 2, & 3, Vol 12 part 1, Pub by Govt of Karnataka
5	Nagar and Nagar (2010), Economic Thoughts and Policy of Dr. B. R. Ambedkar
6	Permaiah, P.K and Satheesh Reddy (1994) – Dr Ambedkar's Economic Philosophy, Deka Pub, New Delhi
7	Dongre M.K – Economic Thought of Dr B R Ambedkar
8	Ramaiah Reddy (ed) (1987) – Dr B R Ambedkar's Economic Philosophy
9	Sukhadeo Thorat (1998), Ambedkar's Role in Economic Planning and Water Policy, Shipra Publications: New Delhi
10	Ambedkar B. R. (1936) Annihilation of Caste, Government of Maharashtra, Writings and Speeches of Dr B R Ambedkar, Volume 1, Mumbai. Also see https://www.drambedkar.in/annihilation-of-caste/
11	Ambedkar B. R. (1923) THE PROBLEM OF THE RUPEE: ITS ORIGIN AND ITS SOLUTION' (HISTORY OF INDIAN CURRENCY & BANKING) http://drambedkar.co.in/wp-content/uploads/books/category/1-19/the-problem-of-the-rupee.pdf
12	Vasant Moon (Compiled) (1989) DR. BABASAHEB AMBEDKAR WRITINGS AND SPEECHES VOL. IPart V of https://www.mea.gov.in/Images/attach/amb/Volume_01.pdf

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	Environmental Economics			
Course Code	ECO C16		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to

- CO1. Understand how economic methods can be applied to environmental issues facing society
- CO2. Examine the linkages between Environmental Degradation and Economic Development
- CO3. Develop an informed view regarding the potential of economics to help societies achieve their environmental goals
- CO4. Demonstrate good inter-personal and communication skills through writing an essay and contributing to critical discussion.
- CO5. Analyze environmental problems and to assess environmental policies.

MODULES	DESCRIPTION	60 Hours
Module I	**Environment and Ecology**	**15**
	Meaning, Nature and Scope of Economics of Environment; Linkages between Environment and the Economy; Environmental Kuznets curve; Environmental Stress; Population and Environment; Poverty and Environment; Meaning and elements of ecology; Biotic and Abiotic components; Food, Hydrological and Carbon Cycles; Material Balances Principle (Entropy law); Meaning and strategies to achieve Sustainable Development; Rio Summit; Green Accounting; Introduction to SDGs.	
Practicum:	Making charts relating to SDGs or Assignments on environment-economy linkages at the local level.	
Module II	**Natural Resources Scarcity and Conservation**	**15**
	Meaning and Characteristics of Renewable and Non-renewable resources; Non-Renewable Resources and the problem of depletion and problem of overuse ; Resource Scarcity and Economic Growth (Limits to Growth Model); Energy and Economic Development; Energy resources and their Pricing; Alternative energy sources; Conservation of Natural Resources- 3Rs – Reduce, Reuse and Recycling Measures	
Practicum:	Identifying local resources; Project on resource conservation (esp. water) at the College level; Discussion on Limits to Growth.	

Module III	**Environmental Pollution**	**15**
	Environmental regulatory system in India, Pollution Control Boards and their Functions; Provisions of the Environmental Protection Act, 1986; Environmental Movements in India (Chipko); Role of Citizens and NGOs in Environmental Protection	
Practicum:	Visiting the Pollution Control Board office and observing its functions	
Module IV	**Environmental Pollution and Regulation**	**15**
	Environmental regulatory system in India, Pollution Control Boards and their Functions; Provisions of the Environmental Protection Act, 1986; Environmental Movements in India (Chipko); Role of Citizens and NGOs in Environmental Protection	
Practicum:	Assignments on types of pollution in local areas, Seminars on climate change and its consequences, visiting the Pollution Control Board office and observing its functions	

References	
1	Bhattacharya, R.N (Ed) (2001), *Environmental Economics: An Indian Perspective*, Oxford University Press.
2	Karpagam M. (1995), *Environmental Economics*, Sterling Publishers, New Delhi.
3	Shankar, U. (2001), *Environmental Economics*, Oxford University Press, New Delhi.
4	Singh, Katar and Amil Shishodia (2007), *Environmental Economics: Theory and Applications*, Sage Publications, New Delhi.
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Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	Industrial Economics			
Course Code	ECO E2A		No. of Credits	3
Contact hours	45 Hours		Duration of SEA/Exam	2 hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand Industrial Economics in the Indian context.
- CO2. Critically examine and summarize the theories of industrial location.
- CO3. Describe the working of different industrial finance institutions.
- CO4. Identify the major issues involved in Indian industry and Government policies.

MODULES	DESCRIPTION	45 Hours
Module – I	**Framework of Industrial Economics**	15
	Industrial Economics: Meaning, Nature & Scope, Importance - Concepts: Plant, Firm and Industry, Organization of a Firm, Classification of Firms on the basis of Ownership (Public, Private, Joint and Cooperative Sectors), - Industrial Combinations, causes, Mergers & Acquisitions and Amalgamations; **Industrial Location:** Meaning, Determinants, Weber's theory, Florence's theory, Industrial location policy in India, Industrial Location trend in India.	
Practicum	Visit to nearest firm/organization and prepare the report	
Module – II	**Industrial Growth and Finance in India**	15
	Industrial growth in India: Review of recent trends in Indian industrial growth and structural transformation, Changing role of Public enterprises, efficiency, productivity and performance constraints - Performance and role of Micro, Small, Medium Enterprises (MSME), Role of MNC's in India, The IT sector in India viewed in world context; **Industrial Finance** : Internal & External and other components of Funds, Role, Nature, Volume and types of Industrial Finance - Role of Commercial Banks, IDBI, SIDBI, IFCI, SFCs etc.	
Practicum	Discussion on sources of Industrial Finance.	

Module – III	Issues in Indian Industry and Government Policies	18
	Major Issues in Indian Industry: Industrial Backwardness, Problems of Regional Imbalance, Industrial Sickness: Industrial Disputes: Causes and Measures, Industrial Proliferation and Environmental Protection. **Government Policies for Industries :** Global Competition emerging trend, Government's recent policies: Industrial policy 1991 and subsequent changes, Technology and Foreign Collaboration Policy.	
Practicum	Seminar on Industrial disputes	

References	
1	Barthwal R.R. (2022), *Industrial Economics: An Introductory Textbook*, 3rd Edn, New Age International Publishers.
2	Bhalerao N & Desai SSM (2010), *Industrial Economy of India*, 5th Edition, Himalaya Publishing House, Bombay.
3	Cherunilam, F. (1994), *Industrial Economics: Indian Perspective*: Himalaya Publishing House, Mumbai.
4	Hay, D. and D.J. Morris (1979), *Industrial Economics: Theory and Evidence*, Oxford University Press, New Delhi.
5	Singh, Sarla and A. N. Sadhu (1988), *Industrial Economics*, Himalaya Publishing House, Bombay.
6	Sreenivasa, K.V. and Das, V.B.M. (2004), *Indian Industrial Economy*, S. Chand & Co., New Delhi.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	Labour Economics			
Course Code	ECO E2S		No. of Credits	3
Contact hours	45 Hours		Duration of SEA/Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After successfully completing the course, the student will be able to:

CO1.Understand the basic concepts of Labour Economics.

CO2. analyze and tackle the labour issues effective.

CO3. Understand the theories of wages as well as wage policy analyze

MODULES	DESCRIPTION	45 Hrs
Module - I	**Introduction Labour Economics**	15
	Concept and Definition - Nature, Scope and Importance - Labour as a Unique Factor of Production - Labour Economics as a Branch of Economics - Interdisciplinary Character of Labour Economics. Labour Market Concept of Labour Market and its Features - Difference between Labour Market and Commodity Market - Labour Market Imperfections and Factors Contributing to Imperfections - Determinants of the Supply and the Demand for Labour – Organized and Unorganized Labour.	
Practicum	Group Discussion on Labour as a Unique Factor of Production. Assignment on Labour Economics as a branch of economics Visit to Organized and Unorganized Labour Market	
Module II	**Employment and Wage**	15
	Concept of Employment and Full Employment - Need for Full Employment - Theories of Employment - Classical, Neo-Classical and Modern Approaches to Employment - Unemployment, Causes and Consequences – Technology and Employment - Information Technology Revolution and Employment. Wages Wage Concept and Definitions – Wage and Development – Theories of Wages, Classical, Marginal Productivity and Collective Bargaining Theory of Wage – Wage Differentials – Wage Policy, Objectives and Importance	
Practicum	Presentation on Theories of Employment Undertake evaluation study on wage policies and prepare an assignment	
Module III	**Labour Productivity and Labour Welfare**	15
	Concept of Labour Productivity - Measurement and Importance of Labour Productivity – Determinants - Causes for Low Labour Productivity and Measures to Increased Labour Productivity - Technology and Labour Productivity. State and	

	Labour: Need for State Intervention in Labour Matters - Methods of Intervention - Labour Social Security and Labour Welfare Measures; Labour Policy: Objectives and Importance - Emerging Perception on State Intervention.	
Practicum	Survey on the conditions of Labour in different sectors - Debate on need for State Intervention in Labour Matters.	

References	
1	Bhagoliwal T.N. *Economics of Labour and Industrial Relations*; Sahitya Bhawan, Agra.
2	McConnell C.R. and S.L. Brue *Contemporary Labour Economics*, McGraw Hill, New York.
3	Mittal and Sanjay Prakash Sharma. *Labour Economics*, RBSA, Jaipur.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	Factor Pricing and Welfare Economics			
Course Code	ECO E2C		No. of Credits	3
Contact hours	45 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1 Understand the concepts of Welfare Economics
- CO2 The students can be able to analyze and theories of welfare economics effectively
- CO3 To understand the importance of the theories and models that can be used to improve the economic and social welfare of people

MODULES	DESCRIPTION	45 Hours
Module I	**Theories and Pricing of Factors of Production**	**15**
	Meaning and Significance of factor pricing - Functional (factor) and Personal incomes - Demand and Supply of Factors of Production in Perfect and Imperfect Competitive Markets. *Rent*: Ricardian Theory, Modern Theory, and Quasi Rent Theory, *Wages*: Subsistence Theory, Wage-Fund Theory, Residual Claimant Theory, Marginal Productivity Theory, and Modern Theory, *Interest*: Classical Theory - Loanable Funds Theory, Liquidity Preference Theory, and Hicks -Hansen Theory (IS-LM), *Profit*: Dynamic Theory, Innovation Theory, Risk-bearing Theory and Uncertainty bearing Theory, Factor pricing in perfectly competitive markets - Marginal productivity theory of factor pricing, Factor pricing in imperfectly competitive markets - Monopoly power: Trade Unions and wage determination - Bilateral monopoly, Prices of Fixed Factors, Rents and Quasi Rents - Non-Homogeneous Factors and Wage Differentials	
Practicum	Collecting information on labour supply to understand the reasons for its backward bending, seminars about the above theories	
Module II	**General Equilibrium Theory**	**15**
	Interdependence in the Economy (Circular Flow) - Partial and General Equilibrium Analyses: Two-Sector Model. Equilibrium of Production and Equilibrium of Consumption - Simultaneous Equilibrium (Edgeworth box diagram) – Walrasian General Equilibrium Analysis – Pareto Optimality and Market Equilibrium, Market failure –Meaning of Market Efficiency – Reasons for Market Failure - Externalities, Public goods, Property rights, Coase Theorem, Asymmetric information - Meaning - adverse selection, moral hazards, agency problems, Theory of second best	
Practicum	Collecting information on market failures and to ascertain the reasons for it. Describing the graphs used	

Module III	Welfare Economics	25
	Individual welfare and social welfare – Pigouvian Welfare Economics – Social welfare function – Kaldor-Hicks Compensation criteria – Collective Choice, Social Choice and Social Welfare - Arrow's impossibility theorem - Samuelson's Utility Possibility Curve – Value Judgments and Welfare Economics – Amartya Sen's Contributions to Welfare Economics, Government Intervention – Need for Public Policy – Economics Justification for Welfare Schemes	
Practicum	Conducting surveys to understand the notion of welfare Preparing a list of government programmes and giving justification for it from the point of view of Economics	

References	
1	Ahuja H.L. (2007) *Advanced Economic Theory*. S. Chand and Company, New Delhi.
2	Ferguson C.E and Maurice S. Charles, (1978) *Economic Analysis - Theory and Applications*. Richard D. Irwin Inc. USA.
3	Sen A.K. (2017) *Collective Choice and Social Welfare*. Holden-Day, San Francisco.
4	Jhingan, M.L. (2016): *Microeconomics*, Vrinda Publications, New Delhi.
5	Mankiw, N. Gregory (2020). *Principles of Economics* (Ninth ed.). Boston, MA.
6	Koutsoyiannis, A (1979). *Modern Microeconomics*, London. Macmillan
7	Samuelson, Paul (2004). *Economics*, McGraw-Hill, New Delhi.
8	Salvatore, Dominick (2008) Microeconomics Theory and Applications, Oxford University Press, New York.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	Economics of Non-Farm Sector			
Course Code	ECO E2D		No. of Credits	3
Contact hours	45 Hours		Duration of IA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1.Understand the Meaning, Concepts, objectives, Nature and scope of Economics of Non-Farm Sector.
- CO2. To know the sustainable development of non-farm sector
- CO3. To understand the importance of non-farm sector in the Indian economy
- CO4. To study the Government programmes and policies for non-farm sector

MODULES	DESCRIPTION	45 Hours
Module I	**Introduction to Non-Farm Sector**	15
	Meaning and Definition of Non-Farm Sector, Nature of Non-Farm Sector Economics, Importance of non-farm sector, Role of non-farm sector in the rural Economy, the demand for and supply of non-farm labour in the rural Economy. Need of sustainable development of non-farm sector in India.	
Practicum	Collecting the information on demand for and supply of nonfarm jobs Collecting information on how to develop and sustain non-farm sector Seminars and discussion	
Module II	**Non-Farm Sector and Employment**	15
	Types of unemployment in rural India, Nature of nonfarm Employment-Construction, Mining and quarrying, small businesses. Women and women employment in non-farm sector, Agro based Industries, and agro processing industries, Rural Markets, Rural MSMEs, women employment in households and cottage industry, Textile and handlooms, Rural Trade and Transportation, Rural Tourism-Swadesh Darshan.	
Practicum	Collecting the information on mining and quarrying workers condition Collecting information on rural trade and transportation Seminars and discussion	
Module III	**Government Schemes and Policies for Non-Farm Sector**	15
	Role of NGOs in non-farm sector, Government Schemes, MGNREGA, Skill India, Pradhan Mantri Kaushal Vikas Yojna, National Apprenticeship Promotion Scheme,	

	Aajeevika, Deen Dayal Upadhyay Gramin Kaushal Yojana, Pradhan Mantri MUDRA Yojana (PMMY), National Institute of Rural Development and Panchayati Raj (NIRDPR), Establishing cooperative societies	
Practicum	Collecting the information on National Apprenticeship Scheme Collecting information on MUDRA Yojana Seminars and discussion	

References	
1.	**Nayyar Rohini and Sharma N Alakh, (2005),** Rural Transformation in India : The Role of Non-Farm Sector. Institute for Human Development
2.	**Rao M Koteswara (2000),** Rural Employment: The Non-Farm Sector. Deep and Deep publication. New Delhi
3.	**Chattopadhyay Apurbba Kumar and Chakrabarti Sanmaya (2013)** Economics of Rural Non-Farm Sector: Certain Characteristics and Determinants Serial Publication New Delhi
4.	**Fisher Thomas (1997),** Forgotten Sector: Non-farm employment and enterprises in rural India. Practical Action Publication
5.	Jamli B Kilasiga and M Giribabu (Eds) , 2020 **AGRICULTURE AND RURAL TRANSFORMATION:** Issues and Challenges (With Special Reference to North-East India). Rawat Publication Jaipur
6.	**Government of India** 2020-21. Annual Report. Department of Agriculture, Cooperation and Farmers Welfare
7.	**Antony Piyush, V. S.P Gayathri., Mamgain; (2001)** "Social and Economic Security in India" (ed.), Institute for Human Development. New Delhi

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Sixth Semester
Course Title	Micro Entrepreneurs Development		
Course Code	ECO V2A	No. of Credits	2+1
Contact hours	30+30 Hours	Duration of IA Exam	2 hours
Formative Assessment Marks	50	Summative Assessment Marks	50

Course outcomes: On completion of the course, the students should be able to

- CO1. To know how to start own Micro Entrepreneur Unit
- CO2. To enable the students to find out various procedure of operations of Micro Entrepreneurship
- CO3. To enable the students to gain knowledge and skills needed to run micro enterprises successfully

MODULES	DESCRIPTION	60 Hours
Module I	**Micro Enterprises : Technical Feasibility**	**15**
	Management Evaluation – Micro Enterprises Promotion - Types of Enterprises and Management – Sole Proprietorship, Partnership, Limited Liability Partnership, Private Limited - Profile of the Management – Idea of Product – Product Line – Product Demand Estimation – Promotion and Competition Management: Technical Feasibility – Manufacturing Process – Digital Technology – AI in Manufacturing – Plant Location, Plant and Machinery Technical Feasibility, Raw-material Utilities and Human Resources, Contracts and Annual Maintenance Agreements (AMCs) – Project Monitoring and Implementation – Plant Optimization.	
Practicum	Assignment on Micro Entrepreneurs Development Survey to analyse Technical Feasibility in Micro Enterprises	
Module II	**Micro Enterprises: Financial and Economic Viability**	**15**
	Appraisal of Financial Feasibilities – Cost of the Project – Land and Building, Plant and Machinery, Furniture's and Fixtures, Pre-Operative Expenses, Fixed and Working Capital – Means of Strategic Finance – Own Contribution and Venture Capital, Term Loans, Subsidy and Government Schemes, Other Sources; Economic Viability – Profit and Losses, Break Even and Bottom Line	
Practicum	Identify the factors of economics viability in micro enterprises and write an assignment	
Experiential Learning/ Practicum	**Visit a Micro Enterprise and write a report of 15-20 pages about consisting of the following:**	**30**
Format of the	1. Name and Address of the Micro Enterprise Visited	

Report	2. Certificate from the Micro Enterprise Stating the students visit and learning about the Micro Enterprises. Technical Feasibility 3. Certificate from the concerned HOD & Concerned teacher 4. Brief Profile of the Micro Enterprise 5. Lessons Learnt about Micro Enterprises: Technical Feasibility, Financial and Economic Viability, Launching a Business, Product Marketing, Sources of finances, Challenges faced, Strategies to Overcome it, etc.	

References	
1.	Bessant J and Tidd J (2013): Innovation and Entrepreneurship, 2nd Edition, John Wiley & Sons.
2.	Desai, V (2021): Small Scale Industries and Entrepreneurship, Himalaya Publishing House, Mumbai.
3.	Desai, V (2011) : Dynamics of Entrepreneurial Development and Management, Himalaya Publishing House, Mumbai.
4.	Donald F K (2014): Entrepreneurship – Theory, Process and Practice, 9th Edition, Cengage learning.
5.	Hirsch, R.D., Peter, M and Shepherd D (2006): Entrepreneurship, 6th Edition, Tata McGraw-Hill, Mumbai.
6.	Kanaka S S (2013): Entrepreneurial Development, S. Chand & Co. New Delhi.
7.	Nagendra and Manjunath, V S (2010): Entrepreneurship and Management, Pearson.
8.	Roy R (2011): Entrepreneurship, 2nd Edition, Oxford University Press.
9.	Stokes, D and Wilson, N. (2010): Small Business Management and Entrepreneurship, 6th Edition, Cengage Learning.
10.	Sundar, K (2011) : Entrepreneurial Development, Vijay Nicole Imprints Pvt. Ltd.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Sixth Semester
Course Title	Project Planning and Management		
Course Code	ECO V2B	No. of Credits	2+1
Contact hours	30+30 Hours	Duration of SEA/Exam	2 hours
Formative Assessment Marks	50	Summative Assessment Marks	50

Course outcomes: On completion of the course, the students should be able to

- CO1-formulate and present a practicable project idea
- CO2-prepare a realistic economic plan
- CO3-describe models and methods to lead, carry out, document and evaluate project
- CO4-describe an intended project in a complete project plan
- CO5-review and evaluate own and others' project plans critically.
- CO6-Understand the content for preparing a Project Report for new projects and differentiate between financial, technical analysis and business feasibility.

MODULES	DESCRIPTION	60 Hours
Module I	**Introduction to Project Planning and Management**	**15**
	Meaning, Definition, Nature & Scope, Types - Schedule planning, Resource planning, Budget planning, Procurement management, Quality planning, Communications planning, Key elements of a successful project planning, and Process of Project planning.	
Practicum	Assignments on project planning and management activities. Group discussion on project planning.	
Module II	**Project Management Implementation and Stakeholder Management and Project Controlling**	**15**
	Project Management: Meaning, definition, Objectives, Nature and Importance, Project Management Skills - Qualities of the best project manager, Project Management life Cycle, **Project Implementation:** Definition, Implementation Tools, and Process; Performance and quality control measurements, **Stakeholder Management:** Definition, Features, Importance, Risk Management: Definition, importance, techniques, Project Controlling System: Meaning, Pre-requisites, Process, Essentials, Methods, Project completion.	
Practicum	Discussion on the Skills of project management, Decision Making, Problem-Solving, and risk-management skills In small groups, try to identify the LARGEST project each of you has been involved with.	
Experiential Learning/ Practicum	**Visit an Enterprise and write a report of 15-20 pages about consisting of the following:**	**30**
Format of the Report	1. Name and Address of the Enterprise Visited. 2. Certificate from the Enterprise Stating the students visit and learnings about the Project Planning and Management.	

	3. Certificate from the concerned HOD & Concerned teacher 4. Brief Profile of the Enterprise 5. Lessons Learnt about Project Planning and Management Implementation, Stakeholder Management and Project Controlling Launching a Business, Product Marketing, Sources of finances, Challenges faced, Strategies to Overcome it, etc.	

References	
1	Adrienne Watt (2014) Project Management – 2nd Edition, publisher, BC CAMPUS open access books library
2	Davies A. Igherasa (2015) Introduction to Project Management ,Routledge Taylor &Francis Group
3	Harold Kerzner (2013), Project Management: A Systems Approach to Planning, Scheduling, and Controlling, WILEY INDIA
4	Joseph Heagney (2019) Fundamentals of Project Management, 5th Edition, Amacom Publication
5	Kalpesh Askar (2022), Project Management Essentials, You Always Wanted To Know, Vibrant Publication
6	Project Management from Simple to Complex, open text book Publisher University of Minnesota Libraries Publishing
7	Albert lester (2021) Project management, planning and control
8	Rory Burke (2009), Project Management Planning And Control Techniques, 4Th Edition, WILEY INDIA

Government of Karnataka

Model Curriculum

Program Name	BA in Economics Internship		Semester	Sixth Semester
Course Title	Internship			
Course Code	Skill Enhancement Course		No. of Credits	2
Contact hours			Duration of SEA Exam	Practical
Formative Assessment Marks	50		Summative Assessment Marks	NA

INTRODUCTION:

Internship [Organizational work] is an integral part of the curriculum. Its objective is to equip students with job skills and communication abilities, enabling them to bridge the gap between theoretical knowledge and practical application. The internship program incorporates various interventions that offer students exposure to real-life job experiences and expectations, empowering them with insights into the workings of different industries.

The internship is strategically positioned during the 6th semester of the Bachelors of Arts in Economics program. This timing provides students with a strong foundation in economics, enabling them to apply their knowledge in real-world settings. Additionally, the program caters to the critical need for teaching skills in economics and administration, enhancing the academic qualifications of students. Overall, the internship program aims to prepare students for the job market, thereby bridging the gap between academia and the professional world.

OBJECTIVES:

The objectives of conducting program are:

1. To boost students' employability by imparting soft skills that are essential in everyday life.
2. To enable students discover their professional strengths and weaknesses and align them with the changing economic environment.
3. To provide an opportunity for students to apply theoretical concepts and knowledge in real life situations at the work place.
4. To prepare students to understand organization culture and familiarize them with the organization needs.

5. To enable students to manage resources, meet deadlines, identify and undertake specific goal-oriented tasks.

6. To sharpen domain knowledge and provide core competency skills.

Internship Requirements & General Guidelines:

A. Nature of internship project work:

1. Every Student is required to work in an organization (a firm, self- help groups cooperatives) farms or any rural economy components) for at least two months as part of Internship.

2. The student shall identify an internship work place.

3. Maximum five students of the same department from a College/University shall work for Internship in the same organization.

4. Internship work may be to carry out Professional work.

5. The internship shall be paid or unpaid.

6. While, working from the organizational premises is encouraged, in certain cases, virtual internship shall be considered.

B. Duration of Internship:

1. The Internship works shall be for a period of TWO months (Sixty Days).

2. The internship commence from the first day of the sixth semester.

3. Student is expected to carry out his/her Internship works during the first FIVE days of the week, and shall report to the department on a weekly basis.

4. The duration of the work shall be specified by the organization at the beginning of the program and the number of hours spent shall be in line with the prevailing rules.

C. Guide and Mentor:

1. An internal mentor shall be assigned by the University/College for the smooth conduct and supervision of the internship program.

2. The internal mentor shall provide guidance students in securing internship and to monitor the progress.

D. **Protocol of the Internship work:**

1. The head of the institution shall issue an internship work authorization letter during the 5th semester to the College or Organization where student is expected to join the internship work.
2. Student is expected to take up the preliminary work such as identifying the organization and engaging in securing an offer from an organization.
3. During the 5th semester, students who secured an offer must get consent offer signed by the principal/head to carry out internship.
4. Student must submit the joining report with the date of joining for internship to the department head through internal mentor.
5. In case of professional work the student is expected to be regular in performing his/her duties/tasks assigned to him/her by the Organization.

E. **Evaluation:**

1. All the students should obtain a certificate of internship from the workplace. This certificate shall mention the name of the candidate, the organizations name and duration of work. A letter describing the work of the candidate is desirable. The certificate shall be submitted to the department head.
2. The performance of a candidate shall be assessed for maximum of 100 marks.
3. The assessment methods shall be decided by the Universities based on the existing conventions.
4. The assessment method shall consist of an internship report submitted by the students based on the work experience and a viva-voce presentation.
5. **Viva-voce Presentation:** There shall be a viva-voce examination will be conducted for by the department where each student is expected to give a presentation and submit necessary documents.

F. **Marks allocation for Internship Work:**

Statement of Marks Secured		
Item	**Maximum Marks**	**Marks Obtained**
Candidate Attendance for teaching work		
Candidate Punctuality for teaching work		
Course Work Preparation/ Work Commitment		
Students Feedback/ Employer Feedback		
Behavioural Attitudes		

Overall Observation		
Total		
Total Marks Secured by student in Words:		

Viva-voce by Chairman and an Expert Drawn from Other University for 30 Marks			
Sl. No	Aspects	Maximum Marks	Marks Obtained
1	Presentation Skills		
2	Communication Skills		
3	Subject Knowledge		
	Total		

Note: Assessment needs to be done as per the regulate

Government of Karnataka

Curriculum Framework for Undergraduate Programme in Colleges and Universities of Karnataka State

5th and 6th Semester Model Syllabus

for

BA. and BSc. in

Economics

Submitted to
Vice Chairman
Karnataka State Higher Education Council
30, Pratima Kumar Block, Bengaluru City University Campus,
Bengaluru, Karnataka—560009

Model Curriculum

of

BA in

Economics

5th & 6th Semester

Karnataka State Higher Education Council

Karnataka State Higher Education Council

Note: If any Elective or Vocational course involves theory-cum-practical, then IA to Exam. Marks will be in the ratio of 50:50. The practical part is to be evaluated as part of IA. Semester end examination is only in theory component and questions from practical part, if any.

Note: If any Elective or Vocational course involves theory-cum-practical, then IA to Exam. Marks will be in the ratio of 50:50. The practical part is to be evaluated as part of IA. Semester end examination is only in theory component and questions from practical part, if any.

Pedagogy

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks :
Internal Test	50%
Assignment	20%
Presentation/Project	30%
Total	100
Formative Assessment as per University guidelines are compulsory	

Note: Strictly follow the Practicum

Pedagogy Evaluation process IA MARKS

FORMATIVE ASSESSMENT			
	CT	CT	Total
Assessment Occasion/type			
Internal Test	10	10	20
Assignment/ seminar	5	-	05
Quiz GD	5	-	05
Presentation/Project etc	-	10	10
Total	20	20	40
Semester End Exam Theory			60

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Public Economics			
Course Code:	ECO C9		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 hours
Formative Assessment Marks		40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

CO1. Understand introductory Public Finance concepts.

CO2. Study the causes of market failure and corrective actions.

CO3. Understand the impact, incidence and shifting of tax.

CO4. Study the Economic Effects of tax on production, distribution and other effects.

CO5. Enable the students to know the Principles and Effects of Public Expenditure.

CO6. Understand the Economic and functional classification of the budget, Balanced and Unbalanced budget.

CO7. Understand the Burden of Public debt and know the Classical, Ricardian views, Keynesian and post-Keynesian views.

CO8. To acquaint with the advantages and disadvantages of Deficit Financing.

MODULES	DESCRIPTION	60 Hours
Module I	**Introduction to Public Economics**	**15**
	Public Economics: Meaning, definitions, Scope and Significance, Public Finance and Private Finance: Meaning, and Distinction, Public good and private good: Meaning, Characteristics, and Distinction, Principle of Maximum Social Advantage, Market Failures: Meaning, causes-role of externalities, Market failure and role of government: Corrective actions.	
Practicum	Group Discussions on Public Finance and private finance, public good and private good Assignment on Market failure and government intervention	
Module II	**Public Revenue and Public Expenditure**	**13**
	Meaning and sources of revenue, Taxation –Canons of taxation, Characteristics of a sound tax system, Impact, Incidence– Division of Tax burden, Shifting of tax, Economic Effects of tax on production, distribution and other effects, Progressive and Regressive, Proportional Tax, Direct and Indirect Taxes –Merits and Demerits, Taxable Capacity: Meaning and determinants. Public Expenditure, Meaning, classification, principles, Types & Canons, Reasons for the growth of public expenditure, Wagner's	

	law of increasing state activities, Peacock-Wiseman hypotheses, Effects of public expenditure: Production, Distribution &Other effects	
Practicum	Mini-project study to ascertain the impact of GST on retailers-wholesalers in your vicinity A case study on the taxable capacity of the different sections of society in the vicinity Assignment on Effects of public expenditure: Production, Distribution & Other Effects	
Module III	**Public Debt**	**12**
	Public Debt: Meaning, Purpose, Types & Effects; Sources of Public Borrowing; Burden of Public Debt -Classical/ Ricardian views, Keynesian and post-Keynesian views; Intergenerational equity of public debt; Causes of the Rise in Public Debt; Methods of debt redemption, Debt management	
Practicum	Studying the burden of public debt through a project/ case study Assignment on Debt Management	
Module IV	**Public Budget, Fiscal Policy and Fiscal Deficit**	**15**
	Budget: Meaning, process & Types of budget, Economic and functional classification of the budget, Balanced and unbalanced budget, Types of Budget Deficits; Fiscal Policy Meaning objectives & Tools, Fiscal deficit: Meaning, Computation Deficit Financing- Meaning, Advantages and Disadvantages	
Practicum:	Calculation of various types of budget deficit using the budget data Group discussion on the advantages and disadvantages of deficit financing	

References	
1	Lekhi R.K., Joginder Singh (2018) Public Finance, Kalyani publication, New Delhi
2	Tyagi B.P. (2014) Public Finance published by Jaya Prakash Nath and CO, Meerut
3	Hindriks J. and G. Myles (2009), Intermediate Public Economics, MIT Press.
4	Bhatia H.L (2018): Public Finance. Vikas Publishing House
5	Musgrave, R.A. (1989), The Theory of Public Finance, McGraw Hill
6	Musgrave R.A. and P.B. Musgrave (1989), Public Finance in Theory and Practice, McGraw Hill.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Development Economics			
Course Code:	ECO C10		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the basic concepts and measurements of Development.
- CO2. Learn some classical and partial theories of Development economics and identify the difference.
- CO3. Identify the differences between Developed and Developing Countries.
- CO4. Analyse and tackle the Development issues effectively.

MODULES	DESCRIPTION	60 Hrs
Module 1	**Introduction to Economic Development**	14
	Concept - Definitions - Distinction between Economic Growth and Development - Indicators of Growth and Development, Measures of Economic Development: Gross National Product (GNP) - Physical Quality of Life Index (PQLI), Human Development Index (HDI), Happiness Index, Inequality and Poverty: Meaning, causes, indicators – Gini Coefficient Index, Human Poverty Index (HPI)	
Practicum:	Assignment on various indicators of growth and development Group discussions about the characteristic features of different countries and their development levels	
Module 2	**General Theories of Economic Growth and Development**	16
	Adam Smith's Theory, David Ricardo's Theory, T.R. Malthus' Theory, Karl Marx's Theory, Schumpeter's Theory and Rostow's Growth Theory – Harrod-Domar Model.	
Practicum:	Assignment on different theories and their relevance to developing Countries. Debate on present stage of India's growth and estimated stage it may reach by 2047	
Module 3	**Partial Theories of Economic Development**	16
	Lewis Labour Surplus Model - Rodan's Big Push Theory - Liebenstein's Critical Minimum Effort Approach – Balanced Vs. Unbalanced Growth, Factors in the Development Process: Capital Accumulation - Capital-Output Ratio - Technology and Economic Development.	

Practicum:	Group Discussion on Balanced and unbalanced growth strategies in Developed and developing countries Assignment on the Factors in the Development Process Capital Accumulation	
Module 4	**Sustainable Development**	14
	Inclusive Development - Millennium Development Goals - Sustainable Development Goals, Targets and Achievements with reference to India.	
Practicum	Seminar on MDGs and SDGs and the challenges	

References	
1	Higgins Benjamin & W.W. Norton Economic Development New York & Company, Inc.
2	Mishra S.K and Puri V.K, Economic Development and Planning, Himalaya Pub. House, Mumbai
3	Taneja M.L and Meier G. M, Economics of Development and Planning, S. Chand and Co, New Delhi
4	Thirlwall A.P, Growth and Development: With Special Reference to Developing Economies, Palgrave Macmillan, New York
5	Todaro, M.P & Orient Longman Economic Development in the Third World, United Kingdom
6	Sustainable Development Reports

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Economics of Human Resource Management			
Course Code:	ECO C11		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the meaning, nature, scope and value of the contemporary approach to human resource management with reference to Economics.
- CO2. To describe an organisation of a human resource management functionary in an establishment, and to identify attributes of a successful personnel manager.
- CO3. To impart knowledge and techniques in human resource planning, Job-Analysis, and Job-Design.
- CO4. To explain various methods of recruitment, selection, induction and placement.
- CO5. To develop the importance and methods adopted for training and development of employees in two days environment in the workplace.

MODULES	DESCRIPTION	60 Hours
Module I	**Introduction to Human Resource Management**	**15 hrs**
	Human Resource Management: Concept, Nature, scope, objectives, importance, functions of Human Resource Management with reference to Economics, Organization of personnel department, Qualities of Personnel Manager, role of Personnel Manager, Status of Personnel Manager, Characteristics of a Human Resource Manager, HRD – Responsibility of managers.	
Practicum	Group Discussions on Human Resource Management as a Profession. Assignment on Qualities of Personnel Manager.	
Module II	**Procurement of Human Resources**	**15 hrs**
	Human Resource Planning – Concept and objectives, importance, process, problems and guidelines; Job Design and Analysis: Concept, process, job description and job specification; Recruitment and Selection Meaning and process of recruitment, recruitment policy and organization, sources and techniques of recruitment, meaning and process of selection.	
Practicum	Assignment on recruitment and selection Group discussion on Techniques of Recruitment	
Module III	**Training and Job Evaluation**	**15 hrs**

	Training: Concept, objectives, importance, identifying training needs. Designing training programmes, methods of training, evaluating training effectiveness, retraining Concept, process and objectives of job evaluation, advantages and limitations, essentials of successful job evaluation, methods of job evaluation. Wage and Salary Administration. Objectives and principles, essentials of sound wage structure, factors affecting wages, methods of wage payment, and wage policy in India, executive compensation.	
Practicum	Project on training and job evaluation	
Module IV	**Performance Appraisal**	**15 hrs**
	Performance appraisal: Concept, objectives, uses, process, problems, essentials, methods and techniques, appraisal interview. Transfers, promotions and separations: Purpose of job changes, concept and objectives of transfers. Types of transfer, transfer policy, concept and basis of promotion, promotion policy, demotion, types of separations.	
Practicum	Seminar on transfers and promotions Group discussion on Performance appraisal	

References	
1	Koontz, Weirich & Aryasri, (2004) **Principles of Management**, Tata McGraw-Hill, New Delhi.
2	Tripathi & Reddy, (2008) **Principles of Management**, Tata McGraw-Hill, New Delhi, Laurie
3	Meenakshi Gupta, (2009) **Principles of Management**, PHI Learning, New Delhi.
4	Gupta (2016), **Human resource Management**, S Chand Publisher, New Delhi
5	Aswathappa K. (2020) **Human resource Management**, Tata Mc Graw Hill Publishing Co. Ltd.
6	Prasad L. M. (2017) **Organisational Behaviour**, S. Chand Publishers, New Delhi.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fifth Semester
Course Title	Indian Banking and Finance		
Course Code	ECO C12	No. of Credits	4
Contact hours	60 Hours	Duration of SEA Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the structure of Indian banking and the role of banks in monetary policy
- CO2. Analyze the functioning of banks and different types of accounts and other services offered by banks.
- CO3. Evaluate recent developments in the Indian banking sector, including digital banking, payment banks, and non-performing assets.
- CO4. Describe the overview of the Indian financial system, including financial markets, financial instruments, and financial regulation.
- CO5. Analyze the challenges faced by Indian banks and the implications of banking reforms for the Indian economy.
- CO6. Develop critical thinking and analytical skills in evaluating various financial products and services banks and capital markets offer.

MODULES	DESCRIPTION	60 Hours
Module I	**Introduction to banking: India**	**15**
	Indian Banks: Evolution, structure, functions, types and features- Public sector, private sector, foreign, Cooperative, RRB, Small finance banks, payment banks; Role and importance of banks in the Indian economy; Credit creation and financial intermediation; Central Bank and banking regulation; Regulatory and supervisory powers; Monetary policy and banking channel of credit control; Policy rates and banking, repo, reverse repo, MCLR, Bank rate, CRR, SLR, MSF, Issues in banking sector; NPA crisis; impact of global events on Indian banks	
Practicum	Compare and contrast the different types of banks, highlighting their strengths and weaknesses- Presentation Conduct a class discussion and compare and contrast the different scenarios on various loans, highlighting the risks involved and the measures taken by banks to manage these risks.	
Module II	**Banking services**	**15**

	Banking services: Bank deposits: Types and features of bank accounts: account opening and importance of KYC, Bank loans: types, features, documents required, eligibility, interest rates, maturity, loan default and consequences; Other services: Locker facility, payment and remittance services and channels; currency exchange, debit cards, credit cards, pre-paid cards; ATMs; internet and mobile banking; Modern banking products: Insurance on deposits and loans, Investment services in capital market-stocks, bonds and mutual funds; advisory services; retirement products.	
Practicum	Group discussion on bank accounts and loan products and making recommendation to different classes. Comparison of banking services by visiting bank branches.	
Module III	**Modern Banking**	**15**
	Modern banking facilities: Digital banking, Digital Wallets, Digital account opening, Biometrics, contact less payment system, instant payments, personal finance management tools; Use of artificial intelligence and machine learning in banks; Cyber security in banking, Credit scoring; Direct lending; Corporate banking, Investment Banking	
Practicum	Survey bank customers to understand their usage and satisfaction levels with digital banking services. Analyse the adoption rates of digital banking services across different age groups and demographic segments.	
Module IV	**Financial Market**	**15**
	Introduction to Indian financial markets, Equity markets and stock exchanges; Debt markets and bond markets; Currency markets and forex trading; Commodity markets and trading; Derivatives markets, Mutual funds; Insurance products Investing in capital market products- access, channels, risk in capital market investments, Role of SEBI, Fintech and innovation in capital markets.	
Practicum	Debate: Investing in capital market products. Assignment on Indian financial markets.	

References	
1	Khan, M. Y. (2019). Indian Financial System (11th ed.). McGraw Hill Education (India) Private Limited.
2	RBI (2022) report on the trend and Progress of Banking in India
3	Pathak, B. V. (2018). Indian financial system. Pearson Education.
4	Principles and Practices of Banking (2023), Indian Institute of Banking & Finance (IIBF), MacMillan.
5	Shekhar, K. C. & Shekhar, L. (2015). Banking Theory and Practice, 21st Edition
6	Taxmann's Digital Banking, Indian Institute of Banking & Finance (IIBF), Bharat Law House
7	Reserve Bank of India. (2017). Basic Financial Literacy Guide.

	https://www.rbi.org.in/Scripts/BS_FaqGuidelines.aspx
8	Securities and Exchange Board of India. (2021). Handbook of Statistics on Indian Securities Market. https://www.sebi.gov.in/reports-and-statistics/publications/dec-2021/handbook-of-statistics-2021_66158.html
9	Financial Education Handbook (2021) National Centre for Financial Education (NCFE) https://www.ncfe.org.in/resources/downloads
10	Investor Education material by National Stock Exchange (https://www.nseindia.com/invest/how-to-invest-in-capital-market)

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Economics of GST			
Course Code	ECO E1A		No. of Credits	3
Contact hours	45 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the indirect tax structure in India and challenges
- CO2. Develop an informed view on the rationale of choosing Goods and Services Tax.
- CO3. Understand the GST laws, tax slabs, GST council and the framework of implementation
- CO4. Demonstrate ability to explain time of supply, place of supply and value of supply
- CO5. Analyze the concept of input tax credit and valuation of supply with examples
- CO6. Explain the GST registration process and GST filing procedure

MODULES	DESCRIPTION	45 Hours
Module I	**Indirect Taxes and GST**	**15**
	Indirect taxation before GST- Introduction to Indirect Taxes: Meaning and Features, Types of Indirect Taxes in India: Excise Duty, VAT, Service Tax, etc., VAT types and methods, Drawbacks of the existing Indirect Tax System; Introduction to Goods and Services Tax, Rationale and Key Features for GST, Experience from uniform tax structure in other countries, Advantages and disadvantages of GST framework	
Practicum:	Discussions on the limitation of tax structure before introduction of GST. Assignments on GST tax collection since introduction at state-level. Explain the differences between the old tax system and GST, and how the GST system has impacted the economy of India.	
Module II	**Fundamentals of GST**	**15**
	Structure of GST in India- Central GST, State GST, UT GST, Integrated GST, Subsuming of Taxes, GST Rate Structure in India, Levy and Collection of GST, Discussion on definition of goods, service, supply: Supply under GST and types of supply: taxable, exempt, zero-rated, and non-taxable, Time of supply, place of supply and valuation of supply: transaction value, open market value, and other methods, Input tax credit with illustration.	
Practicum:	Identify the different types of supply and the valuation methods used under GST for a specific product. Assignment on computing the value of supply or input tax credit for a given scenario and explain how the time and place of supply affect the tax liabilities under GST.	

Module III	**GST Compliance**	**15**
	GST framework- GST Registration: eligibility, procedure, and threshold limits, exemptions, GST Returns: types, due dates, and penalties, GST Payment, GST Audit, GST Refund: eligibility, procedure, and time limits, GST Council- Structure, objectives, functions, decisions, GST Network, GST & Indian Economy- Compensation to states- Trends of GST collection in India- national level and state level- Challenges and compliance, impact of GST on Economic growth.	
Practicum	Demonstrate GST registration process for different types of business or GST returns filing procedure. Assignment of trends and progress in GST collection in India	

References	
1	Mehrotra, H.C. & Agarwal V. P. (2022). Goods and Services Tax, Sahitya Bhawan Publications
2	Balachandran, V. (2023). Textbook of GST & Customs Law, Sultan Chand & Sons
3	Datey V. (2023). Taxmann's GST Ready Reckoner (2023), Taxmann Publications Pvt. Ltd.
4	Singhania, V.K. Student's Guide to GST & Customs Law, Taxmann Publication (P) Ltd.
5	Agrawal, R. K. (2023). Bharat's Handbook on G.S.T. (Goods & Service Tax) for May 2023 Exam. Mumbai, India: Bharati Law House.
6	Ahuja, G., & Gupta, R. (2019). Systematic Approach to Income Tax. New Delhi, India: Wolters Kluwer India Pvt Ltd.
7	Central GST Act (2017), Central Board of indirect Taxes and Customs
8	Integrated GST Act (2017), Central Board of indirect taxes and Customs
9	Union Territory GST Act (2017), Central Board of indirect taxes and Customs
10	GST (Compensation to States Act), 2017

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fifth Semester
Course Title	Economics of Insurance		
Course Code	ECO E1B	No. of Credits	3
Contact hours	45 Hours	Duration of SEA Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Gain knowledge on economics of insurance
- CO2 Understand the Insurance Planning
- CO3 Understand the essential and fundamentals of Life and Health Insurance

MODULES	DESCRIPTION	45 Hrs
Module I	Introduction to Economics of Insurance	15
	Definition of insurance, Scope of economic of insurance, Importance of insurance, Brief history of insurance, Perils and risks in insurance, Classification of risks, hazards: How insurance works, Classes of insurance and assumptions, Risk pooling and risk transfer in insurance, Social vs. private insurance, Life vs. non-life insurance	
Practicum:	Identify how insurance works and analyse risk pooling and risk transfer in insurance Assignment on importance of insurance and risks in insurance	
Module II	Insurance Planning	15
	Types of Insurance Planning- Wealth accumulation plan, lifecycle planning, Planning for wealth accumulation, Tax advantage and tax non-advantage Retirement Planning - Essential of individual retirement planning, Investing pension plan, basic principles of pension plans, Pension plans in India. General Insurance Structure - General Insurance, concept of General Insurance, Types of General Insurance, Marine Insurance, Motors Insurance, Agricultural Insurance, Fire Insurance, Personal Accident Insurance	
Practicum:	Compare and contrast the different types of Insurance Planning, highlighting their strengths and weaknesses. Assignment on types of general Insurance	
Module III	Personal insurance / Health Insurance	15
	Essential of Life and Health Insurance- Fundamentals of Life and Health Insurance, functions of Life and Health Insurance, Health Insurance and Economic Development, Insurance and Farmer Security, Insurance Documentation - Health Insurance products, Health Insurance underwriting, Health Insurance claims , Insurance Legislation - The insurance act, 1938- Registration- Accounts and	

	Returns, Investments, Limitation on expense of Management, Regulation of Insurance, Insurance regulation in India, role and need of regulation, history of insurance regulation in India, Insurance Reforms Development Authority (IRDA), performance of IRDA, Indian Insurance in global platform, future potential in Indian Insurance Business.	
Practicum:	Conduct a survey to know the knowledge about life and health insurance in the neighborhood. Assignment on performance of IRDA.	

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2	Dandekar, V.M. and N. Rath (1971): Poverty in India, GIPE, Pune.
3	Dantwala, M. L. (1973): Poverty in India: Then and Now, 1870-1970, Macmillan, Bombay.
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5	Jain, Gopal Lal (1997): Rural Development, Mangal Deep Publications, Jaipur.
6	Singh, Katar (1986): Rural Development: Principles, Policies and Management, Sage Publications, New Delhi. (Second Edition).
7	Karaley, G. N. (2005): Integrated Approach to Rural Development: Policies, Programmes and Strategies, Concept Publishing Company, New Delhi.
8	Maheshwari, S. R. (1985): Rural Development in India, Sage, Publications, New Delhi.
9	Satya Sundaram, I. (1997): Rural Development, Himalaya Publishing House, Delhi.
10	Mehta, Shiv R. (1984): Rural Development Policies and Programmes, Sage Publications, New Delhi.
11	Tyagi, B. P. (1998): Agricultural Economics and Rural Development, Jai Prakash Nath and Co, Meerut.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Rural Economics			
Course Code	ECO EIC		No. of Credits	3
Contact hours	45 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the meaning, concepts, objectives, nature, feature and scope of Rural Economics
- CO2.Know the various indicators and their Measurement of Rural development.
- CO3. Understand the policies and strategies of rural development.
- CO4. Understand the rural Natural Resources, Rural income and Rural poverty and indebtedness

Modules	DESCRIPTION	45 Hours
Module I	**Introduction to Rural Economy**	**15**
	Rural Economics- Definition, Meaning, Objectives, Nature and Scope. Need, Causes and consequences of the Rural Economy. Pattern, Characteristics and Importance of Rural Economy	
Practicum	Assignment on Characteristics and importance of Rural Economy Survey to know the characteristics of rural economy in the neighborhood	
Module II	**Measurement, Policies and Strategies of Rural Development**	**15**
	Introduction to measurement of Rural Development – Objectives of measurement of rural development Indicators of Measurement of Rural development: Poverty, GNP per capita, distribution of Income, Per capita rural expenditure, PQLI, Income inequality, Importance and Need for Rural Development Policies - Freedom, Control and Public Policy - Goals of Rural Development Policy - Hierarchy of Policy Goals - Rural Development Policies. Strategies of Rural Development: Growth Welfare, Responsive Oriented and Integrated or Holistic Strategy – Liberalization and Rural Development.	
Practicum	Undertake evaluation study on rural development programmes and prepare an assignment. Field visit to nearby village and study the employment opportunities and present situation.	
Module III	**Rural Resources Rural Income, Poverty and Indebtedness**	**15**
	Natural Resources: Land, Water, Mineral and Forest Resources. Utilization and Potential. Capital and Human Resources - Levels of Technology. Rural Income. Sources of Household Income - Contribution of Agriculture and Allied Activities to National Income - Animal Husbandry - Income Differences between Rural and Urban Sectors - Problems of Rising Rural Incomes. Rural Poverty: Causes and Consequences - Rural Credit:	

	Magnitude of Rural Credit - Multi-Agency Approach to Rural Credit. Rural Indebtedness: Extent of Rural Indebtedness - Nature of Indebtedness - Causes of Rural Indebtedness - Effects of Indebtedness – Government Measures	
Practicum	Debate on Problems of Rising Rural Income Assignment on Causes and consequences of Rural Poverty	

References	
1	Agarwal A N and Singh S P, The Economics of Under Development, OUP, New Delhi.
2	Dalip S Thakur, Poverty, Inequality and Unemployment in Rural India, S R Pub., Corporation, New Delhi.
3	Ekans Richard S and K S Parikh, Planning and Growth: Multi-sectoral, Inter-temporal Models Applied to India, The MIT Press, Massachusetts.
4	Higgins Benjamin, Economic Development: Principles, Problems and Policies, Central Book Depot, Allahabad.
5	Jain Gopal Lal, Rural Development, Mangal Deep Publications, Jaipur
6	Katar Singh, Rural Development: Principles, Policies and Management, Sage Publications, New Delhi
7	Parthasarathy G – Economic Reforms and Rural Development
8	Satya Sundaram I, Rural Development, Himalaya Publishing House, New Delhi.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fifth Semester
Course Title	Economics of Marketing		
Course Code	ECO EID	No. of Credits	3
Contact hours	45 Hours	Duration of SEA Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. To understand the basics concepts of marketing and asses the marketing environment
- CO2. Analyze the issues in rural markets.
- CO3. To study rural consumers behaviors.
- CO4. Outline the recent development in the field of marketing.

Modules	DESCRIPTION	45 Hours
Module I	**Introduction of Marketing**	**15**
	Marketing: Definition, Meaning, Nature & Scope, Objectives, Importance, Marketing & Selling, Concept and Importance of Market Segmentation, Role of Marketing in Economic Development, Modern Marketing.	
Practicum	Seminar on the Role of Marketing in Economic Development Assignment on Modern Marketing	
Module II	**Consumer Behavior and Rural Marketing**	**15**
	Consumer Behavior: Nature, Importance, buying Decision, Factors influencing consumer buying behaviour. Rural Consumers Behavior: Nature, importance, Characteristics, Influencing Factors. Rural Marketing: Meaning, Definition, Nature & Scope, Features, Importance, Types, Problems and Remedies of Rural Market. Co-Operative Marketing Societies, Importance of Regulated Market	
Practicum	Survey consumers to Know the factors influencing their buying Behavior. Debate on best remedies to solve the problem of rural market.	
Module III	**E-Marketing and Service Marketing**	**15**
	E-Marketing: Meaning, Concept, Advantages & Disadvantages, Challenges. Types – Digital, Mobile Marketing, Online, social media – Meaning, Concept, Benefits, Importance, Challenges, Advantages & Disadvantages. Service Marketing: Meaning, Concept, and Difference between the marketing of goods Vs Service Marketing, Importance, Problems.	
Practicum	Analyse the adoption of E-Marketing across different types of demographic segments. Debate on Advantages & Disadvantages of e-marketing	

References:	
1	Philip Kotler (2015), Principles of Marketing, 15th edition, Pearson Education.
2	Saxena Rajan, (2017) Marketing Management, Tata McGraw-Hill Publishing Company Ltd., New Delhi, Fifth Edition.
3	Kumar Arun & Meenakshi N (2016), Marketing Management, Vikas Publishing House Pvt. Ltd., New Delhi, Third Edition.
4	Panda Tapan (2008), Marketing Management, Excel Books, New Delhi, Second Edition.
5	Gibabra, T.N., and S. K. Grover, Marketing Management, Fourth Edition.
6	Marketing Management- A South Asian Perspective-15e – Pearson, Philip Kotler, Keven Keller.
7	Abraham Koshy, Mithileshwar Jha 7 Principles of Marketing-15e Pearson, Philip Kotler, Gary Armstrong, Prafulla Agnihotri, Ehtasamul
8	Haque Marketing Management- Indian Context-Global Perspective, Ramaswamy and Namakumari, sixth edition, SAGE Publication.
9	Valarie A Zeithmal & Mary Jo Bitner, Dwayne D. Gremler and Ajay Pandit, 7/e, McGH, (2018) Service Marketing, Integrating Customer Focus Across the Firm.
10	Valarie A Zeithmal & Mary Jo Bitner, 5/e, (2011) e-Marketing-TMH.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fifth Semester
Course Title	Entrepreneurial Economics		
Course Code	ECO V1A	No. of Credits	2+1
Contact hours	30+30 Hours	Duration of SEA Exam	2 Hours
Formative Assessment Marks	50	Summative Assessment Marks	50

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1: Acquire the operational procedures knowledge of entrepreneurship
- CO2: To know how to Start your own business as a young Entrepreneur
- CO3: Enabling the students to find various procedures of operations of the business

MODULES	DESCRIPTION	60 Hrs
Module I	**Entrepreneurship and Launching Business**	**15**
	Entrepreneur and Entrepreneurship – Issues of considering for Entrepreneurship, identifying business opportunity and choosing right business, Plan a new entrepreneurship- create a business plan- contents of Business plan- marketing plan-operational plan- financial plan-risk analysis and risk management plan. Choose a business structure, Setting Business Entity & incorporation of the company, Formulation of Memorandum of Association (MOA), Formulate Article of Association (AOA), approving stamp and sign of Business Entity, Registering for e-filing, Applying for Director Identification Number (DIN), Digital Signature Certificate (DSC), and Permanent Account Number (PAN).	
Practicum	Identify career opportunities in business and create a Business Plan Demonstration on Registering for e-filing Assignment on Formulation of Memorandum of Association (MOA)	
Module II	**Procedure for Start-up Business**	**15**
	Operational Procedures- Get Government of India, State Government (Karnataka) and Local Government tax IDs, -Apply for all concerned licenses and permits, - Open a business bank current account, - Apply for Business Insurance, – Appraisal of Technical Feasibilities, Economic and Financial viability - Bottom line	
Practicum	Identify the and write a small report on procedure to open a business bank current account and applying for business Insurance	

Experiential Learning Practicum	Visit a Startup/MSME and write a report of 15-20 pages about consisting of the following:	30
Format of the Report	1. Name and Address of the Startup/Micro Enterprise Visited 2. Certificate from the MSME/Startup Stating the students visit and learning about the entrepreneurship and enterprise 3. Certificate from the concerned HOD & Concerned teacher 4. Brief Profile of the MSME Startup 5. Lessons Learnt about Launching a Business, Product Marketing, Sources of finances, Challenges faced, Strategies to Overcome it, etc.	

References:	
1	Donald F Kuratko (2014), "Entrepreneurship – Theory, Process and Practice", 9th Edition, Cengage Learning.
2	Khanka. S.S (2013) "Entrepreneurial Development" S.Chand & Co. Ltd., RamNagar, New Delhi.
3	Kuratko and Rao, Entrepreneurship: A South Asian Perspective, Ferrell,Fraedrich, Ferrell, Business Ethics, Cengage Learning
4	Singh, Nagendra P. Emerging Trends in Entrepreneurship Development. NewDelhi: ASEED
5	Marc J Dollinger, Entrepreneurship – Strategies and Resources, PearsonEducation
6	Venkateshwara Rao and Udai Pareek, (Eds)Developing Entrepreneurship-A Handbook
7	Donald F Kuratko (2014), "Entrepreneurship – Theory, Process and Practice", 9th Edition, Cengage Learning.
9	https://www.sba.gov/business-guide/launch-your-business/open-business-bank-account
10	https://www.businessnewsdaily.com/4686-how-to-start-a-business.html
11	https://www.forbes.com/advisor/in/business/how-to-start-a-business
12	https://services.gst.gov.in/services
13	https://www.jotform.com/pdf-templates/proposal
14	https://www.visme.co/templates/proposals/

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Digital Economics			
Course Code	ECO V1B		No. of Credits	2+1
Contact hours	30+30 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	50		Summative Assessment Marks	50

Course Objectives: After the completion of the course, the students will be able to understand the structures of the digital economy, how the community and firms interact in digital markets and how digital markets should be designed and regulated.

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. To be able to apply the concepts of business models to digital economy and understand distinguishing features of the digital economy
- CO2. To link the specific distinguishing characteristics of digital economy to market structures and market outcomes.
- CO3. To understand implications of business models and behaviors in the digital economy
- CO4. To analyze the structural incentives of digital economy.

MODULES	DESCRIPTION	60 Hrs
Module I	**Features of the Digital Economy**	**15**
	Introduction to the Digital Economy – Digitization of the Economy, The Digital Economy Ecosystem, Multi-sided Platforms, Two-sided Markets, Network Effects and Positive Feedbacks, Lock-in and Switching Costs, Formation of Monopolies in Digital Economy, The "Long Tail", Importance of Data – Prediction Vs. Causality, Privacy, Search and Matching – Low Search Costs and Prices, Search Engines, Recommendations and Matching, Ethical Challenges in the digital economy – Challenges for Society, Challenges for ethics, Recent Legal Developments towards digital economy.	
Practicum	Group Discussion on the Digital Economy Ecosystem Assignment on Importance of Data – Prediction Vs. Causality.	
Module II	**Digital Markets**	**15**

	Main Types of Digital Economy Market Players – Specific Features, Behaviour, Goals Stakeholders and relationships in digital markets, Competition, Cooperation and Coopetition, Digital Innovations, Main types of Digital Economy Business Models, The layered internet model, Strategic Positioning – Business Strategies of Different types of Digital Economy Market Players, Digital Economy and Traditional Companies – Digital Technologies as a risk factor for traditional Companies, Business Models of Traditional Companies in Digital Economy, Coexistence Models of Digital and Traditional Companies, Individual Markets: Media – Copyrights and Streaming, News and Social Media, Advertising, E-commerce – Customization, Auctions, Payment Systems, The sharing gig economy – Ride-hailing, Labour Markets, Lodging	
Practicum	Seminar on e-commerce sites Debate on the sharing gig economy	
Experiential Learning/ Practicum	**Conduct a Survey using Interview Schedule on Perception of the consumers who are using digital payments**	**30**
Format of the Report	1. Brief Profile on Digital Payments 2. Different Modes of Digital Payments 3. Collecting the data from the 30 respondents who use Digital Payments, Using the pre designed interview schedule 4. Analysis of the data using simple statistical tools 5. Interview Schedule must consist of the following i. Name, Occupation, income and Expenditure ii. Socio-Economic Background of the Consumers iii. From when they are using Digital Payments iv. Products/ Services for which they are using Digital Payments v. Benefits of Digital Payments vi. Difficulties faced by Digital Payments vii. Suggestions to improve.	

References	
1	Overby Harald, Jan. A. Audestad (2013), *Digital Economics: How Information and Communication Technologies is Shaping Markets, Businesses and Innovation*, Create Space Independent, Scotts Valley, CA USA.
2	Overby Harald, Jan. A. Audestad (2021), *Introduction to Digital Economics – Foundations, Business Models and Case Studies*, Springer Nature, Switzerland.
3	Peitz M & Waldfogel J. (2012), *The Oxford Handbook of the Digital Economy*, Oxford University Press
4	Kahin, B & Brynjolfsson, E (2000), Understanding the Digital Economy: Data, Tools and Research, Cambridge, Mass: The MIT Press

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Economics of Dairy Farming			
Course Code:	ECO VIC		No. of Credits	2+1
Contact hours	30+30 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	50		Summative Assessment Marks	50

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Know the animal husbandry and significance, employment opportunities in dairy farming
- CO2. Acquire the knowledge about dairy farm management
- CO 3. Understand the facilities of dairy farming
- CO4. Start the self-dairy farm business.

MODULES	DESCRIPTION	60 Hrs
Module I	**Introduction**	15
	Animal husbandry, livestock in India, scope and prosperity, dairy development in India, Dairy facilities-selection of site, housing system, classification of dairy plants, layouts and design equipment and utilization, cost aspects of dairy farming, records to be maintained in a dairy farm, finance to Dairy farming	
Practicum:	Visit dairy farm- Survey on Dairy facilities Survey on cost and revenue aspect of dairy farming	
Module II	**Management of a Dairy Farm**	15
	Operation flood in India- Definition of Milk and Nutritive value of milk, Classification of dairy animals-breeds and control, breeding management, Pest, disease and control, care of new born calf, major responsibilities of a dairy farmer, cooling, cleaning and sanitization of dairy farm, basic principles of feed, importance of Feed ingredients, feed formulation and feed mixing Milk product and bio-products, procurement of marketing of milk, clean milk production and handling-processing and testing quality Control of milk, storage and distribution of processed milk. Government policies, schems for dairy business	
Practicum:	Understand the animal breeds and management, diseases and its control, cleaning and sanitization Basic principles of feed and marketing	

Experiential Learning Practicum	Visit a milk federation dairy co-operative society/ Milk Union	30
Format of the Report	1. Name and Address of the milk federation dairy co-operative society/ Milk Union Visited 2. Certificate from the milk federation dairy co-operative society/ Milk Union Stating the students visit and learning about the Dairy Management 3. Certificate from the concerned HOD & Concerned teacher 4. Brief Profile of the milk federation/dairy co-operative society/ Milk Union Visited 5. Lessons Learnt about Managerial Functions, Operational Functions –Reception of the milk, Milk Testing, Testing of milk, dispatch of milk, Payments, Accounting, Cleanliness, Standardization of milk and other functions, dairy Product Marketing, Sources of finances, Challenges faced, Strategies to Overcome it, etc.....	

References	
1	Banerjee G. C (2010) -Textbook of Animal Husbandry, Oxford Publication,IBH Publishing Co. Pvt Ltd. New Delhi
2	Mullat C/C, The Dairy Farming Handbook, Directorate Animal Science Researchand Technology Development Services.
3	Dairy India 2007, 6th Edition
4	Principles and Practices of Dairy Farm – Jagadish Prasad.
5	Economics of Milk Production – Bharati Pratima Acharya Publishers.
6	Saras Applied Zoology- Fifth Edition 2011, Saras Publication, Tamilnadu.
7	Dilip Dutt, Chairman, National Dairy Development Board- Good Dairy HusbandryPractices.
8	Fao Animal Production And Health- Guide To Good Dairy Farming Practice, Publishedby food and agriculture organization of the united nations and international dairy federation, Rome, 2011.
9	Dairying- 2019, www.cstaricalcutta.gov.in

6th Semester

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	International Economics			
Course Code	ECO C13		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the international trade theories and their application in international trade
- CO2. Explain the concept of terms of trade and demonstrate the effect of trade barriers; and display the ability to analyse the stages of economic integration
- CO3. Understand the concept of BoP and assess the BoP position and examine the changes in forex rate.
- CO4. Analyse the role of International trade and financial institutions
- CO5. Demonstrate good inter-personal and communication skills through class participation and contributing to critical discussion on trade issues

MODULES	DESCRIPTION	60 Hours
Module I	**International Trade Theories**	**15**
	Meaning and Importance of International trade. Differences between Internal and International Trade. Trade Theories: Mercantilist view; Absolute cost and comparative cost advantage theories, Haberler's Opportunity cost theory, Hecksher-Ohlin theory, Leontief's paradox.	
Practicum	Assignment on Ricardo's Comparative cost advantage and Leontief's paradox.	
Module II	**Terms of Trade and Commercial Policy**	**17**
	Terms of trade- Concept and Types, Factors determining Terms of Trade; Commercial Policy: Free trade v/s Protection; Tariffs: Types and effects; Quotas; Anti-dumping; Economic Integration: Meaning and stages.	
Practicum	Debate: Free trade v/s Protection. Mini project: Trace the evolution of India towards Economic Integration.	
Module III	**Balance of Payment and Capital Flow**	**13**
	Balance of Payment: Concept, Components; Disequilibrium in Balance of Payment: Causes and Measures to correct disequilibrium. Foreign Exchange rate: Meaning and types; determination of Foreign exchange rate: Demand for and Supply of Forex, Purchasing Power Parity (PPP) theory. Capital Flow: Meaning and concept of Foreign Investment: Forms of FDI; Advantages and disadvantages of FDI.	
Practicum	Prepare India's Balance of Payment statement using recent Economic Survey. Assignment on Forms of FDI	

Module IV	International Finance and Trade Institutions	15
	Bretton Woods Institutions: IMF and IBRD -IDA and IFC Organization, Objectives, Functions and their role in developing countries. Evolution of WTO: GATT –principles and objectives, WTO Organization, Objectives, Functions, Agreements and current issues. WTO and developing countries.	
Practicum:	Group Discussion: Effectiveness of IMF and IBRD in developing countries. Seminar: Agreements of WTO or current issues of WTO	

References

1	Sodersten, B. (1993): International Economics, MacMillan, 3 Edition, London.
2	Salvatore, D. (2016): International Economics, 12 Edition, Wiley Publication
3	Vaish, M. C. and Sudama Singh (1980): International Economics, 3 Edition, Oxford and IBH Publication, New Delhi.
4	Gerbaugh, R. J. (1999): International Economics, International Thompson Publishing, New York.
5	Dana, M. S. (2000): International Economics: Study Guide and work Book, 5 Edition, Routledge Publishers, London.
6	Kenen, P. B. (1994): The International Economy, Cambridge University Press, London.
7	Krugman, P.R. and M. Obstfeld (1994): International Economics: Theory and Policy, Addison-Wesley Publications.
8	Jackson, JD. (1998) The World Trading System, Cambridge University Press, Mass. Chennilam, International Economics, TMH, New Delhi.
9	D M Mithani, International Economics, Himalaya, Mumbai.
10	Jhingan M.L. (2016): International Economics, Vrinda Publications Pvt Ltd-Delhi
11	Dwivedi D.N. (2013): International Economics Theory & Policy, Vikas Publishing House Pvt Ltd.
12	K.C. Rana & K.N. Verma (2017): International Economics, Vishal Publishing Co.
13	Krishnamurthy H.S. (2019) : Antarrashtreeya Arthashastra ; (Kannada version), Sapna, Bengaluru.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Fifth Semester
Course Title	Indian Public Finance			
Course Code	ECO C14		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand the structure of Indian Public Finance
- CO2. Enable the students to know the Source and nature of public revenue and expenditure
- CO3. Understand the Budget and different concept of deficits
- CO4. Know the Public debt and its management
- CO5. Understand the fiscal and monetary policy and their tools and importance
- CO7. To enable the students to know the Indian federal financing system and Financial Commissions

MODULES	DESCRIPTION	60 Hours
Module I	**Public Revenue**	**15**
	Direct Tax Revenue – Sources of Revenue-Tax and Non-Tax Revenue; Trends and Patterns of Tax Revenue in India; Direct and Indirect Taxes in India; Personal Income Tax Rates and Slabs; Corporate Tax- Tax Rate and Slabs; **Indirect Tax Revenue** - Indirect Taxes – Earlier Taxes-VAT and MODVAT; Goods and Services Tax (GST)- Objectives and Classification of GST; Tax Rates of GST; Trends and Patterns of GST; Impact of GST on Indian Economy; Tax Reform Commissions	
Practicum	Collection and analysis of data on Direct tax. Collection and analysis of GST from businesses	
Module II	**Public Expenditure**	**15**
	Revenue Expenditure - Classification of Public Expenditure in India; Revenue Account Expenditure- Trends and Patterns; Capital Account Expenditure-Trends and Patterns; Fiscal Responsibility and Budget Management (FRBM) Act; Impact of Public Expenditure on Indian Economy; Expenditure Reforms Commission (ERC) in India. **Union Budget and Its Analysis** - Meaning and Classification of Budgets, Zero-Based Budget, Composition of Union Budget, Union Budget Analysis (current one); Different Concept of Deficits– Revenue, Fiscal, Primary Deficits	
Practicum	Analysis of Union Budget (Current one) Group Discussion on Budget Deficits	

Module III	**Public Debt and Its Management**	14
	Public Borrowings and Debt - Meaning and Nature of Public Debt; Sources of Public Borrowings; Classification of Public Debt; Trends and Patterns of Central Government Debt; Main Characteristics of Indian Public Debt; Crowding out of Private Investment; Causes of Public Debt in India; **Burden of Public Debt and Management in India** - Meaning of Burden of Public Debt; Importance of Public Management; Principles of Public Debt Management; Repayment of Public Debt in India; Impact of Public Debt on Indian Economy; Finance Commissions in India	
Practicum	Assignment to write on Indian Public Dept and sources of repayment Group Discussion on Burden of Public Debt	
Module IV	**Fiscal and Monetary Policies and Federal Finance in India**	13
	Fiscal and Monetary Policy India - Meaning and Objectives of Fiscal Policy; Importance of Fiscal Policy; Tools of Fiscal Policy; Meaning and Objectives of Monetary Policy; Importance of Monetary Policy; Tools of Monetary Policy; **Indian Federal Finance** - Meaning and Importance; Stages of Growth; Allocation of Resources- Division of Functions and Resources; Principles of Federal Finance; Shortcomings of Federal Financing; Finance Commission and Their Recommendations.	
Practicum	Group Discussion about the Role of Fiscal and Monetary Policies in controlling inflation Assignment to write the State List, Union List and Concurrent list	

References	
1	Bhatia H.L (2021): Public Finance, S. Chand and Co., New Delhi
2	Lekhi R.K (2020): *Public Finance*, Kalyani Publishers, New Delhi.
3	Musgrave R.A and Musgrave P.A (2017): *Public Finance in Theory and Practice*, Mcgraw-Hill Kogakusha, Tokyo.
4	Om Prakash (2021): *Public Economics: Theory a practice*, Vishal Publishing Co. Ludhiana
5	S.K. Singh (2019): *Public Economics: Theory and Practice* S. Chand and Co., New Delhi
6	Tyagi B.P (2018): *Public Finance*, Jai Prakash Nath and Company, Meerut, India

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	Economic Thoughts of Dr.B.R Ambedkar			
Course Code	ECO C15		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. derive inspiration from the life and works of B.R.Ambedkar
- CO2. Appreciate the socio-economic scenario during Ambedkar' period and compare it with present day
- CO3. Comprehend the contributions of Ambedkar on various economic aspects
- CO4. Assess the economic views of Ambedkar in the light of present-day socio-economic problems
- CO5. develop the traits of critical thinking and critiquing

MODULES	DESCRIPTION	60 Hours
Module 1	**Ambedkar's views on Economy, Society and Equity**	**15 Hrs**
	Socio- Economic-Political Context of India during Ambedkar's period; Brief outline of Ambedkar's life and career; Ambedkar's views on: a) economy and society; b) role of state c) Socialism and State Socialism; d) Women Empowerment , e) Objectives of economy: growth & equity; Socio-economic inequality: Economics of Caste, discrimination and deprivation, reforms suggested there in by Dr Ambedkar. Constitutional Provisions, Hindu code Bill	
Practicum	Assignment: Socio-economic inequality and status of affirmative actions in India	
Module 2	**Thoughts of Ambedkar on Agriculture**	**15Hrs**
	Ambedkar's views on: Agrarian Economy; Consolidation of land holdings and land revenue; Comparison with Ricardian view; Collective farming; views on land-ownership and land lessness; Nationalisation of land and ceiling on land holdings; Surplus labour utilisation in agriculture and capital formation.	
Practicum	Mini Project: Using the Agriculture census data (http://agcensus.dacnet.nic.in), chart the average size of operational holdings (by group) for different social classes in your tehsils and district (for2001-2 and 2015-16); compare with the corresponding figures of state and nation	
Module 3	**Ambedkar on Industrialisation and Planning**	**15 Hrs**
	Ideas on Industrialisation; views on types of industries Labour: views on labour exploitation and labour reforms; Social security Planning: Measures to develop Irrigation and Power sector, River linking;	
Practicum	Debate 1): Small & cottage industries of rural areas vs large scale industries in	

	urban areas Debate 2) Industrialize or perish v-s Industrialise and perish	
Module 4	**Ambedkar's contribution to Fiscal and Monetary Economics**	**15 Hrs**
	Fiscal Economics: study of sources of revenue; canons of expenditure Monetary Economics: Price stability and exchange rate stability; Currency reforms	
Practicum	Seminar: Ambedkar's views on 'The Problem of Rupee'	

References (In order of importance of usage)	
1	Heggade O D (1998) – Economic Thoughts of B R Ambedkar
2	Heggade O D – ಡಾ|| ಬಿ. ಆರ್. ಅಂಬೇಡ್ಕರ್ ಅವರ ಆರ್ಥಿಕ ಚಿಂತನೆಗಳು, Arjun Pub. House, Mysuru
3	Speeches and writing of Dr. B R Ambedkar, W.R.Mugawar (4 Volumes)
4	ಡಾ|| ಬಿ.ಆರ್.ಅಂಬೇಡ್ಕರ್ ರವರ ಸಮಗ್ರ ಲೇಖನಗಳು ಮತ್ತು ಭಾಷಣಗಳು – Vol 1, Vol 2 Part 1& 2, Vol 5, Vol 6 Part 1& 2, Vol 10 Part 1, 2, & 3, Vol 12 part 1, Pub by Govt of Karnataka
5	Nagar and Nagar (2010), Economic Thoughts and Policy of Dr. B. R. Ambedkar
6	Permaiah, P.K and Satheesh Reddy (1994) – Dr Ambedkar's Economic Philosophy, Deka Pub, New Delhi
7	Dongre M.K – Economic Thought of Dr B R Ambedkar
8	Ramaiah Reddy (ed) (1987) – Dr B R Ambedkar's Economic Philosophy
9	Sukhadeo Thorat (1998), Ambedkar's Role in Economic Planning and Water Policy, Shipra Publications: New Delhi
10	Ambedkar B. R. (1936) Annihilation of Caste, Government of Maharashtra, Writings and Speeches of Dr B R Ambedkar, Volume 1, Mumbai. Also see https://www.drambedkar.in/annihilation-of-caste/
11	Ambedkar B. R. (1923) THE PROBLEM OF THE RUPEE: ITS ORIGIN AND ITS SOLUTION' (HISTORY OF INDIAN CURRENCY & BANKING) http://drambedkar.co.in/wp-content/uploads/books/category/1-19/the-problem-of-the-rupee.pdf
12	Vasant Moon (Compiled) (1989) DR. BABASAHEB AMBEDKAR WRITINGS AND SPEECHES VOL. IPart V of https://www.mea.gov.in/Images/attach/amb/Volume_01.pdf

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	Environmental Economics			
Course Code	ECO C16		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to

- CO1. Understand how economic methods can be applied to environmental issues facing society
- CO2. Examine the linkages between Environmental Degradation and Economic Development
- CO3. Develop an informed view regarding the potential of economics to help societies achieve their environmental goals
- CO4. Demonstrate good inter-personal and communication skills through writing an essay and contributing to critical discussion.
- CO5. Analyze environmental problems and to assess environmental policies.

MODULES	DESCRIPTION	60 Hours
Module I	**Environment and Ecology**	**15**
	Meaning, Nature and Scope of Economics of Environment; Linkages between Environment and the Economy; Environmental Kuznets curve; Environmental Stress; Population and Environment; Poverty and Environment; Meaning and elements of ecology; Biotic and Abiotic components; Food, Hydrological and Carbon Cycles; Material Balances Principle (Entropy law); Meaning and strategies to achieve Sustainable Development; Rio Summit; Green Accounting; Introduction to SDGs.	
Practicum:	Making charts relating to SDGs or Assignments on environment-economy linkages at the local level.	
Module II	**Natural Resources Scarcity and Conservation**	**15**
	Meaning and Characteristics of Renewable and Non-renewable resources; Non-Renewable Resources and the problem of depletion and problem of overuse ; Resource Scarcity and Economic Growth (Limits to Growth Model); Energy and Economic Development; Energy resources and their Pricing; Alternative energy sources; Conservation of Natural Resources- 3Rs – Reduce, Reuse and Recycling Measures	
Practicum:	Identifying local resources; Project on resource conservation (esp. water) at the College level; Discussion on Limits to Growth.	

Module III	**Environmental Pollution**	**15**
	Environmental regulatory system in India, Pollution Control Boards and their Functions; Provisions of the Environmental Protection Act, 1986; Environmental Movements in India (Chipko); Role of Citizens and NGOs in Environmental Protection	
Practicum:	Visiting the Pollution Control Board office and observing its functions	
Module IV	**Environmental Pollution and Regulation**	**15**
	Environmental regulatory system in India, Pollution Control Boards and their Functions; Provisions of the Environmental Protection Act, 1986; Environmental Movements in India (Chipko); Role of Citizens and NGOs in Environmental Protection	
Practicum:	Assignments on types of pollution in local areas, Seminars on climate change and its consequences, visiting the Pollution Control Board office and observing its functions	

References	
1	Bhattacharya, R.N (Ed) (2001), *Environmental Economics: An Indian Perspective*, Oxford University Press.
2	Karpagam M. (1995), *Environmental Economics*, Sterling Publishers, New Delhi.
3	Shankar, U. (2001), *Environmental Economics*, Oxford University Press, New Delhi.
4	Singh, Katar and Amil Shishodia (2007), *Environmental Economics: Theory and Applications*, Sage Publications, New Delhi.
5	Mahajan V S (2003), *Environmental Protection – Challenges & Issues*, Deep & Deep Publishers New Delhi.
6	Sengupta, R.P. (Ed.) (2001), *Ecology and economics: An Approach to Sustainable Development*, Oxford University Press, New Delhi.
7	Nick Hanley, Jason F. Shogren and Ben White (2005) *Environmental Economics in Theory and Practice*, Macmillan India Ltd.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	Industrial Economics			
Course Code	ECO E2A		No. of Credits	3
Contact hours	45 Hours		Duration of SEA/Exam	2 hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Understand Industrial Economics in the Indian context.
- CO2. Critically examine and summarize the theories of industrial location.
- CO3. Describe the working of different industrial finance institutions.
- CO4. Identify the major issues involved in Indian industry and Government policies.

MODULES	DESCRIPTION	45 Hours
Module – I	**Framework of Industrial Economics**	15
	Industrial Economics: Meaning, Nature & Scope, Importance - Concepts: Plant, Firm and Industry, Organization of a Firm, Classification of Firms on the basis of Ownership (Public, Private, Joint and Cooperative Sectors), - Industrial Combinations, causes, Mergers & Acquisitions and Amalgamations; **Industrial Location:** Meaning, Determinants, Weber's theory, Florence's theory, Industrial location policy in India, Industrial Location trend in India.	
Practicum	Visit to nearest firm/organization and prepare the report	
Module – II	**Industrial Growth and Finance in India**	15
	Industrial growth in India: Review of recent trends in Indian industrial growth and structural transformation, Changing role of Public enterprises, efficiency, productivity and performance constraints - Performance and role of Micro, Small, Medium Enterprises (MSME), Role of MNC's in India, The IT sector in India viewed in world context; **Industrial Finance** : Internal & External and other components of Funds, Role, Nature, Volume and types of Industrial Finance - Role of Commercial Banks, IDBI, SIDBI, IFCI, SFCs etc.	
Practicum	Discussion on sources of Industrial Finance.	

Module – III	Issues in Indian Industry and Government Policies	18
	Major Issues in Indian Industry: Industrial Backwardness, Problems of Regional Imbalance, Industrial Sickness: Industrial Disputes: Causes and Measures, Industrial Proliferation and Environmental Protection. **Government Policies for Industries :** Global Competition emerging trend, Government's recent policies: Industrial policy 1991 and subsequent changes, Technology and Foreign Collaboration Policy.	
Practicum	Seminar on Industrial disputes	

References	
1	Barthwal R.R. (2022), *Industrial Economics: An Introductory Textbook*, 3rd Edn, New Age International Publishers.
2	Bhalerao N & Desai SSM (2010), *Industrial Economy of India*, 5th Edition, Himalaya Publishing House, Bombay.
3	Cherunilam, F. (1994), *Industrial Economics: Indian Perspective*: Himalaya Publishing House, Mumbai.
4	Hay, D. and D.J. Morris (1979), *Industrial Economics: Theory and Evidence*, Oxford University Press, New Delhi.
5	Singh, Sarla and A. N. Sadhu (1988), *Industrial Economics*, Himalaya Publishing House, Bombay.
6	Sreenivasa, K.V. and Das, V.B.M. (2004), *Indian Industrial Economy*, S. Chand & Co., New Delhi.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	Labour Economics			
Course Code	ECO E2S		No. of Credits	3
Contact hours	45 Hours		Duration of SEA/Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After successfully completing the course, the student will be able to:

CO1.Understand the basic concepts of Labour Economics.

CO2. analyze and tackle the labour issues effective.

CO3. Understand the theories of wages as well as wage policy analyze

MODULES	DESCRIPTION	45 Hrs
Module - I	**Introduction Labour Economics**	15
	Concept and Definition - Nature, Scope and Importance - Labour as a Unique Factor of Production - Labour Economics as a Branch of Economics - Interdisciplinary Character of Labour Economics. Labour Market Concept of Labour Market and its Features - Difference between Labour Market and Commodity Market - Labour Market Imperfections and Factors Contributing to Imperfections - Determinants of the Supply and the Demand for Labour – Organized and Unorganized Labour.	
Practicum	Group Discussion on Labour as a Unique Factor of Production. Assignment on Labour Economics as a branch of economics Visit to Organized and Unorganized Labour Market	
Module II	**Employment and Wage**	15
	Concept of Employment and Full Employment - Need for Full Employment - Theories of Employment - Classical, Neo-Classical and Modern Approaches to Employment - Unemployment, Causes and Consequences – Technology and Employment - Information Technology Revolution and Employment. Wages Wage Concept and Definitions – Wage and Development – Theories of Wages, Classical, Marginal Productivity and Collective Bargaining Theory of Wage – Wage Differentials – Wage Policy, Objectives and Importance	
Practicum	Presentation on Theories of Employment Undertake evaluation study on wage policies and prepare an assignment	
Module III	**Labour Productivity and Labour Welfare**	15
	Concept of Labour Productivity - Measurement and Importance of Labour Productivity – Determinants - Causes for Low Labour Productivity and Measures to Increased Labour Productivity - Technology and Labour Productivity. State and	

	Labour: Need for State Intervention in Labour Matters - Methods of Intervention - Labour Social Security and Labour Welfare Measures; Labour Policy: Objectives and Importance - Emerging Perception on State Intervention.	
Practicum	Survey on the conditions of Labour in different sectors - Debate on need for State Intervention in Labour Matters.	

References	
1	Bhagoliwal T.N. *Economics of Labour and Industrial Relations*; Sahitya Bhawan, Agra.
2	McConnell C.R. and S.L. Brue *Contemporary Labour Economics*, McGraw Hill, New York.
3	Mittal and Sanjay Prakash Sharma. *Labour Economics*, RBSA, Jaipur.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	Factor Pricing and Welfare Economics			
Course Code	ECO E2C		No. of Credits	3
Contact hours	45 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1 Understand the concepts of Welfare Economics
- CO2 The students can be able to analyze and theories of welfare economics effectively
- CO3 To understand the importance of the theories and models that can be used to improve the economic and social welfare of people

MODULES	DESCRIPTION	45 Hours
Module I	**Theories and Pricing of Factors of Production**	**15**
	Meaning and Significance of factor pricing - Functional (factor) and Personal incomes - Demand and Supply of Factors of Production in Perfect and Imperfect Competitive Markets. *Rent*: Ricardian Theory, Modern Theory, and Quasi Rent Theory, *Wages*: Subsistence Theory, Wage-Fund Theory, Residual Claimant Theory, Marginal Productivity Theory, and Modern Theory, *Interest*: Classical Theory - Loanable Funds Theory, Liquidity Preference Theory, and Hicks -Hansen Theory (IS-LM), *Profit*: Dynamic Theory, Innovation Theory, Risk-bearing Theory and Uncertainty bearing Theory, Factor pricing in perfectly competitive markets - Marginal productivity theory of factor pricing, Factor pricing in imperfectly competitive markets - Monopoly power: Trade Unions and wage determination - Bilateral monopoly, Prices of Fixed Factors, Rents and Quasi Rents - Non-Homogeneous Factors and Wage Differentials	
Practicum	Collecting information on labour supply to understand the reasons for its backward bending, seminars about the above theories	
Module II	**General Equilibrium Theory**	**15**
	Interdependence in the Economy (Circular Flow) - Partial and General Equilibrium Analyses: Two-Sector Model. Equilibrium of Production and Equilibrium of Consumption - Simultaneous Equilibrium (Edgeworth box diagram) – Walrasian General Equilibrium Analysis – Pareto Optimality and Market Equilibrium, Market failure –Meaning of Market Efficiency – Reasons for Market Failure - Externalities, Public goods, Property rights, Coase Theorem, Asymmetric information - Meaning - adverse selection, moral hazards, agency problems, Theory of second best	
Practicum	Collecting information on market failures and to ascertain the reasons for it. Describing the graphs used	

Module III	Welfare Economics	25
	Individual welfare and social welfare – Pigouvian Welfare Economics – Social welfare function – Kaldor-Hicks Compensation criteria – Collective Choice, Social Choice and Social Welfare - Arrow's impossibility theorem - Samuelson's Utility Possibility Curve – Value Judgments and Welfare Economics – Amartya Sen's Contributions to Welfare Economics, Government Intervention – Need for Public Policy – Economics Justification for Welfare Schemes	
Practicum	Conducting surveys to understand the notion of welfare Preparing a list of government programmes and giving justification for it from the point of view of Economics	

References	
1	Ahuja H.L. (2007) *Advanced Economic Theory*. S. Chand and Company, New Delhi.
2	Ferguson C.E and Maurice S. Charles, (1978) *Economic Analysis - Theory and Applications*. Richard D. Irwin Inc. USA.
3	Sen A.K. (2017) *Collective Choice and Social Welfare*. Holden-Day, San Francisco.
4	Jhingan, M.L. (2016): *Microeconomics*, Vrinda Publications, New Delhi.
5	Mankiw, N. Gregory (2020). *Principles of Economics* (Ninth ed.). Boston, MA.
6	Koutsoyiannis, A (1979). *Modern Microeconomics*, London. Macmillan
7	Samuelson, Paul (2004). *Economics*, McGraw-Hill, New Delhi.
8	Salvatore, Dominick (2008) Microeconomics Theory and Applications, Oxford University Press, New York.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Sixth Semester
Course Title	Economics of Non-Farm Sector			
Course Code	ECO E2D		No. of Credits	3
Contact hours	45 Hours		Duration of IA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1.Understand the Meaning, Concepts, objectives, Nature and scope of Economics of Non-Farm Sector.
- CO2. To know the sustainable development of non-farm sector
- CO3. To understand the importance of non-farm sector in the Indian economy
- CO4. To study the Government programmes and policies for non-farm sector

MODULES	DESCRIPTION	45 Hours
Module I	**Introduction to Non-Farm Sector**	15
	Meaning and Definition of Non-Farm Sector, Nature of Non-Farm Sector Economics, Importance of non-farm sector, Role of non-farm sector in the rural Economy, the demand for and supply of non-farm labour in the rural Economy. Need of sustainable development of non-farm sector in India.	
Practicum	Collecting the information on demand for and supply of nonfarm jobs Collecting information on how to develop and sustain non-farm sector Seminars and discussion	
Module II	**Non-Farm Sector and Employment**	15
	Types of unemployment in rural India, Nature of nonfarm Employment-Construction, Mining and quarrying, small businesses. Women and women employment in non-farm sector, Agro based Industries, and agro processing industries, Rural Markets, Rural MSMEs, women employment in households and cottage industry, Textile and handlooms, Rural Trade and Transportation, Rural Tourism-Swadesh Darshan.	
Practicum	Collecting the information on mining and quarrying workers condition Collecting information on rural trade and transportation Seminars and discussion	
Module III	**Government Schemes and Policies for Non-Farm Sector**	15
	Role of NGOs in non-farm sector, Government Schemes, MGNREGA, Skill India, Pradhan Mantri Kaushal Vikas Yojna, National Apprenticeship Promotion Scheme,	

	Aajeevika, Deen Dayal Upadhyay Gramin Kaushal Yojana, Pradhan Mantri MUDRA Yojana (PMMY), National Institute of Rural Development and Panchayati Raj (NIRDPR), Establishing cooperative societies	
Practicum	Collecting the information on National Apprenticeship Scheme Collecting information on MUDRA Yojana Seminars and discussion	

References	
1.	**Nayyar Rohini and Sharma N Alakh, (2005),** Rural Transformation in India : The Role of Non-Farm Sector. Institute for Human Development
2.	**Rao M Koteswara (2000),** Rural Employment: The Non-Farm Sector. Deep and Deep publication. New Delhi
3.	**Chattopadhyay Apurbba Kumar and Chakrabarti Sanmaya (2013)** Economics of Rural Non-Farm Sector: Certain Characteristics and Determinants Serial Publication New Delhi
4.	**Fisher Thomas (1997),** Forgotten Sector: Non-farm employment and enterprises in rural India. Practical Action Publication
5.	Jamli B Kilasiga and M Giribabu (Eds) , 2020 **AGRICULTURE AND RURAL TRANSFORMATION:** Issues and Challenges (With Special Reference to North-East India). Rawat Publication Jaipur
6.	**Government of India** 2020-21. Annual Report. Department of Agriculture, Cooperation and Farmers Welfare
7.	**Antony Piyush, V. S.P Gayathri., Mamgain; (2001)** "Social and Economic Security in India" (ed.), Institute for Human Development. New Delhi

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Sixth Semester
Course Title	Micro Entrepreneurs Development		
Course Code	ECO V2A	No. of Credits	2+1
Contact hours	30+30 Hours	Duration of IA Exam	2 hours
Formative Assessment Marks	50	Summative Assessment Marks	50

Course outcomes: On completion of the course, the students should be able to

- CO1. To know how to start own Micro Entrepreneur Unit
- CO2. To enable the students to find out various procedure of operations of Micro Entrepreneurship
- CO3. To enable the students to gain knowledge and skills needed to run micro enterprises successfully

MODULES	DESCRIPTION	60 Hours
Module I	**Micro Enterprises : Technical Feasibility**	**15**
	Management Evaluation – Micro Enterprises Promotion - Types of Enterprises and Management – Sole Proprietorship, Partnership, Limited Liability Partnership, Private Limited - Profile of the Management – Idea of Product – Product Line – Product Demand Estimation – Promotion and Competition Management: Technical Feasibility – Manufacturing Process – Digital Technology – AI in Manufacturing – Plant Location, Plant and Machinery Technical Feasibility, Raw-material Utilities and Human Resources, Contracts and Annual Maintenance Agreements (AMCs) – Project Monitoring and Implementation – Plant Optimization.	
Practicum	Assignment on Micro Entrepreneurs Development Survey to analyse Technical Feasibility in Micro Enterprises	
Module II	**Micro Enterprises: Financial and Economic Viability**	**15**
	Appraisal of Financial Feasibilities – Cost of the Project – Land and Building, Plant and Machinery, Furniture's and Fixtures, Pre-Operative Expenses, Fixed and Working Capital – Means of Strategic Finance – Own Contribution and Venture Capital, Term Loans, Subsidy and Government Schemes, Other Sources; Economic Viability – Profit and Losses, Break Even and Bottom Line	
Practicum	Identify the factors of economics viability in micro enterprises and write an assignment	
Experiential Learning/ Practicum	**Visit a Micro Enterprise and write a report of 15-20 pages about consisting of the following:**	**30**
Format of the	1. Name and Address of the Micro Enterprise Visited	

Report	2. Certificate from the Micro Enterprise Stating the students visit and learning about the Micro Enterprises. Technical Feasibility 3. Certificate from the concerned HOD & Concerned teacher 4. Brief Profile of the Micro Enterprise 5. Lessons Learnt about Micro Enterprises: Technical Feasibility, Financial and Economic Viability, Launching a Business, Product Marketing, Sources of finances, Challenges faced, Strategies to Overcome it, etc.	

References	
1.	Bessant J and Tidd J (2013): Innovation and Entrepreneurship, 2nd Edition, John Wiley & Sons.
2.	Desai, V (2021): Small Scale Industries and Entrepreneurship, Himalaya Publishing House, Mumbai.
3.	Desai, V (2011) : Dynamics of Entrepreneurial Development and Management, Himalaya Publishing House, Mumbai.
4.	Donald F K (2014): Entrepreneurship – Theory, Process and Practice, 9th Edition, Cengage learning.
5.	Hirsch, R.D., Peter, M and Shepherd D (2006): Entrepreneurship, 6th Edition, Tata McGraw-Hill, Mumbai.
6.	Kanaka S S (2013): Entrepreneurial Development, S. Chand & Co. New Delhi.
7.	Nagendra and Manjunath, V S (2010): Entrepreneurship and Management, Pearson.
8.	Roy R (2011): Entrepreneurship, 2nd Edition, Oxford University Press.
9.	Stokes, D and Wilson, N. (2010): Small Business Management and Entrepreneurship, 6th Edition, Cengage Learning.
10.	Sundar, K (2011) : Entrepreneurial Development, Vijay Nicole Imprints Pvt. Ltd.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Sixth Semester
Course Title	Project Planning and Management		
Course Code	ECO V2B	No. of Credits	2+1
Contact hours	30+30 Hours	Duration of SEA/Exam	2 hours
Formative Assessment Marks	50	Summative Assessment Marks	50

Course outcomes: On completion of the course, the students should be able to

- CO1-formulate and present a practicable project idea
- CO2-prepare a realistic economic plan
- CO3-describe models and methods to lead, carry out, document and evaluate project
- CO4-describe an intended project in a complete project plan
- CO5-review and evaluate own and others' project plans critically.
- CO6-Understand the content for preparing a Project Report for new projects and differentiate between financial, technical analysis and business feasibility.

MODULES	DESCRIPTION	60 Hours
Module I	**Introduction to Project Planning and Management**	**15**
	Meaning, Definition, Nature & Scope, Types - Schedule planning, Resource planning, Budget planning, Procurement management, Quality planning, Communications planning, Key elements of a successful project planning, and Process of Project planning.	
Practicum	Assignments on project planning and management activities. Group discussion on project planning.	
Module II	**Project Management Implementation and Stakeholder Management and Project Controlling**	**15**
	Project Management: Meaning, definition, Objectives, Nature and Importance, Project Management Skills - Qualities of the best project manager, Project Management life Cycle, **Project Implementation:** Definition, Implementation Tools, and Process; Performance and quality control measurements, **Stakeholder Management:** Definition, Features, Importance, Risk Management: Definition, importance, techniques, Project Controlling System: Meaning, Pre-requisites, Process, Essentials, Methods, Project completion.	
Practicum	Discussion on the Skills of project management, Decision Making, Problem-Solving, and risk-management skills In small groups, try to identify the LARGEST project each of you has been involved with.	
Experiential Learning/ Practicum	**Visit an Enterprise and write a report of 15-20 pages about consisting of the following:**	**30**
Format of the Report	1. Name and Address of the Enterprise Visited. 2. Certificate from the Enterprise Stating the students visit and learnings about the Project Planning and Management.	

	3. Certificate from the concerned HOD & Concerned teacher 4. Brief Profile of the Enterprise 5. Lessons Learnt about Project Planning and Management Implementation, Stakeholder Management and Project Controlling Launching a Business, Product Marketing, Sources of finances, Challenges faced, Strategies to Overcome it, etc.	

References	
1	Adrienne Watt (2014) Project Management – 2nd Edition, publisher, BC CAMPUS open access books library
2	Davies A. Igherasa (2015) Introduction to Project Management ,Routledge Taylor &Francis Group
3	Harold Kerzner (2013), Project Management: A Systems Approach to Planning, Scheduling, and Controlling, WILEY INDIA
4	Joseph Heagney (2019) Fundamentals of Project Management, 5th Edition, Amacom Publication
5	Kalpesh Askar (2022), Project Management Essentials, You Always Wanted To Know, Vibrant Publication
6	Project Management from Simple to Complex, open text book Publisher University of Minnesota Libraries Publishing
7	Albert lester (2021) Project management, planning and control
8	Rory Burke (2009), Project Management Planning And Control Techniques, 4Th Edition, WILEY INDIA

Government of Karnataka

Model Curriculum

Program Name	BA in Economics Internship		Semester	Sixth Semester
Course Title	Internship			
Course Code	Skill Enhancement Course		No. of Credits	2
Contact hours			Duration of SEA Exam	Practical
Formative Assessment Marks	50		Summative Assessment Marks	NA

INTRODUCTION:

Internship [Organizational work] is an integral part of the curriculum. Its objective is to equip students with job skills and communication abilities, enabling them to bridge the gap between theoretical knowledge and practical application. The internship program incorporates various interventions that offer students exposure to real-life job experiences and expectations, empowering them with insights into the workings of different industries.

The internship is strategically positioned during the 6th semester of the Bachelors of Arts in Economics program. This timing provides students with a strong foundation in economics, enabling them to apply their knowledge in real-world settings. Additionally, the program caters to the critical need for teaching skills in economics and administration, enhancing the academic qualifications of students. Overall, the internship program aims to prepare students for the job market, thereby bridging the gap between academia and the professional world.

OBJECTIVES:

The objectives of conducting program are:

1. To boost students' employability by imparting soft skills that are essential in everyday life.
2. To enable students discover their professional strengths and weaknesses and align them with the changing economic environment.
3. To provide an opportunity for students to apply theoretical concepts and knowledge in real life situations at the work place.
4. To prepare students to understand organization culture and familiarize them with the organization needs.

5. To enable students to manage resources, meet deadlines, identify and undertake specific goal-oriented tasks.

6. To sharpen domain knowledge and provide core competency skills.

Internship Requirements & General Guidelines:

A. Nature of internship project work:

1. Every Student is required to work in an organization (a firm, self- help groups cooperatives) farms or any rural economy components) for at least two months as part of Internship.

2. The student shall identify an internship work place.

3. Maximum five students of the same department from a College/University shall work for Internship in the same organization.

4. Internship work may be to carry out Professional work.

5. The internship shall be paid or unpaid.

6. While, working from the organizational premises is encouraged, in certain cases, virtual internship shall be considered.

B. Duration of Internship:

1. The Internship works shall be for a period of TWO months (Sixty Days).

2. The internship commence from the first day of the sixth semester.

3. Student is expected to carry out his/her Internship works during the first FIVE days of the week, and shall report to the department on a weekly basis.

4. The duration of the work shall be specified by the organization at the beginning of the program and the number of hours spent shall be in line with the prevailing rules.

C. Guide and Mentor:

1. An internal mentor shall be assigned by the University/College for the smooth conduct and supervision of the internship program.

2. The internal mentor shall provide guidance students in securing internship and to monitor the progress.

D. **Protocol of the Internship work:**

1. The head of the institution shall issue an internship work authorization letter during the 5th semester to the College or Organization where student is expected to join the internship work.
2. Student is expected to take up the preliminary work such as identifying the organization and engaging in securing an offer from an organization.
3. During the 5th semester, students who secured an offer must get consent offer signed by the principal/head to carry out internship.
4. Student must submit the joining report with the date of joining for internship to the department head through internal mentor.
5. In case of professional work the student is expected to be regular in performing his/her duties/tasks assigned to him/her by the Organization.

E. **Evaluation:**

1. All the students should obtain a certificate of internship from the workplace. This certificate shall mention the name of the candidate, the organizations name and duration of work. A letter describing the work of the candidate is desirable. The certificate shall be submitted to the department head.
2. The performance of a candidate shall be assessed for maximum of 100 marks.
3. The assessment methods shall be decided by the Universities based on the existing conventions.
4. The assessment method shall consist of an internship report submitted by the students based on the work experience and a viva-voce presentation.
5. **Viva-voce Presentation:** There shall be a viva-voce examination will be conducted for by the department where each student is expected to give a presentation and submit necessary documents.

F. **Marks allocation for Internship Work:**

Statement of Marks Secured		
Item	**Maximum Marks**	**Marks Obtained**
Candidate Attendance for teaching work		
Candidate Punctuality for teaching work		
Course Work Preparation/ Work Commitment		
Students Feedback/ Employer Feedback		
Behavioural Attitudes		

Overall Observation		
Total		
Total Marks Secured by student in Words:		

Viva-voce by Chairman and an Expert Drawn from Other University for 30 Marks			
Sl. No	Aspects	Maximum Marks	Marks Obtained
1	Presentation Skills		
2	Communication Skills		
3	Subject Knowledge		
	Total		

Note: Assessment needs to be done as per the regulate

KUVEMPU UNIVERSITY

JNANA SAHYADRI SHANKARAGHATTA

National Education Policy (NEP): 2020

Model Curriculum

of

Four Years BA Honours

in

Economics

3rd & 4th Semester (Syllabus)

Karnataka State Higher Education Council

Karnataka State Higher Education Council

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Third Semester
Course Title	Microeconomics			
Course Code	DSC-3.1		No. of Credits	3
Contact hours	42 Hours		Duration of SEA Exam	2 hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of this course, the student will be able to

CO1. Understand introductory economic concepts.

CO2. Recognize basic supply and demand analysis.

CO3. Recognize the investors and the role of costs in the economy.

CO4. Describe, using graphs, the various market models: perfect competition, monopoly, monopolistic competition, and oligopoly.

CO5. Explain how equilibrium is achieved in the various market models.

CO6. Identify problem areas in the economy and possible solutions, using the analytical tools developed in the course.

Content	42 Hrs.
Unit-1: Basics of Microeconomics	
Chapter-1 Exploring Microeconomics: Nature and scope of economics – opportunity cost, scarcity, production possibility frontier - Market system as a way to organize economic activities, welfare state	3
Chapter-2 Supply and Demand: Determinants of demand and supply; demand and supply schedules and; individual and market demand and supply; shifts in the demand and supply curves. Interaction of demand and supply. Equilibrium price and quantity	3

Practicum:

- Reading and working with graphs.
- Estimation of elasticity and discussing its applications, solving problems to estimate the equilibrium price and quantity.

Unit -2: Consumption Decisions	
Chapter 3 **The Households:** Diminishing Marginal Utility, Indifference curves – Meaning and Properties, budget constraint, Satisfaction Maximization, income and substitution effects, choice between leisure and consumption	5
Practicum: Conducting a consumer survey to understand their taste and preferences	
Unit -3: Production and Costs	
Chapter 4: The Firms: Concept of firm and industry, Production Function, Law of Variable Proportions, isoquant and isocost lines, cost minimizing equilibrium condition, Returns to Scale, Features of Cobb-Douglas Production Function	5
Chapter 5: Cost of Production: Short run and long run costs, Returns to Scale	3
Practicum: ➢ Analysing reasons for diminishing marginal returns ➢ Examining the relationship between cost and output: Deriving cost functions from output functions	
Unit -4: Pricing	
Chapter 6: The Markets: Meaning of Market Structure and Types, Pricing under perfect competition; Monopoly pricing and price discrimination; Monopolistic Competition – Features and Pricing; Oligopoly – Interdependence, Collusive and non-collusive oligopoly, Elements of Game theory	7
Chapter 7: The Inputs (Factors): Functional and Personal Income, Demand for and supply of factors, Marginal Productivity Theory of Distribution, Meaning and determinants of Rent, Wages, Interest and Profits	4
Practicum: ➢ Conducting Market Survey to identify the nature and features of markets for different goods/services ➢ Understanding distribution of national income in Indian economy	
Unit -5: Welfare Economics	
Chapter 8: Welfare Economics: Meaning of Welfare, Pigou's Welfare Economics, Compensation principle, Impediments to attain Maximum Social Welfare, Externalities, Market Failure	4
Practicum: Examining day to day externalities and proposing solutions to them	

Unit -5: Economics in Action	
Chapter 9: Economic Theory and Policy: Rising Prices, Roles of Monetary and Fiscal Policies, Controls and Regulations, Income and Taxation, Labour policies	4
Practicum: Analysis of latest budget of the Central Government, Survey of terminology used in the latest Monetary Policy of the RBI	

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	30	30
Assignment/ Seminar	20	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Prepare a report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Revised/Affiliation Regulations

References	
1	Ahuja, H.L. (2004) *Principles of Microeconomics*, S. Chand and Co. New Delhi
2	Mankiw, N. Gregory (2020) *Principles of Economics* (Sixth ed.) Boston, MA.
3	Dhingra, M.L. (2014) *Microeconomics*, Sultan Publications, New Delhi
4	Koutsoyiannis, A. (1979) *Modern Microeconomics*, London, Macmillan
5	Oza, Amresh, Q. (2012) *Economics: A Primer for India*, Orient Blackswan, Hyderabad
6	Samuelson, Paul (2004) *Economics*, McGraw-Hill, New Delhi
7	Vaishnavi, M.R. (2020) *Microeconomics*, Himalaya Publishing House, Bangalore
8	https://www.investopedia.com/terms/m/microeconomics.asp
9	Gurumallesh, Dr. Sha. *Microeconomics*, Siddhagangotri Publications, Kalburgi

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Third Semester
Course Title	Agricultural Economics		
Course Code	DSC-3.2	No. of Credits	3
Contact hours	42 Hours	Duration of SEA Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- Acquire knowledge of the role of agriculture in economic development
- Acquire the theoretical and application knowledge of agriculture growth and development
- To enable the students to understand the strategy of agricultural development in India
- To make the students aware of institutional and non-institutional sources of agricultural finance

Contents of Agricultural Economics	42 Hrs
Unit-I: Agriculture and Economic Development	**14 Hrs**
Chapter-1: Introduction to Agricultural Economics ❖ Definition and scope of agricultural economics ❖ The Organization of agricultural production – Role of Land, Labour, Capital, and entrepreneurship ❖ Role of Agriculture in Economic Development ❖ Inter dependence between agriculture and industry	7
Chapter-2 – Structural changes and Agriculture in India ❖ Traditional agriculture and its modernization ❖ Changes in the share of agriculture in G.D.P., reasons, and way forward ❖ Changes in the percentage of employment generated by agriculture in the total workforce-reasons and way forward **Practicum 1:** Visit a few nearby agricultural farms, discuss with farmers about crops grown, productivity, farm practices and the problems that farmers are facing and the solutions. Then Writing an assignment 2: Group Discussion on the declining contribution of agriculture to G.D.P.	7
Unit II: Theory of Agricultural Growth and Development	**12 Hrs**
Chapter-3: Transformation of traditional agriculture ❖ Schultz's transformation of traditional Agriculture ❖ Mellor Model of agricultural development	5

Chapter 4: Dual economy models and other theories ❖ Arthur Lewis's theory of Unlimited supplies of Labour ❖ Fei-Ranis Model of Economic growth ❖ Todaro Model of Rural-Urban Migration and Unemployment **Practicum:** 1. Group Discussion on various Agricultural growth and development theories 2. Debate on the relevance of the agricultural theories in the present agricultural situation in India	7
Unit-III: Strategy of Agricultural Development in India	16
Chapter-5: Land Reforms and Policy ❖ Post-Independence Agrarian Reforms, Legislation, and Implementation ❖ Role of Technological factors in Agricultural Growth: High Yielding Varieties of Seeds, Irrigation and Water, Fertilizers, Mechanization ❖ Economic Reforms and Agriculture	8
Chapter -6: Agriculture Finance and Marketing ❖ Need for Agriculture credit ❖ Problems of Agricultural Finance and suggestions to improve Agricultural Finance ❖ Sources of Agricultural Finance: Institutional and Non-Institutional Sources ❖ Micro-Financing and Role of SHG's, NGO's and KMG's ❖ Need for an efficient Marketing System ❖ Nature of Demand for Farm Produce ❖ Problems of Indian Agricultural Marketing ❖ Government Measures to improve Indian Agricultural Marketing **Practicum:** 1. Write an assignment on the impact of land reforms in India 2. Quiz on the strategy of agricultural development in India	10
References ❖ Cohen M.L. (1993). Economics of Agriculture. James Nisbet, London ❖ Dantwala, M.L. et. al. (1991). Indian Agricultural Development since Independence. Oxford & IBH, New Delhi. ❖ Government of India (1976). Report of the National Commission on Agriculture. New Delhi ❖ Government of India. Economic Survey (Annual). New Delhi ❖ Lekhi R.K. Joginder Singh (2022). Agricultural Economics. Kalyani Publishers. New Delhi ❖ Reserve Bank of India. Report on Currency and Finance (Annual). Mumbai ❖ Rudra, A. (1982). Indian Agricultural Economics: Myths and Reality. Allied Publishers. New Delhi ❖ Srivastava O.S. (1987). Theoretical Issues of Agricultural Economics. Allied Publishers Pvt. Ltd. Delhi	

Pedagogy: Classroom lecture, tutorials, Problem-solving exercises, field visit

Note: Strictly follow the Practicum

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Third Semester
Course Title	Rural Economics		
Course Code	OE-3.2	No. of Credits	3
Contact hours	42 Hours	Duration of SEA Exam	1 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to

CO1: To Understand the basics of rural development

CO2: To study the characteristics, problems, and programmes of rural development

CO3: To study the trends and patterns of economic activities in rural areas

CO4: To study the role of infrastructural facilities and governance in rural development

CO5: To enable the students to know about significance of rural enterprises and agricultural allied activities.

Contents	42 Hrs
Unit-1:	**12 Hrs**
Chapter-1 - Introduction to Rural Economy	3
Meaning and Objectives of Rural economy	
Characteristics of Rural Economy	
Indicators of Rural Development	
Concepts of inclusive and sustainable development	
Chapter-2 - Approaches to Rural Development	4
Gandhian Model	
Community Development Approach	
Minimum Needs Approach	
Integrated Rural Development and Inclusive Growth Approach	

Chapter:3 - Poverty and Unemployment in Rural India	3
Meaning and Measurement of Poverty	
Causes of Poverty	
Farm and Non-farm employment	
Measurement and Types employment	
Review of Poverty Alleviation and Employment Generation Programmes in India	
Practicum:	
• Field visit to nearby village and study the poverty situation	
• Field visit to village and study the employment pattern	
• Undertake evaluation study on employment generation programme and prepare an assignment	
Unit -2:	**14 Hrs**
Chapter 4- Rural Enterprises	3
Meaning and Importance, Classification of SSIs	
Progress and Problems of SSIs	
Khadi and Village Industries	
Chapter 5: Rural Banking and Finance	4
Credit Co-operative Societies	
Regional Rural Banks	
Role of NABARD	
Microfinance Institutions	
Chapter-6: Rural Infrastructure	7
Educational and Health Infrastructure	
Housing and Sanitation	
Drinking Water Supply	
Rural Transport and Communication	
Rural Electrification	
Practicum:	
• Write an assignment on Rural infrastructure	
• Write a small report on Rural Industry	

Unit-III	14 Hrs
Chapter 7- Rural Development Programmes Wage Employment Programmes Self-employment and Entrepreneurship Development Programmes Rural Housing Programmes Rural Sanitation Programmes	3
Chapter 8 - Rural Markets Meaning and Types of Rural Markets Defects and Government Measures for Removal of Defects in rural markets Co-operative Marketing Societies Meaning and Importance of Regulated Markets Digital Marketing(e-NAM)	5
Chapter 9 - Rural Governance Legislations powers, Functions, and duties of the state of Panchayat Raj Institutions Role of NGOs in rural development People's participation in rural development	5
Practicum: • Group Discussion on Rural Governance • Interview Gram Panchayat members and prepare brief note on their participation in rural development • Undertake a Visit to rural development programmes and prepare an assignment	

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	15	15
Assignment/ Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Report a report	5	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Articles follow the Practicum

References	
1	Chambers, R. (1983): Rural Development: Putting the Last First, Longman, Harlow.
2	Dandekar, V.M. and N. Rath (1971): Poverty in India, GIPE, Pune.
3	Dantwala, M.L. (1973): Poverty in India: Then and Now, 1973-1973, Himalaya, Bombay.
4	Gupta, K. R. (Ed) (2005): Rural Development in India, Atlantic Publishers and Distributors, New Delhi.
5	Jain, Girjal Lal (1997): Rural Development, Mangal Deep Publications, Jaipur.
6	Singh, Katar (1986): Rural Development: Principles, Policies and Management, Sage Publications, New Delhi. (Second Edition).
7	Katoch, G. N. (2002): Integrated Approach to Rural Development: Policies, Programmes and Strategies, Concept Publishing Company, New Delhi.
8	Nilakantaiyar, S. K. (1983): Rural Development in India, Sage Publications, New Delhi.
9	Satya Sundaram, I. (1987): Rural Development, Himalaya Publishing House, Delhi.
10	Mehta, Shiv R. (1984): Rural Development Policies and Programmes, Sage Publications, New Delhi.
11	Tyagi, B. P. (1998): Agricultural Economics and Rural Development, Jai Prakash Nath and Co., Meerut.
12	Sreenivasa Murthy, T.M. (2022). [illegible] Siddalingeshwara publication, Kalburgi.
13	M. R. Krishnaiah Gowda (2022). [illegible] Mysore book house publication, Mysore.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics		Semester	Third Semester
Course Title	Economics of Insurance			
Course Code	OE-3.2		No. of Credits	3
Contact hours	42 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of this course, the student will be able to:

CO1: Gain knowledge relating to the importance of the insurance in the life of human beings.

Content	42 Hrs
Unit-1: Introduction to Economics of Insurance	
Chapter:1 - Fundamentals of Economics of insurance ➢ Definition of Insurance ➢ Scope of economic of insurance ➢ Importance of insurance	
Chapter:2 - The conceptual framework ➢ Brief history of insurance ➢ Perils and risks in insurance. Classification of risks hazards ➢ How insurance works ➢ Causes of insurance and assumptions	
Chapter:3 - Type of Insurance ➢ Risk pooling and risk transfer in insurance ➢ Social vs private insurance ➢ Life vs non-life insurance	
Unit -2: Insurance Planning	
Chapter 4: Types of Insurance Planning ➢ Wealth accumulation plan lifecycle planning ➢ Planning for wealth accumulation ➢ Tax advantage and income advantage	

Chapter-5: Retirement Planning

- Essential of individual retirement planning
- Investing pension plan, basic principles of pension plans
- Pension plans in India

Chapter-6: General Insurance Structure

- General Insurance, concept of General Insurance
- Types of General Insurance, Marine Insurance, Motor Insurance, Agricultural Insurance
- Fire Insurance, Personal Accident Insurance

Unit -3: personal insurance Health Insurance

Chapter 7- Essential of Life and Health Insurance

- Fundamentals of Life and Health Insurance, functions of Life and Health Insurance
- Health Insurance and Economic Development, Insurance and Person Family

Chapter 8 - Insurance Documentation

- Health Insurance products, Health Insurance underwriting
- Health Insurance claims

Chapter 9 - Insurance Legislation

- The insurance act, 1938- Registration Accounts and Returns
- Investments- Limitation on expense of Management
- Regulation of Insurance, Insurance regulation in India, role and need of regulation, history of insurance regulation in India
- Insurance Reforms Development Authority (IRDA), performance of IRDA
- Indian Insurance in global platform, future potential in Indian Insurance Business

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	20	20
Assignment/ Seminar	10	
Quiz	10	
Case Study / Field work / Project work/ Industrial Visit and Project report	-	10
Total	40 Marks	

Formative Assessment as per NEP guidelines are compulsory

References	
1	Chambers, R. (1983): Rural Development: Putting the Last First, Longman, Harlow
2	Dandekar, V.M. and N. Rath (1971): Poverty in India, EPW, Pune
3	Dantwala, M. L. (1973): Poverty in India: Then and Now, 1870-1970, Macmillan, Bombay
4	Gupta, K. R. (Ed) (2003): Rural Development in India, Aligned Publishers and Distributors, New Delhi
5	Nin, Gopal Lal (1997): Rural Development, Mangal Deep Publications, Jaipur
6	Singh, Katar (1999): Rural Development: Principles, Policies and Management, Sage Publications, New Delhi, (Second Edition)
7	Karaky, G. N. (2002): Integrated Approach to Rural Development: Policies, Programmes and Strategies, Concept Publishing Company, New Delhi
8	Mathialvan, S. K. (1981): Rural Development in India, Sage Publications, New Delhi
9	Satya Sundaram, I. (1997): Rural Development, Himalaya Publishing House, Delhi
10	Mishra, Shiv K. (1984): Rural Development Policies and Programmes, Sage Publications, New Delhi
11	Tyagi, B. P. (1998): Agricultural Economics and Rural Development, Jai Prakash Nath and Co., Meerut

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Third Semester
Course Title	Economics of Human Development		
Course Code	OE-3.3	No. of Credits	3
Contact hours	42 Hours	Duration of SEA/Exam	1 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of this course the student will be able to:

CO1. Differentiate between Human Resource Development (HRD), Human Development (HD), and HRM

CO2. Understand the concepts of Human security, describe dimensions of human development, and appreciate various practices and policies of Human Development: HDI and India

Contents	42 Hrs
Unit-1: Introduction to Human Development	**12 Hrs**
Chapter 1: Human Growth and Human Development - Basic Needs Approach - Quality of Life Approach - Capability Approach	
Chapter 2: Human Resource Development (HRD) Human Resource Management (HRM)	
Chapter 3: Human Development: meaning and definition, importance, and objectives	
Unit -2: Human Security, SDGs and Approaches to Human Development.	**12Hrs**
Chapter 4: Human Security: Economic security - Food security - Health security - Environmental security - Personal security - Community security - Political security.	
Chapter 5: Sustainable Development Goals (SDGs): Understanding the SDGs - Linkages between human development and the SDGs.	
Chapter 6: Indian Perspective and Experience with Human Development Approach to human development in national plans.	
Unit -3: Dimensions and Measurement of Human Development	**18 Hrs**
Chapter 7: Dimensions of Human Development: Empowerment - meaning and scope, Cooperation - definition and brief introduction, Equity - concept and scope, Sustainability - meaning and importance, Participation - concept, different levels of participation, Human development & Performance - factors determining productivity	

Chapter 8: Measuring Human Development: Need for indices - Limitations of per capita GDP as an indicator, Earlier indices (meaning) - Physical Quality of Life Index (PQLI) - Disability Adjusted Life Years (DALYs) - Social Capability Index. Human Development Index - HDI as compared to per capita GDP - Method of computing HDI - Critique of HDI. Other indices (meaning): Human Poverty Index (HPI)- Gender-related Development Index (GDI) - Gender Empowerment Measure (GEM)

Chapter 9: Selected Issues in Human Development: Impact of Globalization on Human Development - Trade and Human Development - Technology and Human Development

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	30	30
Assignment/ Seminar	10	
Quiz	10	
Case study/ Field Work/ Project work/ Industrial Visit and Preparation report	-	10
Total	40 Marks	
Formative Assessment as per KTU guidelines are compulsory		

References	
1	Chitkara, Raja J. and R. Sudarshan (eds.), 1998. Income Poverty and Beyond: Human Development in India. UNDP/ Social Sciences Press, New Delhi.
2	Dev, S. Mahendra, Pushi Antony, V. Gayathri, and R.P. Mamgain, 2003. Social and Economic Security in India. Institute for Human Development, New Delhi.
3	Government of India, National Human Development Report 2002, Planning Commission, New Delhi.
4	Jain, Gitanjali. K. Human Resource Development: Conceptual analysis and Strategies. Sterling Publishing Pvt. Ltd., New Delhi.
5	Naresh, Gupta (2019), Human Development in India Emerald Publishers.
6	Nadler, Leonard (2004). Corporate Human Resource Development. Van Nostrand Reinhold, ASTD. New York.
7	Padmanabhan, Nair (2007). Human Development Index: An Introduction (Economy Series). MG Al UNIVERSITY PRESS

References	
8	Papalia, D.E. , Olds, S.W. and Feldman, R.D. (2001). Human development 8th Ed. New Delhi: Tata McGraw-Hill.
9	Rao, T.V. and Pareek, Udai (2001). Designing and Managing Human Resource Systems. Delhi: IBH Pub. Pvt.Ltd., New Delhi.
10	Rao, T.V. Readings in HRD, Oxford IBH Pub. Pvt. Ltd., New Delhi.
11	Virmani, B.R and Seth, Parmila. Evaluating Manpower Development, Vikas Books, New Delhi.
12	Rao, T.V. (et al). (2003) HRD in the New Economic Environment. Tata McGraw-Hill Pub.Pvt. Ltd., New Delhi.
13	Rao, T.V. Human Resource Development, Sage Publications, New Delhi.
14	Virmani, B.R and Rao, Kala. Economic Restructuring, Technology Transfer and Human Resource Development, Response Books, New Delhi.
15	United Nations Development Programme (UNDP). "Course Curriculum on Human Development: An Outline". New Delhi.

Websites:	
1	https://www.unido.org/sustainable-development-goals/?_ga=2.73143.1[illegible]
2	https://hdr.undp.org/en/2020-report
3	https://www.un.org/sustainabledevelopment/
4	https://www.undp.org/publications/human-development-report-india
5	https://www.oxfamindia.org/india-sdgs

Journals	
1	Indian Journal of Training and Development
2	HRD Newsletter (NIHRD Network)
3	American Journal of Training and Development
4	Personnel Today

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fourth Semester
Course Title	Macroeconomics		
Course Code	DSC-4.1	No. of Credits	3
Contact hours	42 Hours	Duration of SEA Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1: Understand the Theories of National Income Accounting
- CO2: Explain the process of Consumption and Investment Functions
- CO3: Evaluate the Concept of Multiplier and Inflation

Content of Theory	42 Hrs
Unit-1: Theory of National Income Determination	**14 Hrs**
Chapter-1 Classical Framework	7
1. Typical Features of classical theory of employment. Assumptions	
2. Basis of Classical theory	
➢ Say's Law	
➢ Pigou's wage price flexibility	
➢ Fisher's Quantity theory of money	
➢ Knut Wicksell's loanable funds theory	
➢ Classical dichotomy and neutrality of money	
3. Criticism of classical theory	
Chapter-2 The Keynesian Framework	7
1 Introductory: connecting growth of national income to development: why incomes of all fall or rise? Are national income, output and employment related?	
2 Some Basic concepts: The idea of equilibrium and identity: ex ante and ex post concepts.	
3 Aggregate Demand and its components	
4. Consumption function: Algebraic and Graphical explanation; Marginal and Average propensity to consume	

	b. Investment function, savings and investment relationship	
4	Aggregate Supply: Meaning and graphical explanation, Effective demand	
5	Determination of national income in Keynes' two sector economy with Aggregate Demand and Aggregate Supply with fixed prices: Analytical, Graphical and algebraic explanation, numerical problems	
6	Determination of national income in Keynes' two sector economy with investment and savings with fixed prices: Analytical, Graphical and algebraic explanation, numerical problem	
Unit-2: Aggregate Consumption and Investment		**15Hrs**
Chapter-3: Theories of Determinants of Consumption		3
1	Keynesian Psychological Law of consumption, determinants	
2	Permanent Income hypothesis of Milton Friedman	
Chapter-4: Investment		5
1	Types of investment	
2	Determinants of investment	
	a. rate of interest	
	b. marginal efficiency of capital: meaning and determinants	
Chapter-5: Concepts of Multiplier and Accelerator		7
1	Investment Multiplier: Meaning and assumptions	
2	multiplier leakages	
Unit-3: Monetary Economics		**15 Hrs**
Chapter-6: Money Supply		5
1	Concept of Money Supply, recent measures of money supply as suggested by RBI	
2	Determinants of money supply	
	a. high powered money	
	b. money multiplier	
3	The reserve ratio and deposit multiplier	
Chapter-7: Money demand		4
1. Cash transactions approach (only meaning) and		
2. Cambridge approach (Only Marshall's equation)		
3. The liquidity preference approach of Keynes		

Chapter-8: Inflation and Unemployment:	3
1 Phillips Curve	
2 Wage cut theory and employment	

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	30	30
Assignment/ Seminar	20	
Quiz	20	
Case study / Field work / Project work/ Industrial Visit and Prepare a report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

References	
1	Ackley, G. (1976). Macroeconomics: Theory and Policy. Macmillan Publishing Company, New York.
2	Ahuja H (2010) Macro Economics theory and policy, S Chand and Co
3	Dornsch,Bfr (2018) Macro Economics: Theory and Policy, Tata McGraw Hill
4	Hajdha, RJ and P.V. Pinag (2001). Foundations of Modern macroeconomics, Oxford University Press, Oxford.
5	Keynes, J.M. (1936). The General theory of Employment, Interest and Money. Macmillan, London.
6	Lucas, R. (1981). Studies in Business Cycle Theory. MIT Press, Cambridge Massachusetts
7	Sampatkhat, Na. Th., Principles of Macroeconomics, Scientific International P v Ltd., Publications New Delhi
8	Bhandhakar, Na. Th., [illegible] publishers publications, Kalburgi.
9	H. E. Kulkarni, Gerula [illegible], Vidyanidhi publications, Mysore.

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fourth Semester
Course Title	Monetary Economics		
Course Code	DSC-4.2	No. of Credits	3
Contact hours	42 Hours	Duration of SEA Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes: After the successful completion of the course, the student will be able to:

- Acquire knowledge of the supply and demand of Money
- Understand and interest in determination theories.
- Appreciate the Implications for Monetary Management
- Understand the relationship between inflation and unemployment
- Acquire knowledge of the working of business cycles

Content of Monetary Economics	**42 Hrs**
Unit-I: Money and the Economy	**14 Hrs**
Chapter-1 Role of Money and Monetary Standards - Money meaning, Gresham's law, - Role of Plastic money and changes in the nature of exchange function of money - Monetary standards- Gamma, metals and domestic - Metallic and Paper System of Note Issue - Principles and methods of note issue.	7
Chapter-2 Chapter -2. Money Supply - Definitions of Money supply: - Money supply and Value of Money, the velocity of circulation - classical and Keynesian views on the supply of money - Determinants of money supply - Money supply measures by RBI - M1, M2, M3, M4	7
Practicum: Assignment on Classical and Keynesian views on the Supply of money	
Unit-II: Demand for Money and Theories of Interest Rate	**14 Hrs**
Chapter-3: Demand for Money - Meaning and Importance - The Classical Approach - The Keynesian Approach - Liquidity preference - The Post- Keynesian Approaches - Friedman's Theory of the Demand for Money	7

Chapter-4: Theories of Interest Rate ❖ Interest rate and investment ❖ Income and output ❖ Interest rates and Demand for Money ❖ Classical Theory of Interest ❖ The loanable funds theory of interest ❖ Keynes's liquidity preference theory of interest **Practicum: Presentation on theories of Interest rate**	7
Unit III Banking	20
Chapter-5: Commercial Banking ❖ Nature, structure, functions of Commercial Banks ❖ The process of credit creation-purpose and limitations ❖ Liabilities and assets of Banks ❖ ATM/Internet Banking - Core banking ❖ Recent Reforms in Banking Sector in India	7
Chapter-6: Central Banking ❖ Role of central banks in developed and developing countries ❖ Functions of the Reserve Bank of India ❖ Methods of credit control: Quantitative and selective methods ❖ Recent monetary policy of RBI **Practicum: Write an assignment on the recent monetary policy of RBI**	7
References ❖ Bhole L.M. (1999). Financial Institutions and Markets. Tata McGraw Hill Co Ltd. New Delhi ❖ Crowther Geoffrey (1940). An Outline of Money. Thomas Nelson and sons Ltd. London ❖ Gupta, S.B. (1995). Monetary Economics. Institutions, Theory and Policy. S. Chand & Co., New Delhi ❖ Mannur, H.G. (1978). Monetary Theory and Practice. McDonald's and Evans Ltd. London ❖ Khan, M.Y. (1996). Indian Financial System. Tata McGraw Hill Co Ltd. New Delhi ❖ Reserve Bank of India, Report on Currency and Finance (Annual), Mumbai ❖ Smith, P.F. (1978). Money and Financial Intermediation: The theory and Structure of Financial ❖ Systems. Prentice Hall, Englewood Cliffs, New Jersey. Vaish, M.C. (2009). Monetary Policy. Vikas Publishing House New Delhi	

Pedagogy: Classroom lectures, tutorials, Problem solving exercises, field visit

Units Jointly follow the Practicums

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fourth Semester
Course Title	Karnataka Economy		
Course Code	OE 4.1	No. of Credits	3
Contact hours	42 Hours	Duration of SEA Exam	1 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to

CO1: Understand the nature of economic growth and problems of Karnataka state

CO2: Explain the process of structural growth in Karnataka Economy

CO3: Evaluate the policies and programmes undertaken by the Govt. of Karnataka for bringing about socio-economic development

Contents	42 Hrs
Unit-1: Karnataka Economy – An overview	**12 Hrs**
Chapter-1 Characteristics of Karnataka Economy o Features of Karnataka Economy o Trends and sectoral contribution of State Domestic Product and Per Capita Income o Measures to reduce regional imbalances – Dr. Nanjundappa Committee Report, Article 371J	4
Chapter-2: Human Resources o Human Resources: importance, Size and Health indicators o Human Development Index o Poverty and Unemployment- Eradication Programmes	4
Chapter-3: Natural Resources Management o Natural Resources: Importance and volume of different natural resources o Karnataka Environmental Policy	3
Practicum: conduct field visit to Forest Range or Mining and prepare the report	
Unit -2: Agriculture, Rural development, and Industries in Karnataka	**18 Hrs**
Chapter-4: Agriculture o Problems in Agriculture o Land Reforms	7

○ Cropping Pattern ○ Irrigation: importance, important irrigation projects and watershed development projects ○ Farmers Suicide – Causes and Solutions	
Chapter-5: Rural Development ○ Public Distribution System ○ Rural Development Programmes (brief) ○ Government Schemes for Rural Women	3
Chapter-6: Industries in Karnataka ○ Major Industries in Karnataka – Problems and Prospects ○ MSMEs – Problems and Measures ○ IT Industries in Karnataka ○ Industrial Finance in Karnataka ○ Industrial Policy of Karnataka	7
Practicum: visit to industrial units in local area and prepare the report. Focus on the aspects of Prof. D M. Nanjundappa Committee report	
Unit-3: Infrastructure and Finance in Karnataka	**12 Hrs**
Chapter-7: Economic Infrastructure ○ Transportation: Road, Rail, Water and Air Transport ○ Information and Communication Technology: Facilities	3
Chapter-8: Social Infrastructure ○ Drinking Water ○ Housing and Sanitation ○ Health and Education ○ Rural Electrification	4
Chapter-9: State Finance ○ Sources of Revenue: Direct and Indirect Taxes ○ Impact of GST on Karnataka economy ○ State Expenditure ○ State Finance Commission ○ Current State Budget (Brief)	5
Practicum: Discussion on State budget	

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	30	30
Assignment/ Seminar	20	
Test	20	
Case study / Field work/ Project work/ Industrial Visit and Preparation of report	-	20
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Strictly follow the Provision

References	
1	Government of Karnataka, Economic Survey (Various Issues)
2	Planning Department, Annual Publications, Government of Karnataka
3	Karnataka at Glance, Annual Publication Government of Karnataka
4	Misharah M A Ramappa, Karnataka Economy: Growth: Issues and Development, Himalaya Pub. House, New Delhi
5	Akhil Aziz and K G Viswan (Eds) Karnataka Economy
6	Government District Development Reports
7	Hanumantha Rao: Regional Disparities and Development in Karnataka
8	Keshavath Govida H.R. Karnataka Economy: Sapnaa Publications, Bangalore
9	Karnataka Ya. Pa., ಆರ್ಥಿಕತೆ ಅಭಿವೃದ್ಧಿ, Sahithyaprakasana publications, Kalburgi
10	Nagendappa D.S. Some Aspects of Karnataka Economy
11	Puttaswamaiah K, Karnataka Economy, Two Volumes

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fourth Semester
Course Title	Entrepreneurial Economics		
Course Code	OE 4.2	No. of Credits	3
Contact hours	42 Hours	Duration of SEA Exam	1 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to

CO1. Start your business as Entrepreneur

CO2. Enabling the students to find career opportunities in business.

CO3. To enable the students to gain knowledge and skills needed to run a business successfully

Contents	42 Hrs
Unit-1: Entrepreneur and Entrepreneurship	**12 Hrs**

Chapter 1: Entrepreneur and Entrepreneurship – Meaning, Definitions, Evolution, types- Characteristics, qualities, functions of entrepreneur - Distinction between entrepreneur and manager, Distinction between entrepreneur and intrapreneur.

Chapter 2: Role and importance of Entrepreneurship in economic development. Role and importance- Factors influencing entrepreneurship - Psychological, social, Economic and Environmental

Chapter 3: New generations of entrepreneurship viz. social, Health, Tourism and Women entrepreneurship, Barriers to entrepreneurship

Unit-2: Launching Entrepreneurial Ventures	**18 Hrs**

Chapter 4: Generation of ideas: Methods and process - sources of ideas - screening process- Assessing Opportunities/Challenges, pitfalls and critical factors of new venture.

Chapter 5: Business Plan: New Ventures: Steps involved in setting up a Business – identifying, selecting a Good Business opportunity, Market Survey and Research, Techno-Economic Feasibility Assessment

Chapter 6: Role of Innovation & Creativity: Innovation- Meaning and importance of innovation, Types of innovation, Sources of innovation, Conditions for effective innovation at Organization level

Chapter 7: Creativity: Concept and process of creativity, role and importance of creativity and mental blocks to creativity, branding, trademarks, patents, copyrights, and registered design protection, Methods of protecting innovation and creativity

Unit -3: Business and Entrepreneurial development	12 Hrs
Chapter 8: Entrepreneur-Nurturing- Awareness to an entrepreneur-Industrial Park (Meaning, features, & examples)-Special Economic Zone (Meaning, features & examples)-Financial assistance by different agencies-Lifestyle, Environmental Clearance, Product proven, Social relationship and orientation, Exemption from income tax-Quality Standards with special reference to ISO.	
Chapter 9: Business and Entrepreneurial development - Determining and acquiring required resources (Financial, Physical and Human)- Search for entrepreneurial capital- Debt vs Equity- Venture Capital Market, Angel Financing and Alternative sources of finance for Entrepreneurs. Entrepreneurship development programme (EDP) in India- Objectives, Phases and agents of EDP. - Government schemes for entrepreneurship – Make in India, Start-up India, MUDRA etc	

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/ Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Prepare a report		10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

References	
1	Donald F Kuratko, "Entrepreneurship – Theory, Process and Practice" 9 th Edition, Cengage Learning, 2014.
2	Khanka S.S., "Entrepreneurial Development" S Chand & Co Ltd., Ram Nagar, New Delhi, 2013
3	Kuratko and Rao, Entrepreneurship: A South Asian Perspective, Patrick Frederick Farrell, Business Ethics, Cengage Learning
4	Entrepreneurship, R. Ramesh, Ezhrans Publishers, New Delhi.
5	Entrepreneurship Development and Business Ethics, Rajeev Sharma – V.K. Global Pvt. Ltd., New Delhi
6.	SS Khanka, Entrepreneurial Development, S. Chand & Co. Delhi.

References	
7.	Desai, Vasant. Dynamics of Entrepreneurial Development and Management. Mumbai, Himalaya Publishing House
8.	Black, Paul E. Creativity, Innovation and Quality (Indian Economic Edition). New Delhi: Prentice-Hall of India. ISBN-81-203-1892-8
9.	Singh, Yogendra P. Emerging Trends in Entrepreneurship Development. New Delhi: ABHED
10.	Entrepreneurship Development and Business Plans - I.I.E. Pune, K.C. Bhat. Trends Publications (P) Ltd.
11.	Robert Hisrich and Michael Peters, Entrepreneurship. Tata Mc Graw- Hill. Vasant Desai, Entrepreneurship
12.	Marc J Dollinger, Entrepreneurship – Strategies and Resources, Pearson Education
13.	Vasudevamurthy Rao and Udai Pareek. Ed. Developing Entrepreneurship A Handbook
14.	Ravi P Mathai Rural Entrepreneurship A Framework a Developent Entrepreneurship –Handbook

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fourth Semester
Course Title	Economics and Law		
Course Code	OE 43	No. of Credits	3
Contact hours	42 Hours	Duration of SEA Exam	1 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course the student will be able to:

CO1. Comprehend the basic economic issues affecting the economy along with the related legal provisions

CO2. Acquire knowledge on the basic provisions of law relating to consumer services, business organizations, etc.,contract

CO3. To appreciate the understanding the law framework in order to frame the economic model closer to reality

CO4. To enable the students to understand the consequences of legal rules, primarily as an exercise in applied microeconomics, macroeconomics, industrial and organizational economics

Contents	42 Hrs
Unit-1: Economic analysis of law	**14 Hrs**
Chapter 1: Introduction to legal reasoning	7
• Efficiency	
• Markets and efficiency	
• Market failure	
• Coase theorem and related ideas	
Chapter 2: welfare economics	4
• Compensation principles	
• Social welfare function	
• Maximization problem	

Chapter 3: Economic Reasoning	3
• Nature of economic reasoning	
• Economic approach to law	
• History	
• Criticism	
Practicum:	
1. Group Discussion on Economic reasoning	
2. Assignment on Coase theorem and related issues	
Unit -2: An Introduction to Law and Legal Institutions	**12 Hrs**
Chapter 4: Law	4
• Definition	
• Juridical Nature of Law	
• Kinds of Law	
• General Law and Special Law	
• Kinds of Special Law	
Chapter 5: Civil law and the and the Common Law Traditions	4
• The institutions of the federal and State Court system	
• The nature of legal disputes	
• How legal rules evolve	
Practicum:	
1 Group Discussion on Civil law and the and the Common Law Traditions	
2 Assignment on the different kinds of Law	
Unit -3: Economic Laws	**18 Hrs**
Chapter 6: Law Relating to Consumer Activities	3
• Bargaining theory	
• Economic theory of contract	
• Defining tort law	
• Economics of tort liability	
• Definition of Consumer	

• Consumer protection, The Consumer Protection Act, 2019 • Consumer courts	
Chapter 7: Law of Business Organizations • Structure of firm — Kinds, Corporations, • Capital, Shares, Debentures, Insiders trading • SEBI, IRDA, MRTP, Role of SEBI,	4
Chapter 8: Macroeconomics and Law • Inequality: Concept theory of Distribution indices • Economic and social costs of poverty • Wealth distribution by Liability Rules • Taxation and efficiency • National and global environmental problems and international environmental agreements — their legal and economic implications	5
Procedure 1. Hold the moot court in the classroom and let there be discussion consisting of at least two or more different views on National and Global environment problems and acts 2. Discuss the case studies on Economic and social costs of poverty and consumer court judgements protecting the consumers	

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/ Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Report writing		10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Annexure follow the Procedure

References	
1	Bouckaert, B. and G. De Geest (Ed.) (1999), Encyclopedia of Law and Economics, Volume I to V, Edward Elgar Publishing Ltd., U.K.
2	Cooter, R.D. and T.S. Ulen, (2000), Law and Economics, 3rd Edition, Addison Wesley, New York
3	Dau-Schmidt, K.G. and T.S. Ulen (Ed.) (2000), Law and Economics Anthology, Addison Wesley, New York
4	Newman, P. (Ed.) (1998), The New Palgrave Dictionary of Economics and Law, Stockton Press, New York
5	Oliver, A.M. (1979), Law and Economics, George Allen and Unwin, London
6	Posner, R.A. (1998), Economic Analysis of Law, 5th Edition, Little Brown, Boston
7	Posner, R.A. and F. Parisi (Eds.) (1997), Law and Economics, Edward Elgar Publishing Ltd., U.K.
8	Massey, I.P. (1991), Administrative Law, Eastern Book Company, Lucknow
9	Indian Law Institute, Annual Survey of Indian Law, Indian Law Institute, New Delhi

Government of Karnataka

Model Curriculum

Program Name	BA in Economics	Semester	Fourth Semester
Course Title	Economics of GST		
Course Code	OE 4.4	No. of Credits	3
Contact hours	42 Hours	Duration of SEA Exam	1 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to

CO1: Acquire knowledge on indirect taxes with special reference to GST

CO2: Acquire the theoretical and application knowledge of GST and its Evolution in India

CO3: To enable the students to understand the GST Law, ITC, Valuation of supply and returns

CO4: Simple calculation of GST and Input Tax Credit, Valuation of Supply, Numerical on valuation and calculation of tax)

Content	42 Hrs
Unit-1: Introduction to Economics of GST	**14 Hrs**
Chapter 1: Indirect taxes before GST	3
• Indirect Taxes: Meaning, Types with examples • Constitutional framework of Indirect Taxes before GST (Taxation Powers of Union & State Governments) • Concept of VAT: Meaning, Variants and Methods	
Chapter 2: Reforms in Indirect Taxes	4
• Major Defects in the structure of Indirect Taxes prior to GST, Need for Tax reforms • Various committees on Tax Reforms	
Chapter 3: Introduction to GST	3
• Rationale for GST, • Constitution (101st Amendment) Act, 2016 • GST: Meaning, Overview of GST • Taxes subsumed under GST • Territorial Jurisdiction of GST	

• Multiple rates of GST	
• Recent reforms in GST	
Practicum:	
1. Group Discussions on Indirect Taxes subsumed prior to GST	
2. Assignment on Types of Indirect Taxes prior to GST and After introduction of GST	
Unit – 2 Fundamentals of GST	**12 Hrs**
Chapter 4: GST Structure in India	4
• GST: Advantages and Disadvantages	
• One Nation-One Tax	
• Structure of GST	
• Features of Single and Dual GST Model	
Chapter 5: Dual GST Mode and GST Council	4
• Dual GST Mode in India: (SGST, CGST, UTGST & IGST)	
• Goods and Services Tax Network (GSTN)	
• GST Council, Creation, Members, Decisions, Compensation to states	
• GST Network	
• Registration	
Practicum:	4
1. Group Discussions on advantages and disadvantages of GST	
2. Hold the mock of GST Council in the classroom and decide the different slabs of GST	
Unit -3: Taxes and Duties	**16 Hrs**
Chapter 6: Transactions and taxes covered and not covered	4
• Transactions and taxes covered under GST	
• Taxes and duties outside the purview of GST	
• Tax structure Comparison	
• Administration of Tax on items containing alcohol, petroleum products, tobacco products	
• Taxation on services	

Chapter 7: Levy and Collection of Tax • Taxable event- "Supply" of Goods and Services • Place of Supply, Within state, Interstate Levy and Collection • Import and Export, Time of supply • Valuation for GST- Valuation rules • Taxability of reimbursement of expenses • Exemption from GST, Small supplies and Composition Scheme, Classification of Goods and Services, Composite and Mixed Supplies	5
Chapter 8: Input Tax Credit • Eligible and Ineligible Input Tax Credit • Apportionment of Credit and Blocked Credits • Tax Credit in respect of Capital Goods • Recovery of Excess Tax Credit • Availability of Tax Credit in special circumstances • Transfer of Input Credit (Input Service Distributor) • Payment of Taxes, Refund, Doctrine of unjust enrichment	4
Practicum 1. Simple illustrations on calculation of GST and Input Tax Credit. 2. Valuation of Supply (Numerical on valuation and calculation of tax) 3. Simple calculation Adjustment of Input tax credit against output CGST, SGST, IGST	

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/ Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Progress report	--	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Institute follow the Practicum

References	
1	The Central Goods and Services Tax, 2017
2	The Integrated Goods and Services Tax, 2017
3	The Union Territory Goods and Services Tax, 2017
4	The Goods and Services Tax (Compensation to States), 2017
5	The Constitution (One hundred and First Amendment) Act, 2016
6	Gupta, S.S., GST: How to meet your obligations (April 2017), Taxmann Publications
7	Datey, V.S. (2018). Indirect Taxation. New Delhi: Taxmann Publications (P) Ltd.
8	Mehrotra, H.C. & Goyal, S.P. (2018). Indirect Taxes. Agra: Sahitya Bhawan Publications.

Dr.
The Chairman
BOS
Department of Economics
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CBCS Question Paper Pattern for UG Semester DSC, DSEC &OEC

Paper Code:		Paper Title:	
Duration of Exam	3 Hours	Max Marks	80 Marks
Instruction	Answer all the sections		

Section-A

1. Answer **All** the following sub-questions, each sub-question carries **One** mark	(10X1=10)

A.

B.

C.

D.

E.

F.

J.

Note for Section-A: Three sub-questions from each unit and remaining two sub-questions (2) from unit 3 to III

Section-B

Answer any **Four** of the following questions, each question carries **Five** marks	(4X5=20)

2.

3.

4.

5.

6.

7.

Note for Section-B: Minimum Two question from each unit (2) No 2 to 6

Section-C

Answer any **Three** of the following questions, each question carries **TEN** marks	(3X10=30)

8.

9.

10.

11.

12.

Note for Section-C: Minimum Two questions from each unit (2) No 8 to 12. Sub-questions such as 'a' and 'b' can be given for a question in section-C only

Dr.
The Chairman
DOS in ECO
Department of Economics
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National Education Policy 2020 (NEP 2020)

A REPORT ON THE CURRICULUM FRAMEWORK FOR FOUR-YEAR UNDER GRADUATE PROGRAM AND MASTER PROGRAM IN UNIVERSITIES OF KARNATAKA STATE UNDER NEP 2020

IN

ECONOMICS

Submitted to

KARNATAKA STATE HIGHER EDUCATION COUNCIL
JB. Prasanna Kumar Block, Bengaluru City University Campus
Y Ramachandra Road Gandhinagara
Bengaluru, Karnataka - 560009

September 2021

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Bengaluru, Karnataka – 560009

September 2021

PREAMBLE

Education empowers individual. A holistic education paradigm will effectively focus on developing knowledge, employable skill sets, appropriate attitudes and an overall personality. NEP is to create a framework supporting such an education system.

India's first education policy of the 21st century is 'National Education Policy 2020' proposes the revision and reimagining of all aspects of the education structure, including its regulation and governance. It seeks to create a new system that is aligned with the developmental aspirations & goals of 21st century education, including SDG4, while building upon India's traditions and value systems.

NEP aims for India to have an education system by 2040 that is poised to once with equitable access to the highest-quality education for all learners regardless of social or economic background and seeks to *"ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"* by 2030."

Vision of the National Education Policy 2020

- An education system that contributes to an equitable and vibrant knowledge society, by providing high-quality education to all.
- Develops 4 deep sense of respect towards the fundamental rights, Duties and Constitutional values, bonding with one's country, and a conscious awareness of one's role and responsibilities in a changing world.
- Instils skills, values, and dispositions that support responsible contribution to human rights, sustainable development and living, and global well-being, thereby reflecting a truly global citizen.

As India is enjoying the demographic dividend, which will last till 2055 and to reap the benefit, a good education policy was the need of the hour. Hence there is an of

hopes on the NEP, which are more or less the educators and to plug the shortcomings of the education system which exists in all over and discipline our education system. Expectations on NEP is high. As every good policy comes but as the implementation and active participation of its stake holders, so is the NEP. The success or failure of NEP lies in all our hands. Hence be all of us join our hands to making the NEP successful.

As mentioned in the National Education Policy-2020 vision of introducing choice curriculum for undergraduate studies under Choice Based Credit System (CBCS), the main objective of framing the curriculum of B.A.B.Sc. Econ Hons in Economics is to impart the students a holistic understanding of the subject giving substantial weightage to the core contents, skill, value-based and ethic enhancement. The syllabus has given the importance on the basic theories of the body of knowledge in Economics with due recognition of its wide spectrum. The ultimate goal of the syllabus is to enable the students to have an in-depth knowledge on the subject and maximize their scope of employment in every level of our. Adequate emphasis has been given on the new and emerging techniques and understanding of the subject under the changing regime and global context.

There is a need to strengthen the students to understand economic aspects of economics, its diverse subject areas not only in social sciences, but also among other natural and physical sciences. The curriculum lays focus on making new knowledge, acquiring new skills and capabilities in Economics producing an intelligent human resource serving the Economy and society.

Composition of Curriculum Draft Committee for Economics

Sl.No	Name & Organization	Designation
1.	Dr. B.P. Veerabhadrappa Vice-Chancellor, Kuvempu University, Shankaraghatta	Chairperson
2.	Dr. B. K. Nileemala Vice-Chancellor, K.S.A.V. University, Vijayapura	Member
3.	Dr. D.V. Gopalappa Professor, University of Mysore, Mysuru	Member
4.	Dr. S.T. Bagalkote Professor, Karnatak University, Dharwad	Member
5.	Dr. S.R. Keshava Professor, Bangalore University, Bengaluru	Member
6.	Dr. Vasavambe Professor, Kuvempu University, Koppa	Member
7.	Dr. Chidanand Kori Professor, Gulbarga University, Kalaburgi	Member
8.	Dr. Jayashila Professor, Tumkur University, Tumakuru	Member
9.	Dr. D.U. Patil Professor, Rani Channamma University, Belagavi	Member
10.	Dr. Basavaraja S. Bhatti Professor, VTU, Belagavi	Member
11.	Dr. Thangaraj K.S. Professor, Davanagere University, Davanagere	Member
12.	Dr. D. Ramesh Professor, Bangalore North University, Kolar	Member
13.	Dr. N.T. Sreedharan Assoc. Professor, Maharaja College, Mysuru	Member
14.	Dr. Manjunathaiah V. S. Assoc. Professor, DFGC, Madigeri, Madikeri Tq.	Member
15.	Dr. Venkatesh Assoc. Professor, A. V. Women's College, Ballari	Member
16.	Dr. K.B. Dhanalaxmi Principal, Sahyadri Arts College, Shivamogga	Member
17.	Dr. Jyothi Hiremath Assoc. Professor, Karnatak College of Arts, Dharwad	Member
18.	Dr. Prashanth Pandhari DFGC, Ramagiri, Mathwadi	Member
19.	Dr. Tejaswini B. Venkatesh Special Officer, Karnataka State Higher Education Council	Member Convener

PREFACE

The course curriculum for undergraduate studies using Outcome-based education (OBE) for B.A. B.Sc. in Economics (Basic Pass) is framed in the format as per the first and second semester syllabus and the same course content is proposed in this document. This exercise was undertaken as part of the nationwide curriculum restructuring initiative by the National Educational Policy-2020. Many online and offline meetings both formal and informal meetings were held by the committee taking the inputs from a number of colleagues from the universities and colleges who helped with crucial inputs as to the content of the course. This curriculum is a fresh exercise but also represents a continuous effort of deliberations with various stake holders.

A graduate is the one who acquires skills of identifying a problem and being responsible for the problem, acquires and appreciates problem solving skills, especially applying problem solving tools, spatially and temporally, identifies future needs of the community and contributes to these areas like corporate together creating an equitable environment, make towards creating employment opportunities and work domains for different skill sets and knowledge disciplines, hands with various social and economic institutions making life happier for the self and of the communities, leverages and explores various attitudes and skill sets for the betterment of the Nation, blending local and regional variations and utilizes them to benefit the economy.

Economics is a discipline which seamlessly connects the science with day-to-day economic demands of the people and policy making issues of the Government. Preparing and developing a curriculum for the subject of Economics is taught in many ways. Hence, a competent subject expert committee was constituted by Karnataka State Higher Education Council, Government of Karnataka. The assigned task of the committee was to design a model curriculum structure and syllabus for both under graduate and post graduate programmes of Economics.

The efforts are taken to incorporate subject scope that helps to create students with the ability of the problem-solving, critical thinking, analytical thinking, model building, thing, interactions, team work and collaboration etc. It is hoped that a student after a rigorous training in the B.A./B.Sc. Economics (Hons) degree will have lots of employment opportunities and will be an asset to the nation.

ACKNOWLEDGEMENT

The Chairman and Members of the UGC Model Curriculum Development Committee in Economics are grateful to Dr. D.P. Kothiyal, Secretary, Ministry of Higher Education, Science and Technology, IT and ST, Skill Development, Government of Karnataka for offering an opportunity to influence such vital area of core importance to the area of Economics and to develop model curriculum.

The Chairman and the Members of the Curriculum Committee are also thankful to Prof. B.Thimme Gowda, Chairman, Task Force Sub-Committee on Curricular Reforms in Higher Education, Vice-Chairman, KSHEC, Prof. Gopalakrishna Joshi, Executive Director, KSHEC and the office of KSHEC, Bangalore for their support during the preparation and development of the Curriculum Framework.

The Chairman and the Members of the Curriculum Committee are also thankful to the BOS Chairpersons and members of all the state Universities and all the state holders who gave their valuable input during the preparation of the model structure of the syllabus and model syllabus.

CONTENTS

EXECUTIVE SUMMARY

Economics is the study to understand the ways to make economic choices. By studying economics one can make the efficient choice by managing scarce resources such as money and time. It is not only helpful to increase the standard of living of the individual and their households and also to the policy decisions for the economic development of the Nation. Overall, the objective of Economics is to maximize well-being of Indians and thereby our ongoing Indian Economy. Here is mirror as a centre for developing ideas and human efforts.

The economic graduates will be trained to make the best choices among their seemingly infinite possibilities. These rigorously trained economists will play a vital role in the Economic Development of the nations.

The implementation of NEP 2020 has given the great opportunity to make the structure and syllabus of Economics more dynamic and rigorous. Hence the Curriculum committee in Economics has prepared the model structure and syllabus for the first two semesters as the first step towards it.

The committee thought has taken the contributions and suggestions of the BOS chairperson of all the cluster colleges. It is reflected that the courses according to the respective BOS of the Universities functions should start as per NEP. The committee has identified different category of courses to be studied by the Economics Students namely **Discipline Specific Core Course (DSCC), Ability Enhancement Course (AECC), Skill Enhancement Course (SEC), GE (Generic Elective), Discipline Specific Elective (DSE) etc., by keeping wide choices by considering the present context.**

The members of the committee, though felt that rigorous training methodology is important to the key to improve the quality of the economics students and the Nation. However, members should have an open mindset to accept it as it is.

Introduction

Economics is a popular and much sought-after course owing to its policy relevance and application to business as well as real life situations. Because of the conventional graduate programmes, Students obtained via such channels would end up with less practical orientation. Further, with changing technology, emergence of some issues like uncertainty, pandemics, climate change and business risk analysis, the skill requirements are changing. New success models demand newer skills to successfully manage the change. Therefore, keeping in mind the objectives of the NEP, the emerging skill needs and the progression of the student to various levels, the Committee Committee of Economics finalized the following programme courses to be taught for B.A (B.Sc and Honours).

Program Outcomes

The four-year Bachelor of Arts and Science (B.A. B.Sc Bachelor) in Economics programme and B.A/B.Sc in economics is designed with options for multiple entry and exit. The students will be taught theory as well as the practical aspects of Economic Issues. They would begin with fundamental concepts and then in the progress in higher semesters they would be introduced to more sophisticated and advance concepts.

The main focus would be on conceptual clarity and practical usage of the knowledge gained. To make the students to 'think like an economist' is the main motto of the curriculum. They will also be exposed to quantitative approaches and tools to understand the economic relationships and also to analyse the data for forecasting as well as evaluating macro-economic policies. With sound analytical and applicable to real world economic problems and policies, the graduates will be prepared to design and evaluate policies. The whole process aims at making them more inquisitive about the economic phenomena. After graduation, the students can apply their knowledge, skills and competencies across a broad range of occupations. They might a rewarding career in academia, business, corporate, industry, health care, government, or any field that uses the information to answer critical questions and inform decision-making.

Learning Objectives:

The Graduates will be/can/have

- Knowledge of the principles, methodologies, value systems, and thought processes employed in understanding economic behaviour of human beings.
- Ability to solve problems in microeconomics and macroeconomics.

- ✓ Understanding of contemporary economic issues and the impact of public and social policies on society
- ✓ Understanding of markets and how they function
- ✓ Ability to identify, formulate and solve problems related to global, national and local socio-economic environment
- ✓ Ability to design and conduct formal and field research projects
- ✓ Ability to design Questionnaires and other survey tools
- ✓ Ability to structure and analyze economic data with statistical tools, software and equipment
- ✓ Ability to critically evaluate academic and policy research in economics
- ✓ Ability to visualize and work as multidisciplinary units
- ✓ knowledge of professional and ethical responsibilities
- ✓ Ability to communicate effectively in both verbal and written form
- ✓ Confidence for self education and ability for life-long learning
- ✓ Participation and success in competitive examinations like UPSC IDAS Civil Services Indian Economic Service etc.
- ✓ Ability to prepare and understand simple financial statements

Program Outcomes:

The Programme outcomes (PO) are expected to be as under

- ➢ Students will be able to understand economic variables, methodologies, tools and analytical procedures.
- ➢ Students will be familiar with the knowledge and application of micro economics for the formulation of policies and planning.
- ➢ Students will learn to apply economic theories and concepts to contemporary social issues, as well as analysis of policies.
- ➢ Students will be able to understand the impact of government policies and will be able to assess the interventions of the policies on the person or trend.
- ➢ As the programme along with economic courses like statistics, mathematics, it enhances them to compete and assess the real situations of the economy including the size and changes of population, income pattern, and role of development with policies of savings and investments and social security measures adopted in the country.
  - Understand the basics of Quantitative techniques their applications

- Critically evaluate the regional economic development in India and abroad
- Understand research methods in economics
- Student develops an awareness of career choices and the options for higher studies

NEED FOR CURRICULUM DEVELOPMENT

As per the NEP 2020 guidelines, it is needed to formulate Curriculum to eliminate the disparities among the students studying in different Universities/Institutes. The need for the curriculum development in Economics emerges due to the following reasons

1. **Changing Economic Scenario:** The Indian Economy is witnessing a radical reversal of the changes in the economic policies since the introduction of the New Economic policy in 1991, followed by second and third generation reforms. India is not only among the FDI but at the same time also promoting Atmanirbhar Abhiyaan (A Self-reliant India). Market economy has expanded leading new opportunities and hence a new economics curriculum is prepared which helps the student to utilize the emerging
2. **Credit transfer:** Credit transfer is approved by the UGC and the Government that allows the allows students to transfer credits from their existing university to other UGC approved university. The same number of credits as in the Universities in Karnataka is the first step to persuade the credit transfer from University to University.
3. **Difference in Syllabus for BA and BSC in Economics:** All these years the BA and BSC in Economics had the same syllabus and as a part forming the committee has prepared the separate syllabus for BA and BSC in Economics which work in the needs of the changing times
4. **Skill Enhancement:** The new curriculum focuses more on hands on training, internship and thereby enhancing the skills of the students. The paper like data analytics etc further helps in earning the skills in the students

PEDAGOGY

The goal of economics pedagogy is to endow a student about conclusions and empower them with economic tools that help them in using the social issues which helps them with economic tools through which they can make the efficient choices in managing scarce resources such as resources, money and time

1. **Importance to theory as well as applications**: All these main economic concepts are concentrating more on making theoretical aspects, but the new curriculum gives importance to applications through exam based on testing, case studies, empirical studies etc.
2. **Utilization of ICT**: In order to make the critical and creative thinking among the students better the ICT tools will be useful includes case studies of research-led teaching, the presentations, websites and other media
3. **Research-based and research-led teaching**: The themes will be explained with applications. In order to give more hands-on training, the Projects and assessments are introduced in the economics curriculum. The students will do the research project of their choice under the supervision of the research guide
4. **Exposure to maths and statistics**: In order to apply economics in using tools of statistics and mathematics as economic analysis. Hence the curriculum is designed in such a way which gives more exposure to maths and statistics training
5. **Brain Storming Approach**: Students will be deliberately provided either in groups or as individuals to deliberately discuss the possible explanations or solutions to real Indian economic problems. The teacher will guide the process and help the students to have a right perspective and direction. This will help the teachers understand the stress of the student understanding and take corrective steps, but also helps in student centric learning in the classrooms
6. **Prominence to Indian economic contributors and Indian examples**: The recent economic thinkers was taught ignoring the contributors of Indian economists. The new curriculum also emphasis on the Indian economic contributors, their theories and applications. The teachers may highlight the Indian economic contributors and Indian examples in the pedagogy

Exit Options and Credit Requirements

A Certificate / Diploma/ Bachelor Degree or Bachelor Degree with Honours in Economics (eg. as BA / B.Sc. in Economics) is awarded at the completion of each progressive level.

Exit Option with	Certificate/ Diploma/ Degree Award
Successful completion of first year (two semesters) of the four years multidisciplinary undergraduate degree programme	Certificate in Economics [Arts/ Science]
Successful completion of second year (four semesters) of the four years multidisciplinary undergraduate degree programme	Diploma in Economics [Arts/ Science]
Successful completion of three year (six semesters) of the four years multidisciplinary undergraduate degree programme	Bachelor of Arts/ Science Degree in Economics
Successful completion of at least year eight semesters) of the four years multidisciplinary undergraduate degree programme	Bachelor of Arts/ Science Degree with Honours in Economics
Successful completion of five year (ten semesters) of the four years multidisciplinary degree programme	Master of Arts/ Science Degree with Honours in Economics

A student will be allowed to exit the course only after the 2nd semester and the 4th (last) exit after every semester by entry at various academic progressions based on the above mentioned earned proficiency certificate.

The validity of the exit credit will be for a maximum period same as specified by the academic bank of credits (ABC).

CONTINUOUS INTERNAL EVALUATION AND SEMESTER END EXAMINATION

Total marks for each course shall be based on continuous assessment and term end examinations. As per the decision of the Manitoba State Higher Education Council, it is essential to have uniform pattern of 30 : 70 for CIA and Semester End examinations respectively, among all the Constituent, their affiliated and autonomous colleges. The committee deliberated on the issue and suggested the following pattern for the CIE Marks:

Sl.No.	Parameters for the Examination	Marks
	Continuous Internal Evaluation (CIE)	
A	Continuous Comprehensive Evaluation (CCE)	20 Marks
B	Internal Assessment Tests (IAT)	20 Marks
	Total of CIE (A+B)	40 Marks
C	Semester End Examination (SEE)	60 Marks
	Total of CIE and SEE (A + B + C)	100 Marks

Evaluation process of CIE marks may be as follows:

- The first component (C1) of assessment is for 10 marks. This shall be based on two assignment, seminar, case study, field work, project work etc. The assessment and score process should be completed after completing 30% of syllabus of the course and within the first half of the semester.
- The second component (C2) of assessment is for 10 marks. This shall be based on two assignment, seminar, case study, field work, internship / industrial practices / project work etc. The assessment and score process should be based on completion of the remaining 70 percent of syllabus of the course of the semester.
- During the 3rd – 5th week of the semester, a seminar and examination of 3 hours duration shall be conducted by the University for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be "20".
- In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the competent teacher Program Coordinator / HOD and suitable decision taken accordingly.
- For assignments, field case study analysis etc., of C1 and C2, the students should bring their own journal sheets (of A4 size), graph sheets etc., required for such type assignments and these be checked by the concerned department using their rejoinder seal at the time of conducting such assignment / field etc.

The method for calculating assessment scores for Component 1 (C1) and Component 2 (C2) of a course shall be as under

Outline for continuous internal assessment for CI and CII

Activities	CI	CII	Total Marks
Session Test	10 marks	10 marks	20
Seminar, etc.	10 marks		10
Case study / Assignment / Field work / Project work/ Academic Economic Quiz/ Review of the Book, etc		10 marks	10
Total	20 marks	20 marks	40

Suggestive Template for CIT

Internal Assessment Test

B.A./B.Sc. and M.A./M.Sc. in Economics

Course Code: Name of the Paper:

Duration: 90 Minutes Total Marks: 40

SECTION-A

Answer any two of the following questions. Questions for testing conceptual clarity (2 X 10 = 20)

1.

2.

3.

SECTION- B

Answer any one of the following questions. Questions for testing the knowledge of theories and applications (1 X 20 = 20)

5.

6.

SECTION- C

Answer any one of the following questions. Questions for testing the critical ability of understanding (1 X 20 = 20)

7.

8.

Structure of B.A/B.Sc., B.A/B.Sc Honors and M.A/M.Sc.

In

Economics

Acronyms Expanded	
AECC	[illegible]
DSCC	[illegible]
SEC SDVS	[illegible]
OEC	[illegible]
DSE	[illegible]

B.A PROGRAM

Proposed Scheme of Teaching and Evaluation for B.A (Basic Basic with Economics as Major)

Sl No	Course Code	Title of the Course	Category of Course	Teaching Hours per Week (L+T+P)	SEE	CIE	Total Marks	Credits
1	Economics-01	Basic Economics-II	DSC	3+0+1	60	40	100	4
2	Economics-02	Environment Issues Economy	SEC	1+0+2	30	20	50	2
3	Open Electives-Economics	1. Statistics Applications 2. Mathematics Issues Economy 3. Development Studies	OEC	3+0+0	40	60	100	3
				Sub Total				09

Sl No	Course Code	Title of the Course	Category of Course	Teaching Hours per Week (L+T+P)	SEE	CIE	Total Marks	Credits
1	Economics-03	Basic Economics-II	DSC	3+0+1	60	40	100	4
2	Economics-04	Karnataka Economy	DSC	3+0+0	60	40	100	3
3	Open Electives-Economics	1. Contemporary Indian Economy 2. Co-operative Organization 3. Economics of Tourism Development	OEC	3+0+0	40	60	100	3
				Sub Total				10

Exit option with Certificate (40 Credits)

Sl. No.	Course Code	Title of the Course	Category of Course	Teaching Hours per Week (L:T:P)	SEE	CIE	Total Marks	Credits
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	Open Elective-I: Economics	1. [illegible] 2. Economics of Insurance 3. Economics of Human Development	OEC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
			Sub- Total					[illegible]

Sl. No.	Course Code	Title of the Course	Category of Course	Teaching Hours per Week (L:T:P)	SEE	CIE	Total Marks	Credits
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	Open Elective-I: Economics	1. Essentials of Economy 2. Entrepreneurial Economics 3. Economics and Law	OEC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
			Sub- Total					[illegible]

[illegible] with Diploma (44 credits): Choice one Discipline as Major, the other as Minor.

Semester V

Sl. No.	Course Code	Title of the Course	Category of Course	Teaching Hours/ Week (L+T+P)	CIE	SEE	Total Marks	Credits
1.	Economics CC9	Public Economics	DSC	4+0+0	40	60	100	4
2.	Economics CC10	Development Economics	DSC	4+0+0	40	60	100	4
3.	Economics	1. Agricultural Economics 2. Industrial Economics 3. Financial Economics (Course 3)	DSE	3+0+0	40	60	100	3
4.	Economics	Vocational Course – 1 1) Entrepreneurship Economics 2) Digital Economics	SEC	2+0+1	50	50	100	3
		Sub-Total						14

Semester VI

Sl. No.	Course Code	Title of the Course	Category of Course	Teaching Hours/ Week (L+T+P)	CIE	SEE	Total Marks	Credits
1.	Economics CC11	Environmental Economics	DSC	4+0+0	40	60	100	4
2.	Economics CC12	Indian Public Finance	DSC	4+0+0	40	60	100	4
3.	Economics	1. Labour Economics 2. Economics of Infrastructure 3. Urban Economics (Course 3)	DSE	3+0+0	40	60	100	3
4.	Economics	Vocational Course – 2 1. Micro Entrepreneurship Development 2. Project Planning & Management (Course 4)	SEC	2+0+1	50	50	100	3
		Sub-Total						14

Exit option with Bachelor of Arts, B.A/ Bachelor of Science, B.Sc. Basic Degree (130 credits)

Sl. No.	Course Code	Title of the Course	Category of Course	Teaching Hours per week (L+T+P)	ESE	CIE	Total Marks	Credits
1	Economics-C13	Advanced Microeconomics	DSC	4+0+0	60	40	100	4
2	Economics-C14	Financial Economics	DSC	4+0+0	60	40	100	4
3	Economics-C15	Econometrics	DSC	3+0+2	60	40	100	4
4	Economics	1. Population Studies 2. Urban Economics 3. Economics of Infrastructure (Choose 1)	DSE	3+0+0	60	40	100	3
5	Economics	1. Economics of Governance 2. Gender Economics 3. Economics of Health & Education (Choose 1)	DSE	3+0+0	60	40	100	3
6	B.A./B.Sc.	Research Methodology for Economics	DSC	3+1+0				3
		Sub- Total						21

Sl. No.	Course Code	Title of the Course	Category of Course	Teaching Hours per week (L+T+P)	ESE	CIE	Total Marks	Credits
1	Economics-C16	Econometrics and Time Analysis	DSC	4+0+0	60	40	100	4
2	Economics-C17	Behavioural Economics	DSC	4+0+0	60	40	100	4
3	Economics-C18	Environmental Economics	DSC	3+0+2	60	40	100	4
4	Economics	1. Institutional Economics 2. International Finance 3. Co-operative Economics	DSE	3+0+0	60	40	100	3
5	B.A./B.Sc.	Research Project						6
		Sub- Total						21

Award of Bachelor of Arts Honours (B.A. (Hons.) / Bachelor of Science Honours (B.Sc. (Hons.)) Degree in Economics (240 credits)

Semester IX

Sl. No.	Course Code	Title of the Course	Category of Course	Teaching Hours per Week (L+T+P)	SEE	CIE	Total Marks	Credits
1	Economics-CC6	Economic Policy Analysis	DSC	4+0+0	60	40	100	4
2	Economics-DS2	Experimental Economics	DSC	3+0+0	60	40	100	3
3	Economics-CC8	Computer Applications in Economics	DSC	2+0+2	30	40	100	3
4	Economics	1. Economics and Law 2. Global Economic Environment 3. Managerial Economics	DSE	3+0+0	60	40	100	3
5	BAES	Internship	-					2
Sub-Total								20

Semester - X

Sl. No.	Course Code	Title of the Course	Category of Course	Teaching Hours per Week (L+T+P)	SEE	CIE	Total Marks	Credits
1	Economics-CC9	Game Theory and its Applications in Economics	DSC	4+0+0	60	40	100	4
2	Economics-CC7	Economics of Capabilities Theory	DSC	3+0+0	60	40	100	3
3	Economics-CC8	International Finance	DSC	3+0+0	60	40	100	3
4	Economics	1. Economics of Financial Intermediation 2. Stock Market Analysis 3. Economics of Information Communication and Technology	DSE	3+0+0	60	40	100	3
5	BAES	Research Project	-					8
Sub-Total								20

Award of Master of Arts /Master of Science Degree in Economics (120 credits)

Note:

1. In lieu of the research project two additional elective papers/ Internship may be offered.
2. One Hour of Lecture is equal to 1 Credit
3. Two Hours of Practical is equal to 1 Credit
4. One Hour of Tutorial is equal to 1 Credit (Except Language)

Program Structure

Proposed Scheme of Teaching and Evaluation for B.Sc. with Economics as Core Subject

Discipline Core: Economics — Total Credits:

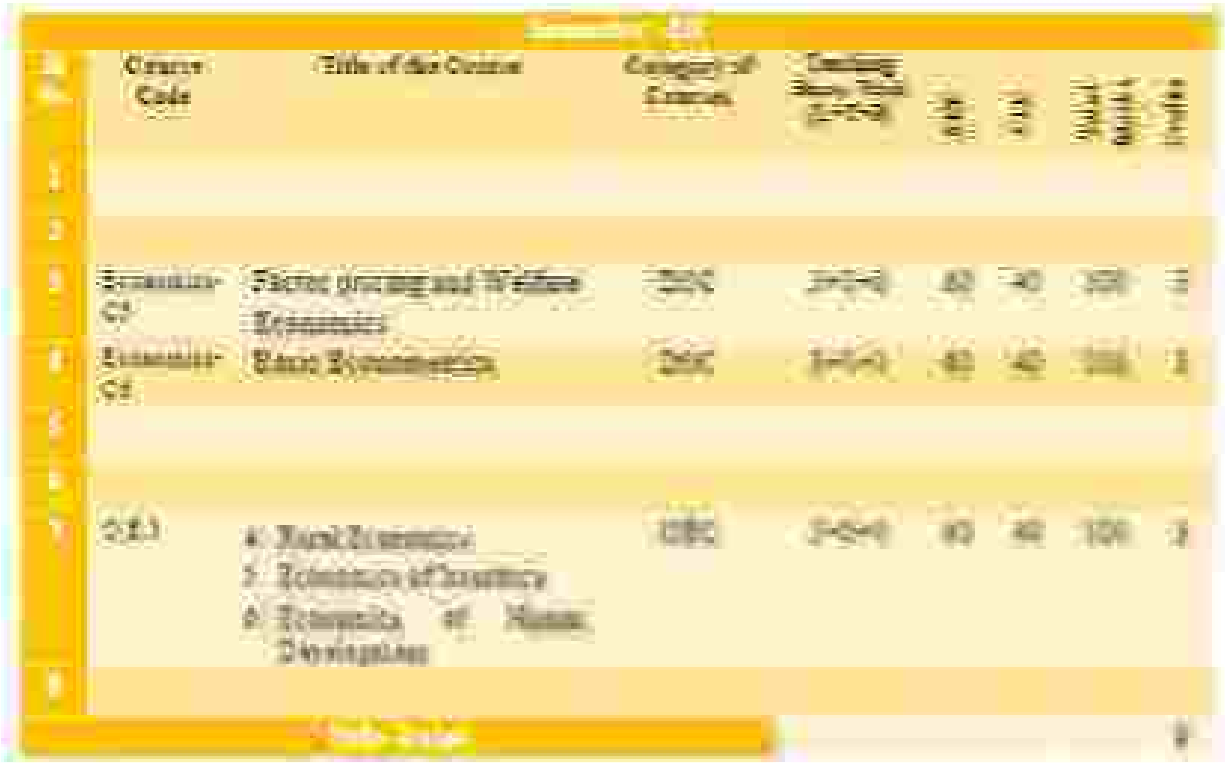
Semester: I

Sl. No	Course Code	Title of the Course	Category of Course	Teaching Hours/Week (L+T+P)				
1								
2								
3	Economics-01	Microeconomics	DSC	3+0+0	40	40	100	3
4	Economics-02	Mathematical Economics for	DSC	3+0+0	40	40	100	3
5								
6								
7	2.5.1	a. Kautilya's Arthshastra b. Development Policies c. Managerial Economics	OEC	3+0+0	40	40	100	3
8								
		Sub-Total						9

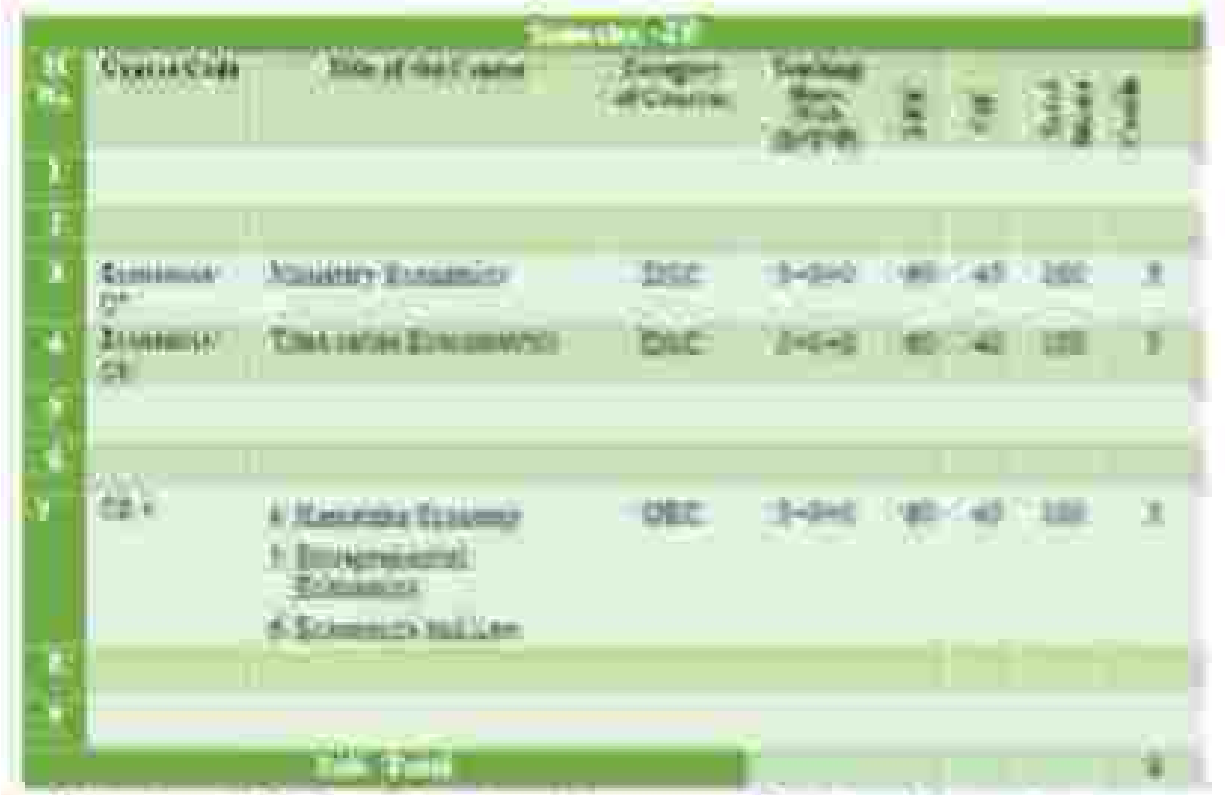
Semester: II

Sl. No	Course Code	Title of the Course	Category of Course	Teaching Hours/Week (L+T+P)				
1								
2								
3	Economics-03	Macroeconomics	DSC	3+0+0	40	40	100	3
4	Economics-04	Statistics for Economics	DSC	3+0+0	40	40	100	3
5								
6								
7	2.5.2	a. Contemporary Indian Economy b. Industrial Development c. Economics of Business Environment	OEC	3+0+0	40	40	100	3
8								
		Sub-Total						9

Exit option with Certificate (45 credits)

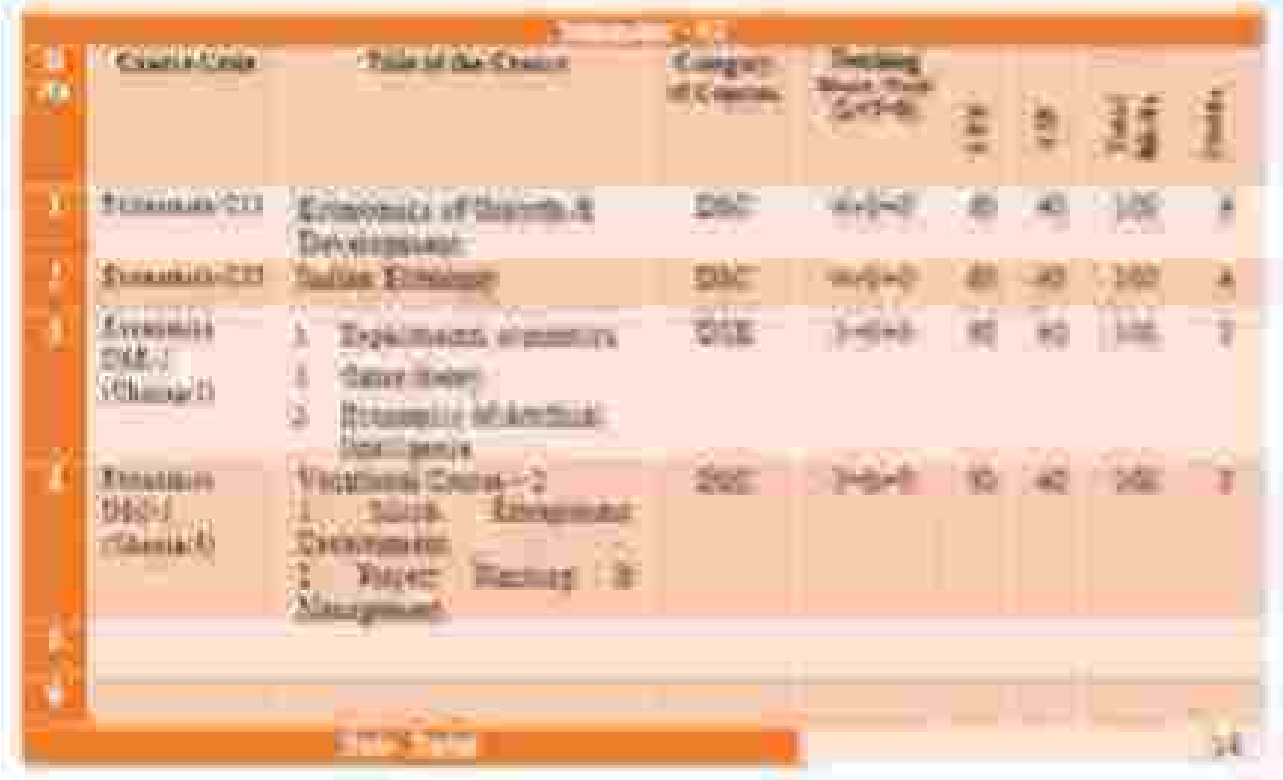


Course Code	Title of the Course	Category of Course	Teaching Hours per Week (L+T+P)				
	Elective (Discipline and Interdisciplinary Elective)	DSEC	3+0+0	40	40	100	3
	Basic Econometrics	DSEC	3+0+0	40	40	100	3
	a. Rural Economics b. Economics of Disability c. Economics of Human Development	OEC	3+0+0	40	40	100	3
							9



Course Code	Title of the Course	Category of Course	Teaching Hours per Week (L+T+P)				
	Industrial Economics	DSEC	3+0+0	40	40	100	3
	Urban and Regional Economics	DSEC	3+0+0	40	40	100	3
	a. Agricultural Economics b. Environmental Economics c. Economics of Health	OEC	3+0+0	40	40	100	3
							9

Exit option with Diploma (60 credits): Choose any one Discipline as Major, the other as the Minor



Exit option with Bachelor of Science B.Sc Basic Degree (120 credits)

Semester – VII

Sl. No.	Course Code	Title of the Course	Category of Course	Teaching Hours/Week (L-T-P-S)	Marks			
1	[illegible]	Advanced [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	Financial Economics	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	Computer applications in [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	Elective DSE-I (Choose 1)	1. [illegible] 2. [illegible] 3. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	Elective DSE-II (Choose 1)	4. [illegible] 5. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	Project DSC-3	[illegible]	[illegible]	[illegible]				[illegible]
		Sub Total						[illegible]

Semester – VIII

Sl. No.	Course Code	Title of the Course	Category of Course	Teaching Hours/Week (L-T-P-S)	Marks			
1	[illegible]	Advanced [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible] and [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible] with R for [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	Elective DSE-III (Choose 1)	1. [illegible] 2. [illegible] 3. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	Project DSC-4	[illegible]	-					[illegible]
		Sub Total						[illegible]
	Grand Total (1 to VIII) (Only Economics)							[illegible]

[illegible] with Bachelor of Science, B.Sc. Basic (Hons.) Degree (176 credits)

Semester: XX

Sl. No.	Course Code	Title of the Course	Category of Course	Teaching Hours Per Week (L-T-P)				
1	[illegible]	[illegible] Course	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]
		[illegible]						[illegible]

Semester: X

Sl. No.	Course Code	Title of the Course	Category of Course	Teaching Hours Per Week (L-T-P)				
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]						[illegible]
		[illegible]						[illegible]

[illegible] Credits

Students who earn 210 credits will get M.Sc. in Economics

List of Open Electives

Open Elective Pages

7. [illegible]
8. [illegible]
9. [illegible]
7. [illegible]
8. [illegible]
9. [illegible]
7. [illegible]
8. [illegible]
9. [illegible]
7. [illegible]
8. [illegible]
9. [illegible]

SYLLABUS FOR FIRST TWO SEMESTERS OF BA
AND
BA HONORS
In
ECONOMICS

BA (Hons) Economics

Semester I

DSC 1.1: Basic Economics – I (Economic Analysis-I) 3 credits

Course Outcomes:

By the end of the course the student will be able to:

1. Identify the facets of an economic problem.
2. Learn basic economic concepts and terms.
3. Explain the operation of a market system.
4. Analyse the productive and cost relationships of a business firm.
5. Establish the pricing decisions under different market structures; and
6. Use basic cost-benefit calculations as a means of decision making (i.e., thinking like an economist)

Content of Basic Economics-I	42 Hrs.
Unit – 1 : Basic Concepts in Economics	24
Chapter No. 1 Nature and Scope of Economics • Meaning of Economics • Origin of Economics • Scope of Economics • Methods of Economics • "Is it Only Economics"	3
Chapter No. 2 Thinking Like an Economist • Thinking Like an Economist • The Economist as Scientist • The Economist as Policy Adviser • Economic Facts	8
Chapter No. 3 Economic System • Types of Economic Activities • Organization of Economic Activities • Central Plan of Economic Activities • Evolution of the Present Economic Systems	3
Practicum: 1. Group Discussion on Choice Problem 2. Assignment on Types of Economic Systems	
Unit – 2 Demand, Supply and Markets	24
Chapter No. 4 Firms and Households • Meaning of Firms and Households • Relationship Between Firms and Households • Input Markets • Output Markets	6
Chapter No. 5 Demand and Supply • Individual Demand • Market Demand • Demand Determinants • Supply and its Determinants • Market Equilibrium	3

Chapter No. 4: Elasticity and its Measurement • Types of Elasticity of Demand • Price, Income and Cross Elasticities • Measurement of Elasticity of Demand • Determinants of Elasticity of Demand Practicum: 1. Estimation of demand and supply functions 2. solving an equilibrium problem	3
Unit – 3 Cost and Market Structures	24
Chapter No. 7: Production and Cost • Production Function • Total Production Cost • Marginal Production Cost • Average Production Cost • Relation Functions	4
Chapter No. 8: Accounting and Economic Costs • Cost in the Short run • Fixed Cost and Variable Cost • Marginal Cost • Long run AC and MC • TR, MR, AR	8
Chapter No. 9: Market Structures • Markets • Perfect and Imperfect Competition • Features of Market Competition • Monopoly, Oligopoly and Monopolistic Competition • Pricing Strategies	9
Practicum: 1. Calculation of various costs and comparing them with production concepts, a case project can be taken up wherever possible 2. Studying the role of pricing strategies through a project/ case studies	
Reference Books/Material: 1. Cohen, A. J. (2010). Microeconomics for Life: Smart Choices for All + MyEconLab Extended with Pearson eText (updated 2nd ed.). Toronto, ON: Pearson Canada Inc. Type: Textbook ISBN: 9781256119550 2. Cohen, A. J. (2010). Microeconomics for Life: Smart Choices for You + MyEconLab Extended with Pearson eText (2nd ed.). Toronto, ON: Pearson Canada Inc. Type: Textbook ISBN: 9781256119566 3. Case Karl E. and Fair Ray C. Principles of Economics. Person Education Asia, 2014 4. Mankiw N. Gregory. Principles of Economics. Thomson, 2013 5. Stiglitz J.E. and Walsh C.E. Principles of Economics. W.W. Norton & Co. New York, 2012	

Semester I

Course Title: DSC 1.3: Contemporary Indian Economy	
Total Contact Hours: 40	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/ Exam: 2 Hrs
Model Syllabus Authors:	Summative Assessment Marks: 60

Course Prerequisite(s):

Course Outcomes (COs):

At the end of the course the student should be able to:

I. Understand the current problems of Indian Economy
II. Identify the factors contributing to the present growth of the Indian economy
III. Evaluate impact of LPG policies on economic growth in India
IV. Analyse the sector specific policies adopted for enhancing the agricultural gains
V. Review various economic policies adopted

Content of Course 1	40 Hrs.
Unit – I LPG POLICIES, ECONOMIC REFORMS AND AGRICULTURE	14
Chapter No. 1 Recent Issues • Features and Impact of LPG • Trade Liberalization policy • Demographic Dividend • Trends in tourism and employment in global perspective	4
Chapter No. 2 Urbanization and governance • Urbanization and Smart City Mission • Informal sector • Impact of COVID-19 Pandemic • Atma Nirbhar Bharat Abhiyan	4
Chapter No. 3 Economic Reforms and Agriculture • Agriculture and WTO • Price policy and Subsidies • Commercialization and Diversification • Policy Distortions: Issues • Impact of public expenditure on agricultural growth • Agrarian Crisis: Declining Farm Income, Indebtedness	6
Practicum 1. Visit/ project to examine the impact of pandemic on loss of livelihood/ migration of population 2. Visit/ Visit to industrial/ tea garden/ plantation	
Unit – I EVOLVING POLICIES: FISCAL POLICY	14
Chapter No. 4 Industrial Policy • New Industrial Policy and changes • Public sector reforms • Privatization and Disinvestment	4

• Competition Policy	
Chapter No. 5: Business	2
• Role of Private Business	
• Performance of Public Sector	
• Role of MSME in Industrial Development	
• Steps to Ease Development of Economic and Social Infrastructure	
• Regional Disparities in Industry	
The teacher should include the latest policy of the government	
Chapter No. 6: Fiscal Policy	
• Tax, Expenditure, Budgetary Deficits	
• Receipts and Fiscal Policies	
• Public Debt management and reforms	
• Fiscal Responsibility and Budget Management (FRBM) Act	
• GST: Fiscal Federalism and Fiscal Consolidation	
• Recommendations of the Current Finance Commission	
Practicum: Measurements to assess the Success Criteria	1
Unit – 3 MONETARY POLICY, FOREIGN TRADE AND INVESTMENT	14
Chapter No. 7: Monetary Policy	3
• Organisation of India's money market	
• Financial sector reforms	
• Interest rate policy	
• Review of monetary policy of RBI	
Chapter No. 8: Money and Capital Markets	
• Working of SEBI in India	
• Changing roles of the Reserve Bank of India	5
• Commercial banks	
• Development Banks in India	
• Foreign banks and Fast-growing financial companies	
• Analysis of price behaviour in India: Anti-inflationary measures	
• Demonetisation and its impact	
Chapter No. 9: Foreign Trade and Investment	
• India's foreign trade	
• India's Balance of payment crisis 1991	
• New Exchange Rate Regime, Rupee and its convertibility	6
• Capital account convertibility	
• FDI + Trends and Pattern	
• New EXIM policy, WTO and India	
• Bilateral and Multilateral Trade Agreements and Concessions	
Practicum:	
1. Comparison and analysis of Wholesale Price Index, Consumer Price Index components and trends	
2. Group Discussion on India's trade policies and trade agreements	
References:	
• Bardhan, P. K. (4th Edition) (1998): The Political Economy of Development in India, Oxford University Press, New Delhi.	
• Bhattacharya, Amita (2017): A Manual of Development Economics, Pearson Publication	
• Divan, Romesh J. (ed.) (1998): The Area Development Planning and Urbanization in India, Delhi: ICSP	
• Dutt, Ruddar and K.P.M. Sundharam (2017): Indian Economy, S Chand & Co. Ltd. New	

Delhi • Ahluwalia, Montek S. (2011), India's Reform Process: Gains and Challenges, in Montek Singh Ahluwalia, Shankar Acharya and Nicholas Stern (eds.), Challenges and Opportunities: Policy Perspectives on Sustaining Growth in India, Oxford University Press, New Delhi. • Bhalla, G.S. (1994), India's Economic Crisis: Reasons and Results, Centre for Study of Developing Societies, New Delhi. • Datt, Rudder and K.P.M. Sundharam (2009), Indian Economy, S. Chand & Co. Ltd., New Delhi. • Kapila, Uma (ed.), Indian Economy since Independence, Academic Foundation. • Misra, S.K. and V.K. Puri (2011), Indian Economy: Its Development Experience, Himalaya Publishing House. • Mukherji, Rahul et al. (2014), India's Economic Transition: The Politics of Reforms, edited by Rahul Mukherji, Oxford University Press, New Delhi. • Nayyar, Deepak (2006), Economic Liberalization in India: Analysing the Reforms, Oxford University Press, New Delhi.	

Pedagogy

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Internal Test	30%
Assignment	20%
Presentation/ Project	20%
Total	100

Date Course Co-ordinator Subject Committee Chairperson

Semester I

Course Title: GEC 1.5: Kenotha's Architecture (GEC)	
Total Contact Hours: 42	Course Credit: 3
Formative Assessment Marks: 40	Duration of End Exam: 3 Hrs
Model Syllabus Authors	Summative Assessment Marks: 60

Course Pre-requisite(s): 12th Standard Pass

Course Outcomes (COs):

At the end of the course the student should be able to

1. This course will enlighten the students about the ancient fundamentals of the political and economic constituents, which will throw out a basic idea of understanding the subject matter. This will help them to understand the upcoming needs in the field of policy making for some of national and international level.
2. This course deals with the concepts of Constitution, as it projects on all the dimensions needed to be understood by students about the present socio-economic and political issues and legislations of the state.

Unit	Description	Hours
I	Chapter 1: Introduction to the Constitution Chapter 2: Various definitions of Indian Constitution by scholars. Chapter 3: Basic of Kenotha's Constitution among others.	4 3 4
II	Chapter 4: Significance of dealing with provisions - Introduction to Taxes in India - The methods of preparing a compendium, steps and techniques of writing a compendium Chapter 5: Government Procedure- Appointment of the principal duties of Government agents/officials, travels, spies, rank and precedence, Telegraphs and Correspondence Chapter 6: Laws of Inheritance - Determination of Rules of Agreement, Determination of legal Disputes, Division of Collections, Special clauses in Constitutional Documents, Honorariums	7 7 7
III	Chapter 7: Economic Questions: Duty of citizens of the new collection of revenue, duties of a Chancellor (constitutional), form every of establishment of the Minister provisioned for the encouragement of research expenditure, Law and Public Expenditure Accounts, Recovery of Debts, Disposal of the debt, Description of the gifts, Remission of Trade Chapter 8: Political Questions: Foreign Policy: War, Continuation of Peace, Agreement of Peace with or without Settlement, Double Policy, Cycle of Time, Conduct of Negotiations, Secret agents, Plan of treaties. Chapter 9: Defensive and Warlike Planning of different Provinces: War	9 7

Suggested readings:

1. Administrative of Kenotha by T. Gangadhar Rao, Constitutional Functions Rajendrapur, Vijayawada

[illegible]

Pedagogy

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible]

Semester I

Course Title: [illegible]
Total Contact Hours: 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA in Hours: 2 Hrs
Model Syllabus Authors:	Summative Assessment Marks: 60

Course Pre-requisites: [illegible]

Course Outcomes (COs):

At the end of the course the student should be able to

i. Trace the evolution of Indian Economy
ii. Identify the structural features and constraints of the Indian economy
iii. Formulate planning models and strategies adopted in India
iv. Analyze the sector specific problems and recommend remedies to small economic growth
v. Review various economic policies adopted

Unit	Description	Hours
I	Features and problems of Indian Economy	14
	Chapter 1: Features of Indian Economy	6
	• [illegible]	
	• [illegible]	
	• [illegible]	
	• [illegible]	
	Chapter 2: Issues in Agriculture sector in India	8
	• [illegible]	
	• [illegible]	
	• [illegible]	
	• [illegible]	
	Chapter 3: Industrial and Service Sector	8
	• [illegible]	
	• [illegible]	
	• [illegible]	
	• [illegible]	
	• [illegible]	
	Practicum: [illegible]	
	2. [illegible]	
II	**Economic Policies**	12
	Chapter 4: Planning	8
	• [illegible]	
	• [illegible]	
	• [illegible]	
	• [illegible]	
	• [illegible]	
	Chapter 5: Monetary policy in India	4
	• [illegible]	

	• [illegible]	
	Chapter 6: Fiscal Policy in India	
	• Tax Revenue	4
	• Public expenditure	
	• Budgetary deficits	
	• Fiscal reforms	
	• Public debt management and reforms	
	• Centre-state Finance Relations and Finance commissions in India	
	Practicum: Assignment on comparative analysis of India's growing Tax revenue and Fiscal Deficit over the years	
III	External sector and Nature of Reforms in India	12
	Chapter 7: India's foreign trade	4
	• Salient features	
	• Value, composition and direction of trade	
	• Balance of payments	
	• Gist of recent trends in export and import policies	
	• Tariff wars	
	• Exchange rate	
	Chapter 8: Post-LPG strategies	8
	• Stabilization and structural adjustment packages	
	• Liberalization Privatization Globalization (LPG) Model	
	• Impact of LPG Policies on Indian Economy	
	Chapter 9: NITI Aayog	4
	• Organization	
	• Functions	
	Practicum: Conclusion of Skill put exchange rate policies. Assignment and group discussion on the impact of LPG Policies	

Suggested Readings:

1. Dutt Ruddar and K P M Sundaram (2016): Indian Economy, S Chand & Co Ltd, New Delhi.
2. Ahluwalia I J & V K Puri (2016): Indian Economy and its Development experience, Kitabistan Publishing House.
3. Kapila Uma (Indian Economy: Policies and Performance, Academic Foundation)
4. Bardhan, P.K. (10 Editions) (1998): The Political Economy of Development in India, Oxford Uni Press Paperback, New Delhi.
5. Tyagi, B. (1969): India's Economic Policy: Prospects for the Twenty First Century, Viking, New Delhi.

Pedagogy

Formative Assessment	
Assessment Occasions/ type	Weightage in Marks
Internal Test	50%
Assignment	50%
Presentation/Seminar	50%
Total	100

Date Course Co-ordinator Subject Committee Chairperson

Semester 3

Course Title: DEC 3.5: Development Studies (DEC)	
Total Contact Hours: 45	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA: 2 Hrs
Model Syllabus Authors	Summative Assessment Marks: 60

Course Pre-requisites: 12th Standard Pass

Course Outcomes (COs):
At the end of the course the student should be able to:

i. Graduates will be able to excel in higher studies and be successful professionals
ii. Graduates will get a sound foundation of fundamentals required to solve societal/economic problems and also to pursue higher studies.
iii. Graduates will demonstrate core knowledge to appreciate of the dimensions of contemporary developmental issues, to generate results-driven solutions, increasing ethics and human values to develop orientation towards effective communication and critical analysis, and to appreciate the interrelationships among disciplines to duly relate to everyday realities.
iv. Graduates will demonstrate professional and ethical attitude, effective Communication skills, teamwork skills, multidisciplinary approach, and an ability to relate the contemporary issues to the framework of the principles, methodologies, value systems, and thought processes employed in human sciences.

Unit No.	Description	No. of Hrs
I	**Development: Meaning and Current Challenges**	15
	Chapter 1: Meaning of Development • The concept of development • Growth and Development • Transition from traditional to globalized society	3
	Chapter 2: Modern economic growth • Characteristics of modern economic growth • Regional and global disparities • Common characteristics and Constraints among developing countries	5
	Chapter 3: Current Development Challenges • Inequality • Migration • Conflicts Environment	7
II	**Approaches to Development**	15
	Chapter 4: Development Ethics • Concept and meaning • Principles and importance of Development Ethics	4
	Chapter 5: Assessing Development • Per capita income • PQLI • Gender and Capabilities • HDI	6
	Chapter 6: Approaches of Development • Adam Smith	5

	• [illegible] • [illegible] • [illegible] • [illegible] • [illegible] Practicum:	
III	**Theories and Concepts Issues in Development**	21
	Chapter 7: Theories of Development • [illegible] • [illegible] • [illegible] • [illegible] **Chapter 8: The Industrial Revolution** • [illegible] • [illegible] • [illegible] • [illegible] **Chapter 9: Environment and development** • [illegible] • [illegible] • [illegible] • [illegible] • [illegible] Practicum:	4 5 12

Suggested Reading:

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]

Pedagogy:

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Total	[illegible]

Date Course Co-ordinator Subject Committee Chairperson

Semester II

Course Title: DSE 2.2: Basic Economics II	
Total Contact Hours: 45	Course Credit: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 2 Hrs.
Model Syllabus Authors:	Summative Assessment Marks: 60

Course Pre-requisite(s): Basic Economics I

Course Outcomes (COs):

At the end of the course the student should be able to

1. Understand the operation of the macro economic system.
2. Calculate various income and output aggregates.
3. Explain the relationship between macroeconomic aggregates.
4. Analyze the impact of business cycles and policies on private and public decision making.
5. Evaluate the macroeconomic policies for solving major problems like poverty and unemployment.

Unit	Description	Hrs.
I	**Macroeconomic Concepts and Relationships**	22
	Chapter 1: Macroeconomy	
	• Introduction to National Income Accounting	
	• Concepts of GDP, GNP and various income	
	• Approaches to calculating GDP: product method, income method, GDP	
	• Limitations of the GDP concept	
	Chapter 2: Monetary economy	
	• Characteristics	
	• The barter economy	
	• The supply of money and liquidity premium	
	• Credit creation	
	Chapter 3: Inflation	
	• Meaning and causes of inflation	
	• Calculating inflation rate	
	• Impact of inflation	
	Practicum: 1. Understanding the relationship between various GDP concepts used in India's GDP accounting.	
	2. Estimating the components of money supply and comparing the various parts (M0 to M4)	
II	**Macroeconomic Challenges and Policies**	23
	Chapter 4: Macroeconomic challenges	
	• Unemployment	
	• Economic Growth	
	• Business Cycles	
	Chapter 5: Monetary Policy	
	• Overview	
	• Instruments	
	Chapter 6: Fiscal Policy	
	• Public Goods vs. Private Goods	
	• Fiscal functions and role of government. (Central, municipal and state)	
	• Characteristics of public goods	

	• [illegible] Practicum: 1. Reviewing the economic policy of India 2. Assignment to identify the various sectors of economy and its major issues and hurdles	
III.	Public Policy and Globalization	18
	Chapter 7: Private and public policy • Meaning, economic and types of taxes • Private Sector vis-a-vis role of India	6
	Chapter 8: International Trade • The economic basis for trade—Absolute advantage and comparative advantage. • Terms of trade • exchange rate • Trade Barriers—tariffs, subsidies and quotas Balance of Payments- The current and capital account	9
	Chapter 9: Globalization • Meaning • Implications • Pros and cons of Globalization Practicum: Survey on identification of taxes, calculating the components of GDP of India	3

References (optional):

1. Cahuc, A. J. (2020). Macroeconomics for Life: From Chaos to All = Macro Économie pour Tous (Second edition, updated ed.). Toronto, ON: Pearson Canada Inc. (Type: Textbook; ISBN: 9780134738222)
2. Cahuc, A. J. (2020). Macroeconomics for Life: From Chaos to All = Macro Économie pour Tous (2nd ed.). Toronto, ON: Pearson Canada Inc. (Type: Textbook; ISBN: 9780134738222)
3. Case, K.E., and Fair, R.C. Principles of Economics. Pearson Education Asia, 2014.
4. Mankiw, N. Gregory. Principles of Economics. Thomson, 2012.
5. Mishkin, F.S. and Eakins, S.G. Principles of Economics. N.P. Harris & Co. New York, 2011.

Pedagogy:

Formative Assessment	
Assessment Occasions/ type	Weightage in Marks
Internal Test	30%
Assignment	20%
Presentation/ Project	50%
Total	100

Date Course Coordinator Subject Committee Chairperson

Semester II

Course Title: DSE 2.2: Karnataka Economy	
Total Contact Hours: 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA: 2 Hrs
Model Syllabus Authors	Summative Assessment Marks: 60

Course Pre-requisite(s):

Course Outcomes (COs):

At the end of the course the student should be able to:

1. Understand the nature of economic growth and problems of Karnataka state
2. Explain the process of structural growth in Karnataka economy
3. Evaluate the policies and programmes undertaken by the Govt. of Karnataka for bringing about socio-economic development

Unit	Description	Hours
I	Characteristics of Karnataka Economy	11
	Chapter 1: Basic Issues • Size, Growth, Position and Trend • Regional variations in growth and development	5
	Chapter 2: Human and Natural Resources • Population • Human Development Index • Poverty and Unemployment – Anti Poverty and Employment generation Programmes • Functioning of Planning in Karnataka	6
	Chapter 3: Natural Resources in Karnataka • Land, Water, Forest and mineral resources in Karnataka Karnataka Sustainable Development Goals • Karnataka environment Policy	5
	Revision	
II	Agriculture and Industries in Karnataka	31
	Chapter 4: Agriculture in Karnataka • Importance of Agriculture • Problems in Agriculture • Land Reforms • Cropping Pattern • Irrigation • Watershed Development • Dry Land Farming • Farmer's Suicide – causes and solutions	9
	Chapter 5: Rural Development • Policy Institutional Credit • Rural Development Programmes	7 6
	Chapter 6: Industries in Karnataka	

	• [illegible] • [illegible] • [illegible] • [illegible] • [illegible] Practices	
III	Infrastructure and Finance	12
	Chapter 7: Infrastructure in Karnataka • [illegible] • [illegible] **Chapter 8: Social Infrastructure** • [illegible] • [illegible] • [illegible] • [illegible] **Chapter 9: State Finances** • [illegible] • [illegible] • [illegible] • [illegible] • [illegible] • [illegible] • [illegible] Practices	[illegible] [illegible] [illegible]

References (indicative)

1. Government of Karnataka, Economic Survey (Various Years)
2. Planning Department, Annual Publication, Government of Karnataka
3. Karnataka at Glance, Annual Publication, Government of Karnataka
4. Ahluwalia M. & Rangarajan, Karnataka Economy: Growth, Issues and Development, Sterling Pub. House, New Delhi.
5. Alok Ajay and K. G. Vasudev, The Karnataka Economy
6. Government District Development Reports
7. Mahajan Vijay, Agricultural Economics and Development in Karnataka
8. Krishnaiah Gowda M.R. Karnataka Economy: Issues, Policies, Strategies
9. Nanjundappa D.M., Some Aspects of Karnataka Economy
10. Publications on Karnataka Economy, Daily Newspapers

Pedagogy:

Formative Assessment	
Assessment Occasions/ type	Weightage in Marks
Internal Test	30%
Assignments	20%
Dissertation/Project	50%
Total	100

Date Course Co-ordinator Subject Committee Chairperson

Semester II

Course Title: DSE 3.5: Contemporary Indian Economy	
Total Contact Hours: 45	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA: 2 Hrs
Model Syllabus Authors	Summative Assessment Marks: 60

Course Pre-requisite(s):

Course Outcomes (COs):

At the end of the course the student should be able to:

vi) Understand the various problems of Indian Economy
vii) Identify the factors contributing to the recent growth of the Indian economy
viii) Evaluate impact of LPG policies on economic growth in India
ix) Analyse the major sectoral policies adopted for achieving the recent growth
x) Explain various economic policies adopted

Content of Course	45 Hrs
Unit – 1 LPG POLICIES, ECONOMIC REFORMS AND AGRICULTURE	14
Chapter No. 1 Recent Issues • Demand and Impact of LPG • India's population policy • Demographic Dividend • India's human development in global perspective	4
Chapter No. 2 Urbanization and governance • Urbanization and Smart City Mission • Informal sector • Impact of COVID-19 Pandemic • Atma Nirbhar Bharat Abhiyan	4
Chapter No. 3 Economic Reforms and Agriculture • Agriculture and WTO • Price policy and Subsidies • Commercialization and Diversification • Public Distribution System • Impact of public expenditure on agricultural growth • Agrarian Crisis, Declining Farm Income, Indebtedness	6
Practicum: 3 Mini-project to examine the impact of pandemic on life of different sections of population 4 Field visit to understand the special villages	
Unit – 2 INDUSTRY, REFORMS, FISCAL POLICY	14
Chapter No. 4 Industrial Policy • New Industrial Policy and changes • Public sector reforms • Privatization and Disinvestment • Competition Policy	6

Chapter No. 5: Business	[illegible]
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
[illegible]	
Chapter No. 6: Fiscal Policy	[illegible]
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
Practicum: [illegible]	
Unit – 3 MONETARY POLICY, FOREIGN TRADE AND INVESTMENT	[illegible]
Chapter No. 7: Monetary Policy	[illegible]
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
Chapter No. 8: Money and Capital Markets	[illegible]
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
Chapter No. 9: Foreign Trade and Investment	[illegible]
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
Practicum:	
3. [illegible]	
4. [illegible]	
References:	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	
▪ [illegible]	

• [illegible] • [illegible] • [illegible] • [illegible] • [illegible] • [illegible] • [illegible]	

Pedagogy

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
[illegible] Test	[illegible]
Assignments	[illegible]
Presentation/Project	[illegible]
Total	[illegible]

Date [illegible] [illegible]

[redacted]

[redacted]	
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

Course Pre-requisite(s):

Course Outcomes (COs):

At the end of the course the student should be able to:

i [redacted]

ii [redacted]

iii [redacted]

iv [redacted]

v [redacted]

Unit	Description	Hrs
I	**[redacted]**	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
II	**[redacted]**	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]

	• [illegible] • [illegible] **Practicum:** [illegible]	
III	Issues in Implementing SDG:	11
	Chapter 7: Measures Relating the SDG: • [illegible] • [illegible] • [illegible] • [illegible] • [illegible] **Chapter 8: Implementing SDG:** • [illegible] • [illegible] • [illegible] • [illegible] **Chapter 9: Other Issues:** • [illegible] • [illegible] • [illegible] **Practicum:** [illegible]	3 3 4

Suggested Readings:

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

Pedagogy:

[illegible]	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible]

Semester II

Course Title: BEC 2.5: Business Environment	
Total Contact Hours: 45	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA: 2 Hrs
Model Syllabus Authors:	Summative Assessment Marks: 60

Course Pre-requisite(s):

Course Outcomes (CO):

At the end of the course the student should be able to

i. Explain the concepts of business environment
ii. Identify the environmental constraints in the growth of a business firm
iii. Apply in the ways to make the correct environmental decisions to achieve higher business growth.

Unit	Content of Course	45 Hrs
I	**Introduction to Business Environment**	10
	Chapter 1: Introduction	2
	• Meaning and definition, objectives, importance and role of study of business environment, Environmental analysis	
	• Meaning, process of environmental analysis, techniques of environmental analysis, environmental factors	
	• The Micro environment of business and the macro environment of business	
	Chapter 2: Economic Environment	6
	• Meaning of Economic Environment	
	• Characteristics of Indian economy	
	• Impact of Liberalization, Privatization & Globalization of Indian Business	
	• Monetary policy – Meaning, objectives	
	• Fiscal policy – Meaning, objectives, budget and significance	
	• EXIM policy – meaning and objectives	
	• Industrial policy – meaning, objectives (Labour Policy Measures)	
	Chapter 3: Global Business Environment	7
	• Meaning	
	• Globalization: Meaning and Impact of globalization	
	• Challenges of international business	
	• GATT and WTO and its implications on Indian economy	
	Practicum:	
	1) Identification of the impact of business environment through surveys	
	2) Group discussion on WTO and its impact on Indian economy	
II	**Non-Economic Environment**	10
	Chapter 4: Social and Cultural Environment	4
	• Business and Society	
	• Social Objectives of Business	
	• Corporate Social Responsibility	
	• Consumer Rights & Consumer Awareness	
	• Business Ethics	
	Chapter 5: Technological Environment	6
	• Meaning	

[redacted]

Pedagogy:	
Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Internal Test	30%
Assignment	20%
Dissertation/ Project	50%
Total	100

[redacted]

SYLLABUS FOR FIRST TWO SEMESTERS OF BS.C
AND
BS.C HONORS
In
ECONOMICS

Name of the Programme: Bachelor of Science (B. Sc)

Course Code: B. Sc. 1.1

Name of the Course: Microeconomics

Course Credits	Number of Hours per Week	Total No of Teaching Hours
3 Credits	3 Hours	42 Hrs

Course Outcome: On Successful completion of the course, the student will be able to,

1. Analyze the economic behaviors of the consumer and the firm
2. Explain the relationship between various variables such as Input and output, cost and output, price of the product and quantity demand and so on
3. Product and Factor pricing under different market structure

Unit – 1: Introduction to Economics, Demand and Supply	14
Chapter-1 Introduction to Economics: Nature and scope of economics, Basic Concepts of economics, Importance of study of Economics, Understanding the economy, Relation of the principles of economics	7
Chapter- 2: Demand: Meaning and Determinants of Demand, the Demand Schedule, The Law of Demand Exceptions to the Law of Demand, Elasticity of Demand, Meaning, Types, Role, Income and Cross Elasticity, Measurement of Elasticity of Demand	6
Chapter- 3: Supply: Concept of Supply, the Law of Supply and Determinants of Supply	1
Unit – 2 Theory of Demand and Production function	14
Chapter-4 Cardinal Analysis: Utility, Law of diminishing marginal utility, equi-marginal utility, consumer's equilibrium, Consumer surplus and its application	3
Chapter-5 Ordinal analysis: Meaning of Indifference curve, Indifference Schedule, Indifference Map, properties of Indifference curves, Budget line, Equilibrium position, Income, Price and substitution effects, inferior goods Vs Giffen goods, Limitations, revealed preference theory	4
Chapter-6 Production Function: Production Function – The Law of Variable Proportion – the Law of Returns to Scale, Least cost combination of Inputs	4
Unit – 3: Cost, Revenue, Price and Output determination under different Market:	14
Chapter No. 7 Cost Concepts, Cost output relationship in the short run and long run	4
Chapter No. 8 Concepts of Revenue: Total, Average and Marginal Revenue Curve	3
Chapter No. 9: Price and Output determination under different market: Meaning and features of perfect competition market, Monopoly, Monopolistic competition and oligopoly, Price and Output determination under these markets	6

Text Books

[illegible]

References

Dominick Salvatore (2002) Theory and Problems of Microeconomic Theory, Schaum's Outline Series, McGraw-Hill Book Company, Singapore.

Ferguson C.E and Maurice S. Charles, (1979) Economic Analysis Theory and Application, Richard D. Irwin Inc. U.S.A.

Hubbard R. Glenn and Anthony Patrick O'Brien, (2012) Microeconomics, Pearson Prentice Hall, New Jersey.

Pindyck Robert S., and Daniel L. Rubinfeld (2001) Microeconomics, Pearson Prentice Hall, New Jersey.

Varian, H. R., "Intermediate Microeconomics: A Modern Approach", W. W. Norton and Company, Publishers, 2010

Pedagogy: Classroom lecture, tutorials, seminar and Case analysis

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Continuous & Comprehensive Evaluation (CCE)	30 Marks
Internal Assessment Test (IAT)	20 Marks
Semester End Exam (SEE)	50 Marks
Total	100 Marks

Date Course Co-coordinator Subject Committee Chairperson

Name of the Programme: Bachelor of Science (B. Sc)

Course Code: S. M. 1.3

Name of the Course: Mathematical for Economics

Course Credits	Number of Hours per Week	Total No of Teaching Hours
3 Credits	3 Hours	42 Hrs

Course Outcome: On Successful completion of the course, the student will be able to:

1. Perform basic operations in Vectors and Matrix algebra.
2. Calculate limits, derivatives and integrals of functions of multiple variables.
3. Calculate Optima for constrained and unconstrained optimization problems encountered in Economics.

Unit – 1: Basics of Mathematical Economics, Vectors, Matrices and Their applications	14
Chapter-1 Basics of Mathematical Economics: Nature of Mathematical Economics and its applications in Economic Analysis –Mathematical Model, Variables, Constants, Parameters, Equations and Identities- Set of numbers, operations, finite and infinite sets, laws of set operations	3
Chapter-2 Relations and Functions: General ideas, relations and functions - Meaning and types of functions- constant function, polynomial functions, rational functions and non-algebraic functions- Inequalities- Equations- Viability-Vector spaces, linear dependence	4
Chapter-3 Matrices: Matrix Operations- Addition and Subtraction, Matrix Multiplications, Commutative, Associative and Distributive laws-Transpose - Inverse Matrix - Determinant, Properties, Rank of Matrix, Minor, Co-factor - Cramer's Rule, Derivatives and its Applications in Economics	7
Unit – 2: Comparative Statics and Derivatives	14
Chapter- 4: Nature of Comparative Statics, Rate of Change and the Derivative, The concept of limit, Left hand & right hand limits	3
Chapter-5: Continuity and Differentiability of a function – rules of differentiations of a function, Constant Functions, Linear Terms, Sums and Differences of Functions, Product of Functions, Quotient of Functions, Chain Rule, Exponential and Logarithmic Functions	3
Chapter - 6: Functions of Two or More Variables - Partial Derivatives, Higher Order Partial Derivatives, the Chain Rule and Total Derivatives- Maxima and Minima – One and two variables- Differential Equations- First Order Linear Differential Equations- Nonlinear First Order Differential Equations- Second Order Linear Differential Equations	8
Unit – 3: Integrations and Optimization Techniques	14
Chapter - 7: Concept of Integration, Rules of Integration – Definite Integrals – Area and properties – Indefinite Integrations	4
Chapter - 8: Applications integrations in Economic Analysis-Consumer Surplus-Producers surplus-Obtaining a quantity function from marginal function	3

Chapter - 4: Concept of Optimization - Unconstrained Optimization - Lagrangian Multipliers, Constrained Optimization	8

Text Books

Chiang, A. C. and Wainwright, K., Fundamental Methods of Mathematical Economics, McGraw-Hill Book, 4th Edition, 2005.

Sydsaeter, K and Hammond, P., Mathematics for Economic Analysis, Pearson Educational Asia, 4th Edition, 2002.

References

Allen, R. G. D., (2017) Mathematical Analysis for Economists, Macmillan.

Bose D., (2002) An Introduction of Mathematical Economics, Himalaya Publishing House, Mumbai.

Sydsaeter, K and Hammond, P., Mathematics for Economic Analysis, Pearson Educational Asia, 4th Edition, 2002.

Dowling, E. T., "Introduction to Mathematical Economics", McGraw-Hill, 2001.

Hoy, M., Livernois, J., McKenna, C., Rees, R. and Stengos, T., "Mathematics for Economics", MIT Press, 3rd Edition, 2011.

Yamane Taro, (2002) Mathematics for Economists - An Elementary Analysis, Bri Learning Publishers.

Pedagogy: Quizzes, Assignments, Problem solving exercise

Formative Assessment	
Assessment Occasions/ wks	Weightage in Marks
Continuous & Comprehensive Evaluation (CCE)	10 Marks
Internal Assessment Test (IAT)	30 Marks
Answering End Exam (SEE)	70 Marks
Total	100 Marks

Date Course Co-coordinator Subject Committee Chairperson

Name of the Programme: Bachelor of Science (B. Sc)

Course Code: B. Sc. 2.1

Name of the Course: Macroeconomics-I

Course Credits	Number of Hours per Week	Total No of Teaching Hours
3 Credits	3 Hours	48 Hrs

Course Outcome: On Successful completion of the course, the student will be able to:

1. Explain the concept of National Income and methods of its estimation
2. Analyse the relationship between Macroeconomic variables
3. Understand the determination of income and employment under Classical and Keynesian framework

Unit – I: Introduction to Macroeconomics and National Income accounting	14
Chapter-1: Introduction to Macroeconomics: Nature of Macroeconomics and its significance, Indicators of Macro Economic Activity – Key Concepts: Stock and flow variables	3
Chapter-2 Building Blocks of Macroeconomic Analysis: Aggregate Demand (AD) curve, Aggregate Supply (AS) curve, Impact of shift in AD on AS Equilibrium (ii) National Income and Price level, Unemployment and National Income: Inflation and Unemployment, Consumption function, Saving function and Money Market	4
Chapter-3 National Income Accounting: Measurement of Major Variables and Economic Performance: National Income Accounting – Important Concepts: GDP, GDP, NNP, NDP, PI, DPI, Real GDP versus Nominal GDP, GDP deflator, Method of Accounting: National Income Expenditure Method, Income method, Value added or Net Product method, Difficulties in National Income Accounting, Trends in GDP in India, GDP and Quality of Life – Net Economic Welfare, Green Income	7
Unit – 2: Classical and Keynesian Macroeconomics	14
Chapter-4: Classical Theory: Introduction to classical theory of employment – Basic Assumptions of the Classical School, Say's Law of Market, Determination of Output, Employment, Savings, Investment, Wages, Prices, Interest Rate – Equilibrium Output and Employment, Implications of Classical Full Employment Model, Critical Evaluation.	5
Chapter – 5: Keynesian Macroeconomics: Principle of effective demand: Keynesian theory of output, income and employment, Equilibrium Income and Output in Simple Two Sector Model, Three Sector & Four Sector Models	4
Chapter: 6: Keynes Psychological law of consumption: Its Properties and Implications, Keynesian Theory of consumption, Relation between average propensity to consume & life cycle hypothesis, Multiplier and Accelerator Analysis, Marginal Efficiency of Capital, Relevance and Critique of Keynesian Macroeconomics	5
Unit – 3: Recent Debates in Macroeconomics	14

Chapter - 7 Supply side Economics	[illegible]
Chapter - 8 Money market and Goods market equilibrium (IS-LM) model Business cycle- Concept and theories	[illegible]
Chapter - 9 Macroeconomic policies: Monetary Policy and Fiscal Policy Relative effectiveness of monetary and fiscal policy	[illegible]

Text Books

Ahuja H L (2013) Macroeconomics Theory and Policy, S Chand & Company Pvt Ltd, New Delhi

Mankiw N. Gregory, (2012) Macroeconomics, Worth Publishers, New York.

Shapiro Edwards, (2004) Macroeconomic Analysis, Galgotia Publications Pvt. Ltd, New Delhi

References

Ackley Gardner, (1978) Macroeconomics: Theory and Policy, Macmillan, New York

Dornbusch R., Fischer, S. and Startz, R., "Macroeconomics", McGraw-Hill, 12th Ed 2015

D'Souza E., "Macroeconomics", Pearson Education, 2008

Froyen Richard T. (2013) Macroeconomics: Theories and Policies, Macmillan Pub. Company, NY.

Mishkin F. S. Gleen and Anthony Patrick O'Brien, (2012) Macroeconomics, Pearson Prentice Hall, New Jersey, USA

Oliver Blanchard, (2016) Macroeconomics, Pearson Prentice Hall, New Jersey, USA

Pedagogy : Classroom lectures, seminars, Seminar and Case analysis

Continuous Assessment	
Assessment Occasions/ type	Weightage in Marks
Continuous & Comprehensive Evaluation (CCE)	[illegible] Marks
Internal Assessment Test (IAT)	[illegible] Marks
University End Exam (UEE)	[illegible] Marks
Total	[illegible] Marks

Date Course Co-coordinator Subject Committee Chairperson

Name of the Programme: Bachelor of Science (B. Sc)

Course Code: S. ST. 2.2

Name of the Course: Statistics for Economics

Course Credits	Number of Hours per Week	Total No of Teaching Hours
3 Credits	3 Hours	42 Hrs

Course Outcome: On Successful completion of the course, the student will be able to:

1. Calculate basic descriptive and inferential statistics.
2. Interpret descriptive and inferential statistics.
3. Explain the process of hypothesis testing.

Unit – 1: Basics of Statistics for economics, Measures of central tendency and dispersion	14
Chapter-1 Basics of Statistics for Economics: Nature, scope, functions, importance of Statistics in Economics- Descriptive and Inferential statistics -Data - Elements, Variables, and Observations, Scales of Measurement- Qualitative and Quantitative Data - Cross-Sectional and Time Series data- Data sources - Categorical and Statistical analysis	4
Chapter-2 Measures of Central Tendency: Arithmetic mean, median, mode, Geometric mean, and Harmonic mean, merits/demerits and applications in Economics	4
Chapter-3 Measures of dispersion: Meaning and significance of measures of dispersion -Measurement and applications of Range , quartile deviation, mean deviation , standard deviation , variance and coefficient of variation	6
Unit – 2 Correlation, Regression, Time Series Analysis and Index Numbers	14
Chapter- 4. Correlation and Regression: Meaning and types of correlation, methods of computation of correlation coefficient -Karl Pearson's method, Spearman's rank correlation method- Regression-meaning and importance of regression analysis, simple regression, lines and equations and Interpreting (two variable only)	4
Chapter - 5. Time Series: Nature and Decomposition of Time Series - Analysis of Trend - Moving Average Method, Least Square Method	3
Chapter - 6. Index Numbers: Nature and Purpose of Index Numbers - Types of Index Numbers: Price Index - Quantity Index, Link and Chain Index - Simple and Aggregate Index Numbers -Laspeyre's Index, Paasche's Index, Marshall and Edgeworth's Index - Fisher's Index – Time Reversal and Factor Reversal Tests-Deflating and splicing of Index Numbers - Problems in the Construction of Index Numbers - Limitations of Index Numbers.	7
Unit – 3 Introduction to Probability, Distributions and Hypothesis Testing	14
Chapter – 7 Probability: Basic Concepts- Importance of Probability- Expected Values, Conditional Probability, Random Variables- Discrete and Continuous	3
Chapter – 8. Probability Distributions: Probability Density Functions and Cumulative Distribution Functions – Expected values and Moments – The	6

Binomial Probability Distribution, Poisson and Normal Distributions	
Chapter - 9: Hypothesis Testing: Meaning of Hypothesis testing, Null and Alternative hypothesis, Level of significance, One tailed and two tailed test, Type I, Type II error - Approaches to Hypothesis Testing - Confidence Interval Approach - Test of Significance Approach	3

Text Books:

Gupta S. P. (2012) Statistical Methods, S. Chand and Company, New Delhi.

References

Anderson, Sweeney & Williams, (2012) Statistics for Business & Economics, Thomson South-Western, Bangalore.

Daniel and Terrell, Business Statistics for Management and Economics, Houghton Mifflin Co., Boston, Toronto, 7th Edition, 1995. PP 1 to 42 – 8 Appendices

Madhir, T., Statistical Methods: An Introductory Text, Wiley, 1992

Navin H. Bapat and Mark T. Holtzman, "Probability and Statistics", 4th edition, 2014

Teresa Bradley, Essential Statistics for Economics, Business and Management, John Wiley Publishers, 2007

Pedagogy: Chalk and talk lecture, tutorials, Problem solving exercise

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Continuous & Comprehensive Evaluation (CCE)	10 Marks
Internal Assessment Test (IAT)	20 Marks
Semester End Exam (SEE)	70 Marks
Total	100 Marks

Date Course Co-ordinator Subject Committee Chairperson

Name of the Programme: Bachelor of Science (B. Sc)

Course Code: B. Sc. 2.7.1.3(B)

Name of the Course: Managerial for Economics

Course Credits	Number of Hours per Week	Total No of Teaching Hours
3 Credits	3 Hours	42 Hrs

Course Outcome: On Successful completion of the course, the student will be able to:

1. Forecast the demand for goods and services
2. Analyze the efficiency of inputs used in the production
3. Understand the determinants of price and output under different market forms, the methods of pricing in practice

Content of Course-1	42 Hrs
Unit – 1 Introduction to Managerial economics, Demand analysis and Forecasting	14
Chapter-1: Meaning, nature and scope of Managerial Economics- Organization of business firms- Objectives of business firms	2
Chapter-2: Application of Basic Economic Principles to Managerial Problems- Incremental Reasoning, Time Perspective, Opportunity Cost and Risk- Marginal Principle	4
Chapter-3: Demand and its determinants- Elasticity of demand- Meaning, types and determinants- Meaning and Objectives- Demand Forecasting – Methods of demand forecasting and their merits and limitations	8
Unit – 2: Production Analysis, Cost Analysis and Determination of price	14
Chapter- 4: Managerial applications of production function- Laws of returns and their applications- Least cost combinations of inputs	
Chapter - 5: Cost concepts and classification- Cost output relationship and its usefulness in profit cost decision	
Chapter - 6: Price and output determination in various markets- Perfect competition, monopoly, monopolistic competition and oligopoly	
Unit – 3: Pricing Methods in Practice, Profit Management and Capital Budgeting	14
Chapter – 7: Pricing Methods in Practice- Specific Pricing Problems - Popular Pricing Practices- Cost-Oriented Pricing- Cost-Plus Pricing and Other Price Determinants- Peak – Load Pricing- Price over the Life Cycle of the Product- Predetermined Price - Pricing of Multiple Products	2
Chapter – 8: Profit Analysis- Meaning of Profit – Accounting Profit and Economic Profit- Break-Even Analysis - Problems- Break-even Quantity- Break-Even Sales - Targeted Profit- Safety Margin	6
Chapter – 9: Capital Budgeting- Meaning and Importance – Techniques- Payback Period and Net Present Value (NPV) Method	6

Text Books:

Salvatore Dominick. (2012) Managerial Economics in a Global Economy. 7th Edition. Inc., New York.

Mehta P.L. (2007) Managerial Economics: Analysis, Problems and Cases. Sultan Chand and Sons, New Delhi.

References

Nik Dolgan R. James, F. Charles Mayer, Roderick H Dek Mann (2017) Managerial Economics: Applications, Strategy and Tactics. South Western, USA.

Keat Paul G. and Philip K.Y. Young. (2012) Managerial Economics: Economic Tools for Today's Decision Makers, Prentice Hall, New Jersey.

Peterson H. Craig and W. Cris Lewis. (2008) Managerial Economics. Morrill Marschak Interactional Edition, New York.

Samuelson William F. and Stephen G. Marks. (2014) Managerial Economics. John Wiley and Sons, Inc., New Jersey.

Pedagogy: Classroom lecture, tutorials, Seminar and Case analysis.

Formative Assessment	
Assessment Occasions/ type	Weightage in Marks
Continuous & Comprehensive Evaluation (CCE)	10 Marks
Internal Assessment Test (IAT)	20 Marks
Semester End Exam (SEE)	70 Marks
Total	100 Marks

Date Course Co-coordinator Subject Committee Chairperson

Model Curriculum Content for Semester V and VI Electronics

KUVEMPU UNIVERSITY

BOARD OF STUDIES (BOS) IN PHYSICS
(UNDER GRADUATE PROGRAMME)

APPROVED SYLLABUS

(To be effective from the academic year 2023-24)

For

V AND VI SEMESTER ELECTRONICS PAPERS

of

B.SC DEGREE PROGRAMME

[Framed in according with the National Education policy (NEP-2020) & based on *Model Electronics Syllabus* prepared by electronics expert committee, Karnataka State Higher Education Council, Bangalore]

Syllabus approved in the Board of Studies (BOS) meeting held on 08-09-2023 at the Department of Post-Graduate in Physics and Research, Jnana Sahyadri, Shankaraghatta

Curriculum Structure-Electronics
(Core and Electives)

Semesters- V and VI SEM

SEM	COURSE CODE	SEC	Core Papers	Teaching Hours (per Week)	Credits
Sem-5	DSC-ELE51	----	Communication-II	4	4
	DSC-ELE51P	----	Communication-II Practicals	4	2
	DSC-ELE52	----	Embedded Controllers	4	4
	DSC-ELE52P	----	Embedded Controllers Practicals	4	2
Sem -6	DSC-ELE61	----	Signals and Systems	4	4
	DSC-ELE61P	----	Signals and Systems Practicals	4	2
	DSC-ELE62	----	Artificial Intelligence	4	4
	DSC-ELE62MP	----	Mini Project	4	2

Semester V

Program Name	BSc in Electronics	Semester	Fifth Semester
Course Title	Communication-II		
Course Code	DSC-ELES3	No. of Credits	4
Contact hours	60 Hours	Duration of SEA-Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Objectives:

- To understand the various microwave devices and their working
- To understand the Principle and working of different RADAR Systems
- To understand principle and working of different digital modulation techniques
- To understand the Principle and working of Cellular communication and different wireless techniques.

Course Outcomes:

- Know the various microwave devices, their working and applications.
- Understand the principle and working of different RADAR Systems.
- Familiar with ASK, FSK, PSK, BPSK, QPSK Digital modulation techniques.
- Understand the basic concept of cell phone hand set, working principle of cellular communication and wireless technologies.

Contents:	60Hrs
Unit 1	15 Hrs

Microwave devices for Communication: RF/Microwaves, EM spectrum, Wavelength and frequency, rectangular waveguides, circular waveguides, microwave cavities, microwave hybrid circuits, directional couplers, circulators and isolators, GUNN diode, READ diode, IMPATT diode, BARITT diode, PIN diodes, Schottky barrier diodes, Multicavity Klystron, Magnetron, block diagram of Microwave communication and working, Applications.

Unit 2	15 Hrs

RADAR Communication Systems: RADAR principles, frequencies and powers used in RADAR, maximum Unambiguous range, detailed block diagram of pulsed RADAR system, RADAR range equation-derivation, factors influencing maximum range, effect of ground on RADAR antenna characteristics, doppler effect, expression for Doppler frequency, MTI RADAR-block diagram, working, CW RADAR-block diagram, working, advantages, applications and limitations, FM CW RADAR-block diagram, numerical examples wherever applicable.

Unit 3	15 Hrs

Digital communication: Block diagram of digital transmission and reception, Bit Rate, Baud Rate, Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), Binary Phase Shift Keying (BPSK) and Quadrature Phase Shift Keying (QPSK) Advantage and

disadvantages of digital transmission, characteristics of data transmission circuits—Shannon limit for information capacity, bandwidth requirements, data transmission speed, noise, cross talk, echo suppressors, distortion and equalizer, MODEM– modes, classification.	
Unit 4	15 Hrs.
Cellular Communication and Wireless LANs: Concept of cellular mobile communication: –cell and cell splitting, frequency bands used in cellular communication, absolute RF channel numbers (ARFCN), frequency reuse, roaming and hand off, authentication of the SIM card of the subscribers, IMEI number, concept of data encryption, architecture (block diagram) of cellular mobile communication network, Multiplexing, FDMA, CDMA, TDMA, OFDMA, GSM ,Wireless LAN requirements- Bluetooth, Wi-Fi, MIMO, LTE and 3G technology. Comparative study of GSM and CDMA, simplified block diagram of cellular phone handset, Major components of local area network-Primary characteristics of Ethernet-mobile IP, OSI model	

Reference Books	
1	D Roddy and J. Collen, "Electronics communications", 4th edition, PHI, 2008
2	B. P. Lathi and Zhi Ding, "Modern Digital and Analog communication Systems", Oxford University Press, 4th Edition, 2010
3	Bernard Sklar 'Digital Communications: Fundamentals and Applications, Pearson Education, 2nd edition, 2009
4	David Tse, Pramod Viswanath 'Fundamentals of Wireless Communication', Cambridge University Press,1st edition, 2005
5	Wayne Tomasi "Advanced Electronic Communication systems" – 6th edition, Low priced edition–Pearson education
6	Wayne Tomasi – "Electronic Communication systems, Fundamentals through Advanced", V th edition
7	Kennedy & Davis "Electronic Communication systems", IV th edition-TATA McGraw Hill

Program Name	BSc in Electronics		Semester	Fifth Semester
Course Title	Communication-II Practicals			
Course Code	DSC-ELESIP		No. of Credits	2
Formative Assessment Marks	25		Summative Assessment Marks	25
Note: Minimum of 8 Experiments from Part A and 4 Experiments from Part B				

Part- A

1. Study of ASK generation and Detection
2. Study of FSK generation and Detection
3. Study of PSK generation and Detection
4. Study of Time Division Multiplexing and Demultiplexing
5. Study of Frequency Multiplier
6. QPSK modulator and demodulator
7. Determination of V-I Characteristics curve of a Gunn Diode
8. Study of notch filter
9. Class C tuned amplifier
10. Study of Switched mode regulator using PWM

Part- B

Simulation Experiments using MATLAB/SCILAB

1. Simulate NRZ, RZ, half-sinusoid and raised cosine pulses and generate eye diagram for binary polar signalling.
2. Pulse code modulation and demodulation system.
3. Computations of the Probability of bit error for coherent binary ASK, FSK and PSK for an AWGN Channel and compare them with their Performance curves.
4. DPSK Transmitter and receiver
5. QPSK Transmitter and Receiver.

Program Name	BSc in Electronics	Semester	Fifth Semester
Course Title	Embedded Controllers		
Course Code	DSC-EL E52	No. of Credits	4
Contact hours	60 Hours	Duration of SEA/Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Objectives:

- To know the importance of microcontrollers and its applications
- Understand the basics of Embedded Systems hardware and software concepts
- Acquire knowledge about 8051 and PIC Microcontrollers and its peripherals.

Course Outcomes:

- Identify and understand function of different blocks of 8051 microcontrollers.
- Develop program for I/O port operations, Timers, Serial port and Interrupts using C.
- Gain the knowledge to interface LCD, Keyboard, ADC, DAC, DC motor, etc.
- Design and develop small scale embedded systems.

Contents	60Hrs
Unit 1	15 Hrs

Introduction: Embedded Systems, Examples of Embedded Systems, Design Parameters of Embedded Systems, Microcontrollers, Memory: Information Storage Device, Read Only Memory, Random Access Memory, Aligned and Unaligned Memory Accesses, The Microprocessor, Microprocessor Architecture Classification, Instruction Set Architecture, Memory Interface-Based Architecture Classification, Performance Comparison of Different Architectures, Software System and Development Tools, Software Sub-Systems, Software Development Tools, Debugging Tools and Techniques, Manual Methods, Software-Only Methods, Software-Hardware Debugging Tools.

Unit 2	15 Hrs

8051 Microcontroller: Architecture-Registers, Pin diagram, I/O ports functions, Internal Memory organization, External Memory (ROM & RAM) interfacing, Addressing Modes, Data Transfer instructions, Arithmetic instructions, Logical instructions, Branch instructions, Bit manipulation instructions. Simple Assembly language program examples to use these instructions. 8051 Stack, Stack and Subroutine instructions. Assembly language program examples on subroutine and

involving loops.

Unit 3	15 Hrs
8051 Microcontroller Hardware Programming in C Data types and time delays, I/O Programming, Timer Programming, Serial Communication- Basics of Serial Data Communication, RS-232 standard, 9 pin RS232 signals, UASRT Serial port programming, Interrupt programming, Keyboard and LCD Interfacing, ADC, DAC interfacing, Using Flash and EEPROM memories for data storage, Stepper motor and DC motor interfacing.	
Unit 4	**15 Hrs**
PIC18 Microcontrollers: Overview of the PIC18 Family, Architecture and features of 18F458, Status register, Data memory and Special Function Registers, Data memory map, Access RAM, Indirect addressing and accessing tables in data memory, Program memory, Program memory map, Program Counter , Configuration registers, Stacks, Automatic Stack operations, Programmer access to the Stack, Fast Register Stack, Interrupts, Context saving with interrupts, Power supply and reset, Power supply, Power-up and Reset, Oscillator sources, Clock source switching, Parallel Ports, Parallel Slave Port, Watchdog Timer, Capture/Compare/PWM (CCP) Modules, MSSP, Serial Port, Low-Voltage Detect, Nano-watt technology, Enhanced Peripherals.	

Reference Books	
1.	Muhammad Tahir and Kashif Javed, "ARM Microprocessor Systems: Cortex-M Architecture, Programming, and Interfacing," 1st Edition, CRC Press, 2017.
2.	Kenneth J. Ayala, "The 8051 Microcontroller", 3rd Edition, Thomson Cengage Learning, 1997
3.	Muhammad Ali Mazidi and Janice Gillespie and Rollin D, "The 8051 Microcontroller and Embedded Systems using assembly and C," 1st Edition, Pearson, 2006
4.	Tim Wilmshurst, "Designing Embedded Systems with PIC Microcontrollers: Principles and applications", First Edition, Elsevier, 2007.
5.	Muhammad Ali Mazidi and Rollin D. Mckinlay, "PIC Microcontroller and Embedded Systems: using assembly and C for PIC18," 1stEdition, Pearson, 2008.
6.	John Peatman, "Design with PIC Microcontrollers," 1st Edition, Prentice Hall, 1997.

Program Name	BSc in Electronics		Semester	Fifth Semester
Course Title	Embedded Controllers Practicals			
Course Code	DSC-ELE52P		No. of Credits	2
Formative Assessment Marks		25	Summative Assessment Marks	25
Note: Minimum of 8 Experiments from Part A and any 4 either using 8051 or PIC from Part B				

Part–A

Conduct the experiments by writing C programs using KeiluVision IDE for 8051

1. To read 10 data from port P0 and store in internal RAM.
2. Find the square of a numbers (1to10) using look-up table :
3. To read data from port P0 and send the data to P1 if it is even else send to P2 repeatedly.
4. To read data from port P0 convert it to decimal and send to P1 and P2 repeatedly.
5. To toggle P0 bit for every 500ms continuously use TIMER 0 to generate time delay.
6. To read switch status connected to P1.0 if switch is on, turn on LED connected P2.0 on or ifswitch is off, turn off LED.
7. To read switch status connected to P1.0 if switch is on set P2.0 on or if switch is off set P2.0off.
8. To stop/start toggling of LED connected to P0, when there is an external hardware interrupt.
9. To control traffic lights interface.
10. To transmit data "Hello Computer" to PC and receive data "Hi Microcontroller", from PC using USART Serial port.

Part–B

Using and Keil vision IDE for 8051

1. To rotate stepper motor clockwise 180°.
2. To display numbers from 0 to F on seven segment display.
3. To display text "Electronics" on 16x2 LCD display.
4. To put a main function at ROM address 0x100 and data "HELLO" at ROM address 0x200.
5. To convert analog data to digital using ADC.

Using MP Lab IDE for PIC

1. To monitor pin PC5, if it is High send 55H to PORT B, otherwise send AA to Port D
2. To convert Packed BCD of29 ASCII and display. The bytes on PORTB and PORTC
3. To send out the vale 44H serially one bit at a time via RC0, the LSB should go out first
4. To convert analog signal to digital from external ADC and display the result on P2(any unused)port.
5. To control DC motor interfacing

Semester VI

Program Name	BSc in Electronics		Semester	Sixth Semester
Course Title	Signals and Systems			
Course Code	DSC-ELE61		No. of Credits	4
Contact hours	60 Hours		Duration of SEA/Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Objectives:

- Gain the knowledge on Signals and Systems
- Understand the operations on Signals
- Know the frequency domain representation of signals
- Know the Laplace Transform and its properties

Course Outcomes:

- Distinguish between continuous-time and discrete-time signals and systems
- Do basic operations on signals
- Apply Laplace transform technique
- Find DTFS and IDTFS of the Signals

Contents	60Hrs
Unit 1	15 Hrs

Introduction to continuous-time and discrete-time signals: Understanding signals and systems, some real-world examples of signals and systems. Mathematical and graphical representation of signals. Classification of signals: 1-and 2-D, continuous and discrete, periodic and non-periodic, symmetries (even-odd) etc., related problems to enhance understanding of different signal types, elementary signals — unit impulse, unit step, exponential and sinusoidal signals. Introduction to continuous-time and discrete-time systems, examples of systems, interconnections of systems. Properties of systems: Linear, Non-linear, time-variance-invariance, causal-noncausal, memory-memoryless systems, feed-back in systems, stability, inverse systems.

Unit 2	15 Hrs

Operations on signals: amplitude scaling, shifting, folding, time scaling, addition of two signals etc., Time-domain representation of systems, Linear time-invariant systems, Convolution integral and convolution sum, impulse and step response of systems, differential equation representation of LTI systems, properties and stability of LTI systems, solving differential equations.

Unit 3	15 Hrs

Frequency domain representation of systems, magnitude and phase spectrum. Introduction to transforms, need for transforms Laplace transforms, unilateral Laplace transforms. Properties, Inverse Laplace transforms application of Laplace transforms for analysis of systems, solving differential equations, stability analysis of systems.

Unit 4	15 Hrs
Continuous-time Fourier series representation of periodic signals, convergence of Fourier series representation, properties of continuous-time Fourier series and problems Discrete-time Fourier Series properties of discrete-time Fourier series and problems IDFS	

Reference Books	
1	Alan V Oppenheim, Alan s. Willsky and Hamid Nawab, "Signals and systems", Pearson edition Asia/PHI, 2nd Edition, 2002.
2	Simon Haykin and Barry Van Veen, "Signals & Systems," Wiley, 2nd Edition, 2021.
3	M J Roberts, "Signals and Systems Analysis Using Transform Methods and MATLAB," TMG.
	Vinay Ingle, and John G. Proakas, "Digital Image Processing using MATLAB."

Program Name	BSc in Electronics		Semester	Sixth Semester
Course Title	Signals and Systems Practicals			
Course Code	DSC-ELE6IP		No. of Credits	2
Formative Assessment Marks		25	Summative Assessment Marks	25
Note: Minimum of 10 programmes to be written and executed.				

Write and execute following program using MATLAB/OCTAVE/SCILAB, etc.

1. Generate and plot unit sample, unit step, ramp, real sequences
2. Generate and plot sinusoidal, cosinusoidal and periodic sequences
3. Generate even & odd components of a sequence
4. Perform amplitude scaling, time scaling, folding and time-shifting operations on signals
5. Perform Upsampling and downsampling operation on a given sequence
6. Perform addition, subtraction and multiplication operation on signals
7. Find the linear convolution of two finite duration sequences
8. Find the cross-correlation of two finite duration sequences
9. Evaluate &plot auto-correlation of a sequence
10. Compute the DTFS of a sequence and plot the magnitude and phase response
11. Compute the IDTFS of a sequence
12. Verify the sampling theorem

Program Name	BSc in Electronics	Semester	Sixth Semester
Course Title	Artificial Intelligence		
Course Code	DSC-ELE62	No. of Credits	4
Contact hours	60 Hours	Duration of SEA/Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Objectives:

- Understand the basic concepts, techniques, and applications of artificial intelligence.
- Gain knowledge of different problem-solving methodologies and intelligent agents.
- Be able to apply machine learning algorithms for data analysis and pattern recognition.
- Acquire an understanding of natural language processing and computer vision.
- Develop an awareness of ethical considerations and societal impacts of artificial intelligence.

Course Outcomes:

- Explain the fundamental concepts, techniques, and applications of artificial intelligence.
- Apply problem-solving and search algorithms to solve simple AI problems.
- Implement basic machine learning algorithms for classification and clustering tasks.
- Understand and apply natural language processing techniques for text analysis.
- Understand and apply computer vision techniques for image analysis.
- Recognize ethical considerations and societal impacts of artificial intelligence.

Contents	60Hrs
Unit 1	15 Hrs.
Definition, history, and goals of artificial intelligence. Intelligent agents: types, properties, and architectures. Problem-solving and search algorithms: uninformed search, informed search (heuristic search), and game playing.	
Unit 2	15 Hrs.
Predicate logic and first-order logic. Inference mechanisms: resolution, forward chaining, and backward chaining. Knowledge representation techniques: propositional logic, semantic networks, frames, and ontologies.	
Unit 3	15 Hrs.
Introduction to machine learning: supervised learning, unsupervised learning, and reinforcement learning. Classification algorithms: decision trees, naive Bayes, and support vector machines. Clustering algorithms: k-means, hierarchical clustering.	
Unit 4	15 Hrs.
Natural language processing: language modelling, part-of-speech tagging, syntactic parsing, and	

sentiment analysis. Computer vision: image representation, feature extraction, object recognition, and image classification.

Reference Books	
1	Artificial Intelligence: A Modern Approach by Stuart Russell and Peter Norvig.
2	Artificial Intelligence: Foundations of Computational Agents by David L. Poole and Alan K. Mackworth.
3	Machine Learning: A Probabilistic Perspective by Kevin P. Murphy.
4	Natural Language Processing with Python: Analyzing Text with the Natural Language Toolkit by Steven Bird, Ewan Klein, and Edward Loper.

Program Name	BSc in Electronics		Semester	Sixth Semester
Course Title	Mini Project			
Course Code	DSC-ELE6MP		No. of Credits	2
Formative Assessment Marks		25	Summative Assessment Marks	25

KUVEMPU UNIVERSITY

BOARD OF STUDIES (BOS) IN ELECTRONICS
(UNDER GRADUATE PROGRAMME)

APPROVED SYLLABUS

(To be effective from the academic year 2022-23)

For

3rd AND 4th SEMESTER ELECTRONICS PAPERS

of

B.Sc./B.Sc.(HONS.) DEGREE PROGRAMME

[Framed in according with the National Education policy (NEP-2020)
& based on *Model Electronics Syllabus* prepared by electronics expert committee
Karnataka State Higher Education Council, Bengaluru]

Syllabus approved in the Board of Studies (BOS) meeting held on 27.06.2022 at the
Department of Post Graduate Studies and Research, Jnana Sahyadri, Shankaraghatta

Curriculum Structure - Electronics
(Core and Electives)

Semesters- 3rd and 4th SEM

SEMESTERS	DSC	Core Papers
Semester-3:	ELE CT-3.1	Programming in C and Digital Design using Verilog (Theory)
	ELE CP-3.1	Programming in C and Digital Design using Verilog (Practical)
Semester -4:	ELE CT- 4.1	Electronic Communication-1 (Theory)
	ELE CP- 4.1	Electronic Communication-1 (Practical)

Open Electives for 3rd and 4th Semesters

Sl.No.		3rd Semester-OE
1	ELE OE 3.1	Fundamentals of Electronics (Theory)
2	ELE OE 3.2	Application of Electronics-1 (Theory)
3	ELE OE 3.3	Robotics. (Theory)
4	ELE OE 3.4	Medical Electronics. (Theory)
Sl.No.		4th Semester-OE
1	ELE OE 4.1	Application of Electronics-2 (Theory)
2	ELE OE 4.2	Augmented and Virtual Reality (Theory)
3	ELE OE 4.3	IOT and Applications (Theory)

Model Curriculum

Program Name:	BSc in Electronics		Semester	Third Semester
Course Title	Programming in C and Digital Design using Verilog (Theory)			
Course Code	ELE CTX1		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Objectives: After the successful completion of the course, the student will be able to:

- The ability to code and simulate any digital function in Verilog HDL.
- Know the difference between synthesizable and non-synthesizable code
- Understand library modeling, behavioral code and the differences between simulator algorithms and logic verification using Verilog simulation
- Learn good coding techniques required for current industrial practices.
- Gain the knowledge of programming the system using C programming language

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

CO1: Apply the acquired knowledge of digital circuits in different levels of modeling using Verilog HDL

CO2: Apply the acquired knowledge of digital circuits in different levels of modeling using Verilog HDL

CO3: Design and verify the functionality of digital circuit/system using test benches

CO4: Develop the programs more effectively using directives, Verilog tasks and constructs

CO5: Design and analyze algorithms for solving simple problems.

CO6: Write and execute and debug C codes for solving problems

Contents	60Hrs
Unit-1:	15 Hrs

C Programming: Introduction: Importance of C, Structure of C program, Character set, Tokens, keywords, identifier, constants, basic data types, variables, declaration & assigning values

Arithmetic operators, relational operators, logical operators, bitwise operators, increment and decrement operators, conditional operators, bitwise operators, expressions and evaluation of expressions, precedence of operators

Arrays: Basics of arrays, one-dimensional array declaration, accessing elements, storing elements, two-dimensional. Input output statement – printf(), scanf() and getch(), and library functions (math and string related functions).

Unit -2:	15 Hrs

Decision making, branching and looping: if, if-else, else-if, switch statement, break, for loop, while loop and do loop.

Functions: Defining functions, function arguments and passing, returning values from functions, example programs.

Structures: Structure type declarations, structure declarations, referencing structure members, referencing whole structures, initialization of structures.

Unit -3:	15 Hrs

Overview of Verilog HDL: Evolution of CAD, emergence of HDLs, typical HDL flow, Trends in HDLs.

Hierarchical Modeling Concepts: Top-down and bottom-up design methodology, differences between modules and module instances, parts of a simulation, design block, module block, Lexical conventions, Data types, system tasks, compiler directives.

Modules and Ports: Module definition, port declaration, connecting ports, hierarchical name referencing.

Gate Level Modeling: Modeling using basic Verilog gate primitives, Description of and or and buf not type gates, Rise, fall and turn off delays, min, max, and typical delays. Combinational logic circuit design using Gate level modeling.

Unit -4:	15 Hrs

Dataflow Modeling: Continuous assignments, delay specification, expressions, operators, operands, operator types.

Behavioral Modeling: Structured procedures, initial and always, blocking and non-blocking statements, Delay control, generate statement, event control, conditional statements, Multi way branching, loops, sequential and parallel blocks.

Tasks and functions: Differences between tasks and functions, declaration, invocation, automatic tasks and functions.

References	
1	Samir Palnitkar, "Verilog HDL: A Guide to Digital Design and Synthesis," 2nd Edition, Prentice Hall PTR, 2006
2	E. Balaguruswamy, "Programming in ANSI C", 4th Edition, Tata McGraw-Hill, 2008
3	Donald E. Thomas, Philip R. Moorby, "The Verilog Hardware Description Language", 5th Edition, Springer, 2002
4	Michael D. Ciletti, "Advanced Digital Design with the Verilog HDL", 2nd Edition, Pearson Education, 2010
5	Palanisamy, Tripura Sundari, "Design through Verilog HDL", Wiley Eastern, 2016.
6	Nazeih M. Botros, "HDL Programming VHDL and Verilog", 1st Edition, Dreamtech Publication, New Delhi, 2006.
7	Yashavant P. Kanetkar, "Let us C", 15th Edition, BPB Publications, 2021.
8	T. Jayapavan, "A First Course in Programming with C," Vikas Publishing Pvt LTD, 2004
9	Kevin Skahill, "VHDL for Programmable Logic," Pearson Education, 2006
10	Cyril P. R. "Fundamentals of HDL Design," Pearson, 2010.

Program Name	BSc in Electronics	Semester	Third Semester
Course Title	Programming in C and Digital Design using Verilog (Practical)		
Course Code	ELE CP-3.1	No. of Credits	2
Formative Assessment Marks	25	Summative Assessment Marks	25
Note: Minimum of 10 programs to be written and executed in each section			

Part - A: Programming in C Laboratory

Write and execute C Program to

1. Find the area and circumference of a circle
2. Find the biggest OR smallest elements in a series
3. Find the factorial of a given number
4. Check the prime number in a series
5. Find the roots of quadratic equation
6. Find the gross salary of an employee
7. Remove all vowels from a string
8. Upper case and lower case conversion and vice versa
9. Reverse a string using library functions
10. Reverse a string without using library
11. Check whether the string is palindrome or not
12. Arrange the array in ascending OR descending order using bubble sort
13. To perform arithmetic operations for a matrix
14. Display prime numbers between intervals 0 to 100
15. Find GCD of two numbers

Part – B: Verilog HDL Laboratory

Write and execute Verilog code to realize

1. Realization of logic gates
2. Encoder without priority and with priority
3. Multiplexer, De-multiplexer
4. Comparator, Code converters – Binary to Gray and vice versa
5. Adder/ Subtractor (Half and Full) using different modeling styles
6. 4-bit parallel adder and 4-bit ALU/ 8-bit ALU
7. SR, D, JK, T-flip-flops
8. To realize counters: Up/Down (BCD and Binary)
9. 4-bit Binary counter, BCD counter (Synchronous reset) and any arbitrary sequence counters
10. 4-bit Binary counter, BCD counter (Asynchronous reset) and any arbitrary sequence counters
11. Modeling of Universal shift registers

Program Name:	BSc in Electronics	Semester	Third Semester
Course Title	Fundamentals of Electronics (Theory)	Course Code:	ELE OE 3.1
Contact hours	45 Hours	No. of Credits	3
Formative Assessment Marks	40	Summative Assessment Marks	60
OE Paper is to be offered for the Students other than Science stream			

Theory Contents

Unit-1:	15 Hrs

Passive Components: Overview of passive Components-Fabrication, Types, color coding, and applications.

Transformer: Principle, construction and working, turn ratio, Types of transformers (Step up and Step down).

Semiconductors: Intrinsic and extrinsic semiconductors.

Diodes: P-N Junction theory, V-I Characteristics, Rectifiers, Clippers, and Clampers (Qualitative analysis only).

Special diodes: Zener diode, LED and LDR: Construction, working and applications.

Unit-2:	15 Hrs

Bipolar Junction Transistor (BJT): Physical structures, modes of operations, characteristics, Transistor as an amplifier, RC- Coupled amplifier, Darlington pairs, Transistor as a switch.

Field Effect Transistor (FET): Physical structures and modes of operations, Characteristics.

Electronic Instruments: Ammeter, Voltmeter: design and construction, analog multimeter, Digital multimeter, function generator (Qualitative analysis only), Cathode Ray Tube (CRT), Cathode Ray Oscilloscope (CRO)- Block diagram.

Digital Fundamentals: Binary numbers, signed binary numbers, binary to decimal and Decimal to Binary conversion, Binary additions and Subtractions, Logic gates: AND, OR, and NOT gates.

Unit-3:	15 Hrs

Components and Device Applications: To design and Construct at least Ten of the following circuits

1. V–I characteristics of semiconductor diode.
2. V–I characteristics of Zener diode. Determination of breakdown voltage.
3. V–I characteristics of LED. Determination of Cut-in voltage.
4. Characteristics of LDR.
5. Half wave rectifier, with and without filter. Determination of ripple factor.
6. Full wave rectifier (Centre tap/ Bridge), With and without filter, determination of ripple factor.
7. Zener diode voltage regulator, determination of line and load regulation.
8. Clipping circuits: Positive clipper, Negative Clipper, Biased positive and negative clippers. Trace the input and output waveforms.
9. Clamper circuits: Positive clamper, Negative Clamper. Trace the input and output waveforms.
10. Input and output characteristics of a transistor in Common Emitter configuration, determine of current gain β.
11. Input and output characteristics of a transistor in common base configuration, determine the current gain α.
12. Transistor as a switch.
13. Construct RC coupled amplifier. Plot the frequency response curve and determine the bandwidth.
14. V-I Characteristics of Common Source (CS) configuration of FET. Determine the current gain.
15. Construct an ammeter to read (0-1ma) of current.
16. Construct a voltmeter to read (0-1volt).
17. Measure Vp, Vpp and Time period of Sine and Square waves using CRO.
18. Construct OR, AND and NOT gates using diodes and transistors. Verify the truth tables.
19. Verify the truth tables OR, AND and NOT gates using Integrated Chips (ICs).
20. Construct four-bit binary adder.

References	
1.	"A Textbook of Electronics" R. S. Sedha, S Chand and Co. 3rd edition.
2.	"Principles of Electronics", V K Mehta and Rohit Mehta, S Chand and Co
3.	"Basic Electronics", B L Theraja, S Chand and Co, 3rd edition 2012
4.	"Electronic Devices", David Bell, Reston Publishing Company
5.	"Electronic Devices and Circuit Theory", Pearson edition
6.	"Digital Principles and Applications", Malvino and Leach
7.	"Electronics lab lab manual", Paul B Zbar

Program Name:	BSc in Electronics	Semester	Third Semester
Course Title	Applications of Electronics-1 (Theory)	No. of Credits	3
Course Code	ELE OE 3.2	Contact hours	45 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

OE Paper is to be offered for the Students other than Science stream

Theory Contents	
Unit-1: Basic Electronics	12 Hrs
Introduction to circuit components: Resistors, capacitors, inductor, transformer, diode and transistor. Symbols, pinouts. LED and LCD display, relay, fuse, switches, etc. AC and DC applications.	
Unit-2: Applied Electronics	15 Hrs
Electronic instruments: DMM, CRO. Biomedical instruments: ECG, EEG, EMG, pH meter, X-ray, sphygmomanometer, Glucometer, Digital thermometer. Sensor: OMR, MICR, Scanner, Barcode reader.	
Unit-3: Power Supplies	10 Hrs
DC power supply, Rectifiers: principle, Types. Inverter and UPS: Adaptor and SMPS: Inverter and UPS: Mobile chargers.	
Unit-4: Electronic calculators	10 Hrs
Types, Functions of Basic calculators-block diagram: Keypad using, use of calculator.	

References	
1	Basic Electronics (Solid State – B L Theraja - S Chand And Company Ltd
2	Electronic Devices And Circuit Theory – Robert L Boylestad And Louis Nashelsky (PHI)

Program Name:	BSc in Electronics	Semester	Third Semester
Course Title	Robotics (Theory)	No. of Credits	3
Course Code	ELE OE3.3	Contact hours	45 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

OE Paper is to be offered for the Students other than Electronics stream

Theory Contents

Unit-1:	15 Hrs

Definitions of Robots, Robotics, Motivation, A Brief History of Robotics, A Robot System, Interdisciplinary Areas in Robots, Classification of Robots, Introduction to embedded system, Understanding Embedded System, Overview of basic electronics and digital electronics, Microcontroller vs Microprocessor, Common features of Microcontroller, Comparison between the two Different types of microcontroller, Sensors, Classification of sensors (contact & non-contact), characteristics of sensors, Touch sensor, Position sensor, optical sensor, IR, PIR, Ultrasonic, temperature, displacement sensor.

Unit-2:	15 Hrs

Getting Started with Programming platform of Robots, Installation of IDE, Pin configuration and architecture of Microcontroller (Atmel series/arduino), Device and platform features, Concept of digital and analog pins, Familiarizing with breadboarding Board, Introduction to Embedded C platform, Review of Basic Concepts, Arduino data types, Variables and constants, Operators, Control Statements, Arrays, Functions, I/o Functions, Pins Configured as INPUT, Pins Configured as OUTPUT, Incorporating time delay() function, delay Microseconds() function, millis() function, micros() function

Unit-3:	15 Hrs

Programming different types of Robots

1. Temperature & Humidity controlled Robot (Fan Regulation, thermostat)
2. Infra-Red signal Controlled Robot (Measuring the speed of the vehicle)
3. Ultrasonic signal operated Robot (Automatic Tap system, Hand Drier, Flush drive)
4. Obstacle Follower & avoider Robot

References	
1	Fundamentals of Robotics by D K Pratihar
2	Robotics Simplified: An Illustrative Guide to Learn Fundamentals of Robotics by Dr. Jain Elsa Jacob, Manjunath N
3	Introduction to Robotics (Fourth Edition by John Craig
4	Arduino Robotics by John-David Warren (Author), Josh Adams(Author)
5	Programming in 24 Hours by Richard Blum
6	Getting Started with Arduino: The Open Source Electronics Prototyping Platform Book by Massimo Banzi and Michael Shiloh

Program Name:	BSc in Electronics	Semester	Third Semester
Course Title	Medical Electronics (Theory)	No. of Credits	3
Course Code	ELE OE 3.4	Contact hours	45 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

OE Paper is to be offered for the Students other than Electronics stream

Theory Contents	
Unit-1:	10Hrs
Fundamental Electronics: Amplifiers, Frequency response, signal generation. Different types of transducers & their selection for biomedical applications. Electrode theory, selection criteria of electrodes & different types of electrodes. Bio electric amplifiers	
Unit -2:	12 Hrs
Introduction to Bio-medical instruments. Origin of bio-electric signals, active & passive transducer for medical application.–Electrocardiographs-waveform-standard lead systems, typical ECG amplifier, ECG electrode, recording systems. EMG: basic principle-block diagram of a recorder.	
Unit -3:	10 Hrs
Medical Imaging: Nature and production of X-rays. Improving X-ray images. Computerized axial tomography. Using ultrasound in medicine, Ultrasound scanning. Magnetic resonance imaging PET and SPECT imaging	
Unit -4:	13Hrs
Biomedical Signal Processing: Fundamentals of signal processing, digital image transforming image, image enhancement, image Segmentation, image compression, image restoration and reconstruction of medical images.	
Demonstration using MATLAB	

References	
1	L. Cromwell, F. J. Weibell, Erich Pfeiffer, Biomedical Instrumentation and measurements, PHI Publications

Program Name	BSc in Electronics		Semester	Fourth Semester
Course Title	Electronic Communication-I (Theory)			
Course Code:	ELE CT 4.1		No. of Credits	4
Contact hours	60 Hours		Duration of SEA Exam	2 hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Objectives:

- To understand the communication system, Principle and working communication system, means and medium of communication.
- To understand the Principle and working of different modulation techniques.
- Will be able to differentiate between analog and digital communication.
- To understand the Principle and working of Satellite and optical fibre communication.

Course Outcomes (COs): After the successful completion of the course, the student will be able to

CO1 Know the basic concept of Analog Communication, means and medium of communication.

CO2 Understand the principle of Analog and digital modulation.

CO3 Familiar with "AM" and "FM" techniques.

CO4 Understand the basic concept of Pulse Modulation, Carrier Modulation for digital transmission and able to construct simple pulse modulation.

CO5 Understand the basic concept of Satellite Communication

CO6 Understand the basic concept of Optical Fibre Communication

Contents	60Hrs
Unit-1:	12 Hrs

Electronic communication: Introduction to communication – means and modes. Need for modulation. Block diagram of an electronic communication system. Brief idea of frequency allocation for radio communication system in India (TRAI). Electromagnetic communication spectrum.

Propagation of "EM" Wave: Introduction, Loss of "EM" Energy due to noise, Ground Wave, Sky-wave and Space-wave propagation, Ionosphere and its effects

Communication medium: Transmission lines, coaxial cables, wave guides and optical fibers.

Antenna: Introduction, Antenna parameters, yagi-Uda antenna, Dish-antenna principle, Working and applications only

Unit -2:	15 Hrs

Analog Modulation: Amplitude Modulation, modulation index and frequency spectrum. Generation of AM (Emitter Modulation). Amplitude Demodulation (diode detector). Concept of Single side band generation and detection. Frequency Modulation (FM) and Phase Modulation (PM), modulation index and frequency spectrum, equivalence between FM and PM. Generation of FM using VCO, FM detector (slope detector). Qualitative idea of Super heterodyne receiver

Analog Pulse Modulation: Channel capacity, sampling theorem. Basic Principles- PAM, PWM, PPM, modulation and detection technique for PAM only, Multiplexing

Unit -3:	15 Hrs

Digital Pulse Modulation: Need for digital transmission, Pulse Code Modulation, Digital Carrier Modulation Techniques

Introduction to Communication and Navigation systems: Satellite Communication: Introduction, need, geosynchronous satellite orbits, geostationary satellite, advantages of geostationary satellites, Satellite visibility, transponders (C - Band), path loss, ground station, simplified block diagram of earth station, Uplink and downlink.

Unit -4:	15 Hrs

Optical Fiber Communication: Optical Fibers: fundamentals, Nature of light, basic optical laws and definitions, optical fiber types, Rays and modes, Signal degradation in optical fibers, attenuation, scattering losses, radiation losses, absorption losses, core and cladding losses, signal distortion in optical wave guides, dispersion, pulse broadening in graded index wave guide

Optical sources: LEDs, structure, source materials, Laser diodes: Structures, threshold conditions, modal properties and radiation patterns

Optical Receiver Operations: Fundamental receiver operations, digital signal transmission, receiver noise, analog receivers

References	
1	Electronic Communications, D. Roddy and J. Coolen, Pearson Education India.
2	Advanced Electronics Communication Systems- Tomasi, 6th edition, Prentice Hall.
3	Modern Digital and Analog Communication Systems, B.P. Lathi, 4th Edition, 2011, Oxford University Press.
4	K.D Prasad, "Antenna and Wave Propagation", Satyaprakashan, New Delhi.
5	Sanjeev Gupta, "Electronic Communication Systems", Khanna Publishers, New Delhi.
6	Electronic Communication systems, G. Kennedy, 3rd Edn., 1999, Tata McGraw Hill.
7	Principles of Electronic communication systems – Frenzel, 3rd edition, McGraw Hill
8	Communication Systems, S. Haykin, 2006, Wiley India Electronic Communication system, Blake, Cengage, 5th edition.
9	Wireless communications, Andrea Goldsmith, 2015, Cambridge University Press
10	Gerd Keiser, "Optical Fibre Communication", McGraw Hill, 3rd Edn.

Program Name	BSc in Electronics	Semester	Fourth Semester
Course Title	Electronic Communication-I (Practical)		
Course Code:	ELE CP 4.1	No. of Credits	2
Formative Assessment Marks	25	Summative Assessment Marks	25
Note: Minimum of 10 Experiments are to be performed using hardware and simulation			

List of Experiments

1. Construct amplitude modulator using transistor. I. C. Determination the modulation index.
2. Construct frequency modulator circuit – determine the modulation index.
3. "AM" Linear Diode detector- trace the input and output waveforms.
4. Frequency mixer circuit – Verify output frequency for different input frequencies.
5. "FM" Detector – Plot the frequency response curve.
6. Study of Balanced demodulator.
7. Study of IF amplifier circuit.
8. Pulse amplitude modulation (PAM) – trace the output waveforms.
9. Pulse width modulation (PWM) – trace the output waveforms.
10. Pulse position modulation (PPM) – trace the output waveforms.
11. Characteristics of LED in OFC
12. Study of Numerical aperture
13. Characteristics of photo diode or photo transistor in OFC
14. Setting up simple OFC Link.

Program Name:	BSc in Electronics	Semester	Fourth Semester
Course Title	Application of Electronics-2 (Theory)	No. of Credits	3
Course Code	ELE OE 4.1	Contact hours	45 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

OE Paper is to be offered for the Students other than Science stream

Theory Contents

Unit-1: Introduction to Advanced Communication	12 Hrs
Radio, TV- principles, block diagram & applications. OFC application and advantages. Embedded system – Smart card, SIM card Mobile- Block diagram &applications	
Unit -2: Advance Electronics	12 Hrs
CCTV camera, ATM- principles, block diagram & applications. Electronic voting Machine (EVM)- CU,BU,VVPAT.,	
Unit -3: Application of Satellite	11 Hrs
Types, EDUSAT, TV & Internet-modem, Wi-Fi.	
Unit -4: E-waste management	10 Hrs
E-waste management- identification, segregation, disposal.	

References

1. Basic Electronics-Solid State – B L Theraja – S Chand And Company Ltd

Program Name	BSc in Electronics	Semester	Fourth Semester
Course Title	Augmented and Virtual Reality (Theory)	No. of Credits	3
Course Code:	ELE OE 4.2	Contact hours	45 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

OE Paper is to be offered for the Students other than Electronics stream

Theory Contents

Unit-1: Introduction to Virtual Reality	10Hrs

Defining Virtual Reality, History of VR, Human Physiology and Perception, Key Elements of Virtual Reality Experience, Virtual Reality System, Interface to the Virtual World-Input & output- Visual, Aural & Haptic Displays, Applications of Virtual Reality.

Unit -2: Augmented Reality	10 Hrs

AR Taxonomy, technology and features of augmented reality, difference between AR and VR, Challenges with AR, AR systems and functionality, Augmented reality methods, visualization techniques for augmented reality.

Unit -3: The Geometry of Virtual Worlds &The Physiology of Human Vision	12 Hrs

Geometric Models, Changing Position and Orientation, Axis-Angle Representations of Rotation, Viewing Transformations, Chaining the Transformations, Human Eye, eye movements & implications for VR, Examples, Case Studies Sweeping coverage of eye movements.

Unit -4: Visual Perception & Rendering and Motion & Tracking	13 Hrs

Visual Perception - Perception of Depth, Perception of Motion, Perception of Color, Combining Sources of Information, Visual Rendering -Ray Tracing and Shading Models, Rasterization, Correcting Optical Distortions, Improving Latency and Frame Rates, Examples, Case Studies Automatic switching of panorama in Virtual Reality, Motion in Real and Virtual Worlds, Velocities and Accelerations, The Vestibular System, Physics in the Virtual World, Mismatched Motion and Vection, Tracking- Tracking 2D & 3D Orientation, Tracking Position and Orientation, Tracking Attached Bodies.

References

1	E. Balagurusamy, - Computing Fundamentals and C Programming, Tata McGraw-Hill, 2008.
2	Anand N., "Augmented and Virtual Reality", Khanna Publishing House, Delhi.

References	
3	R.G.Dromey, How to Solve by Computer, Pearson Education, Inc, Reprint 2009.
4	Yashavant P. Kanetkar, --Let Us C, Fifth Edition, Sridhara Publication, India, 2008.

Program Name	BSc in Electronics	Semester	Fourth Semester
Course Title	IOT and Applications (Theory)	No. of Credits	3
Course Code	ELE OE 4.3	Contact hours	45 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

OE Paper is to be offered for the Students other than Electronics stream

Theory Contents

Unit-1:	12 Hrs

Fundamentals of IoT: Introduction, History of IoT, Definitions & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, Components of an IoT Solution, IoT frameworks, IoT and M2M, Open Source and Commercial Examples, Competing Standards for IoT

Unit -2:	12 Hrs

Sensors Networks: Definition, Traditional Data Storage, Analog and Digital I/O Basics, Types of Sensors, Types of Actuators, Examples and Working, IoT Development Boards: Arduino IDE and Board Types, Raspberri Pi Development Kit, RFID Principles and components, Wireless Sensor Networks: History and Context, The node, Connecting nodes, Networking Nodes, WSN and IoT

Unit -3:	11 Hrs

Wireless Technologies for IoT: WPAN Technologies for IoT: IEEE 802.15.4, Zigbee, HART, NFC, Z-Wave, BLE, Bacnet, Modbus. IP Based Protocols for IoT: IPv6, 6LowPAN, RPL, REST, AMPQ, CoAP, MQTT, Edge connectivity and protocols

Unit -4:	10 Hrs

Data Handling& Analytics: Introduction, Bigdata, Types of data, Characteristics of Big data, Data handling Technologies, Flow of data, Data acquisition, Data Storage, Applications of IoT: Home Automation

References

1. Internet of Things, Vasudev, Jayaprakash and Sundaram, Wiley India
2. Srinivasa K G "Internet of Things", Cengage Learning, India 2017

References	
3	David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry, IoT fundamentals: Networking Technologies, Protocols and use cases for the Internet of things, 1st Edition, Pearson Education
4	Iot Fundamentals, David Hanes et al, Cisco press

KUVEMPU UNIVERSITY
NEP-2020

Pattern of continuous Evaluation and Semester End Examination

Assessment should be a combination of continuous formative evaluation and an end-point summative evaluation as per the Guidelines provided by Karnataka state Higher education Council.

Total marks for each course shall be based on continuous assessment and semester-end examinations as per the uniform pattern of 40:60 for IA and Semester End theory examinations respectively and 50: 50 for IA and Semester End practical examinations respectively, in all the Universities, their Affiliated and Autonomous Colleges.

Total Marks for each course = 100

Continuous assessment (C 1) = 20 marks
Continuous assessment (C 2) = 20 marks
Semester End Examination (C 3) = 60 marks

A. Formative evaluation process (Internal Assessment).

a. The first component (C 1) of assessment is for 20 marks. This shall be based on tests, assignments, seminars, case studies, fieldwork, project work etc. This assessment and score process should be completed after completing 50% of the syllabus of the course's and within 45 working days of the semester program.

b. The second component (C 2) of assessment is for 20 marks. This shall be based on the test, assignment, seminar, case study, fieldwork, internship / industrial practicum, project work etc. This assessment and score process should be based on the completion of the remaining 50 per cent of the syllabus of the courses of the semester.

Activities	C1	C2	Total Marks
Activity Test	10 marks	10 marks	20 marks
Seminars Presentations Activity	10 marks	-	10 marks
Case study Assignment Fieldwork Project work etc.		10 marks	10 marks
	20 marks	20 marks	40 Marks

B. Summative evaluation process (Semester End theory Examination).

During the 15th - 16th week of the semester, a semester-end evaluation shall be conducted for the 3 hours' duration for each course. This forms the final and final component of assessment (C 3) and the maximum marks for the third component will be 60 marks.

III. Practical Examination: For the practical courses of full credits, marks shall be for 50 marks as detailed as follows:

Internal Assessment for 25 Marks: 15 Marks for conducting practical record and 10 marks for journal test. This shall be conducted after the completion of practical classes.

End Semester Practical Examination: End Semester Practical examination shall be conducted for **25 marks.**

QUESTION PAPER PATTERN FOR DEGREE COURSES
(DSC, OE and Languages)

First Semester ..... Degree Examination, April/May 2022

(CBCS NEP Scheme)

Paper: DSC- .....

Time: 02 Hours **Max. Marks: 60**

I. Select the most appropriate answer from the options provided. 10 x 1= 10

1) _____

a) b) c) d)

2) _____

a) b) c) d)

.

.

.

10) _____

a) b) c) d)

II. Answer/Write short notes on any **FIVE** of the following. 05 x 03 = 15

1)

2)

3)

4)

5)

6)

7)

8)

III. Answer any **THREE** questions from the following. 03 x 08 = 18

1)

2)

3)

4)

5)

IV. Answer the following* 02 x 10 = 20

1) _____

OR

_____

2) _____

OR

_____

*Must have sub questions if required

[redacted]

[redacted]

APPROVED SYLLABUS

(To be effective from the academic year 2021-22)

For

I AND II SEMESTER ELECTRONICS PAPERS

of

B.Sc./B.Sc.(HONS.) DEGREE PROGRAMME

[redacted]

[redacted]

[redacted]

[redacted]

CONTENTS

APPENDIX-1: COURSE PATTERN AND SCHEME OF EXAMINATION for B.Sc./B.Sc. (Hons.) as per NEP (2021-22 and onwards)

SUBJECT: ELECTRONICS

SEC	Semester	Title of the Paper	Credits (Total)	Hours / Week		Examination Pattern Max. Marks Paper				Duration of Exam (hours)		Total Marks / Paper	Theory Credits	Practical Credits
						Theory		Practical						
				Theory	Practical	Theory	IA	Practical	IA	Theory	Practical			
1	I	ELE-CT 1: Electronic Devices and Circuits	06	4	4	60	40	25	25	3	4	150	4	2
		ELE-OE1: 1/2/3	06	2	1**	40	10	-	-	3*	-	50	2	
2	II	ELE-CT2: Analog and Digital Electronics	06	4	4	60	40	25	25	3	4	150	4	2
		ELE-OE2: 1/2/3	06	2	1**	40	10	-	-	3*	-	50	2	

***Questions from practical have to be included in theory examinations of Open Electives (Since electronics is a practical oriented subject)**

**** Tutorial Class**

Basis for Awarding Theory Internal Assessment Marks:

S.N	Particulars	IA Marks
1	Minimum of Two internal Tests	20
2	Assignments/ Seminar/ Case Study/ Project work/ Reports on visits to industries/ exhibitions/ webinars/ seminars/ participation in Electronics competitions, etc.	20
	TOTAL Theory IA Marks	40

Basis for Awarding Practical Internal Assessment Marks:

S.N	Particulars	IA Marks
1	Practical Test	10
2	Report on data sheet of electronic devices/ lab/ workshop or electronics experiments, etc	10
3	Active participation in practical classes	05
	TOTAL Practical IA Marks	25

B.Sc. DEGREE FORMATIVE AND SUMMATIVE ASSESSMENTS

(Under New syllabus of NEP-2020 Scheme; Effective from Academic Year 2021-22)

SEMESTER: III

CORE COURSE and PAPER: ELECTRONICS – III

1. FORMATIVE ASSESSMENT (Max. Marks = 30)		
ASSESSMENT TYPE	DETAILS/METHOD	MARKS
Test	Theory paper IA tests	20 (Average of Two tests)
Assignments/ Seminar/ Case Study/ Project work/ Reports on visits to industries/ exhibitions/ science centre/ active participation in Electronics competitions; etc.		20
TOTAL Theory IA 3 hrs		40

2. SUMMATIVE ASSESSMENT (End Semester Examination)

A. Theory Examination (Max. Marks = 70; Duration -3 Hrs)

Question Paper Pattern

(There are THREE sections A, B and C. Each Section has EIGHT main questions out of which FIVE main questions are to be answered

Section – A (Short Answer questions)

- Each question carries 2 marks
- Max. Marks = 2 x 5 = 10 Marks

Section – B (Medium Length Answer questions)

- Each question carries 4 marks
- Max. Marks = 4 x 5 = 20 Marks

Section – C (Long Answer questions)

- Each question carries 8 marks
- Max. Marks = 8 x 5 = 40 Marks

APPENDIX- 2: Syllabus

Semester-I

ELE-CT1: ELECTRONIC DEVICES AND CIRCUITS

(Credits: Theory–04, Practical–02) Total Teaching hours:60

Course Objectives

Upon completing the course, ELE-CT1, the student will be able to understand various fundamental principles of network analysis, number systems and Boolean algebra and become familiar with the basic operation of electronic devices and circuits which are the building blocks of all electronic circuits, devices and gadgets.

UNIT-I **15 HOURS**

Electronic Components: Electronic passive and active components, types and their properties. Concept of Voltage and Current Sources, electric energy and power (Qualitative only)

Network Theorems: Superposition, Thevenin's, Norton's, Maximum Power Transfer, DC and AC analysis of RC and RL circuits, RLC series and parallel Resonant Circuits.

PN junction diode: Ideal and practical diodes, Formation of Depletion Layer, Diode Equation and I-V characteristics, Idea of static and dynamic resistance, Zener diode, Reverse saturation current, Zener and avalanche breakdown.

Rectifiers: Half wave and Full wave (centre tap and bridge) rectifiers, expressions for output voltage, ripple factor and efficiency (qualitative only), Shunt capacitor filter. (Numerical examples wherever applicable).

UNIT-2 **15 HOURS**

Voltage regulator: Block diagram of regulated power supply, Line and Load regulation, Zener diode as voltage regulator- circuit diagram, load and line regulation, disadvantages. Clippers (shunt type) and clampers (Qualitative analysis only).

Bipolar Junction Transistor: Construction, types, CE, CB and CC configuration (mention only), VI characteristics of a transistor in CE mode, Regions of operation (active, cut off and saturation), leakage current (mention only), Current gain α, β and γ and their inter-relations, dc load line and Q point. Applications of transistor as amplifier and switch-circuit and working. (Numerical examples wherever applicable)

UNIT-3 **15 HOURS**

Transistor biasing and Stabilization circuits- Fixed Bias and Voltage Divider Bias. Thermal run away, stability and stability factor. Transistor as a two-port network, h-parameter equivalent circuit.

Amplifier: Class A, B and C Amplifiers (qualitative). Types of coupling, two stage RC Coupled Amplifier-circuit, working and its Frequency Response, loading effect, GBW product, Darlington transistor.

UNIT-4 **15HOURS**

Boolean Algebra: Constants, variables, operators, basic logic gates-AND, OR, NOT, Positive and negative logic. Boolean laws, Duality Theorem, De Morgan's Theorem, simplification of Boolean expressions-SOP and POS. Derived logic gates (NAND, NOR, XOR & XNOR). Universal property of NOR and NAND gates. (Numerical examples wherever applicable).

Course Outcomes

At the end of this course, students will be able to

- Study and analyze basic networks using network theorems as a systematic manner
- Build simple electronic circuits used in various applications
- Describe the behavior of basic semiconductor devices
- Reproduce the I-V characteristics of diode BJT devices
- Describe the frequency response of BJT amplifiers
- Explain the behaviour, characteristics and applications of Varactor diode, Schottky diode, Tunnel diode, LED, LCD and solar cells.
- Apply standard device models to explain, calculate critical internal parameters of semiconductor devices.
- Understand and represent numbers in powers of base and converting one from the other, carry out simple arithmetic operations.
- Understand the basic knowledge of Digital system building blocks, effectively can construct simple digital designs with the knowledge of Boolean algebra.

Reference Books:

1. Robert L Boylestad "Introductory circuit analysis" 3rd edition, Universal Book 2003
2. R S Sedha, "A Textbook of Applied Electronics", 7th edition, S Chand and Company Ltd 2011
3. A P Malvino, "Principles of Electronics", 7th edition TMH, 2011
4. Electronic devices and circuit theory by Boylestad, Robert Nashelsky
5. David A. Bell "Electronic Devices and Circuits", 5th Edition, Oxford Uni Press 2015
6. Thomas L. Floyd, Digital Fundamentals, Pearson Education Asia 1994
7. Digital Principles and Applications, A.P. Malvino, D.P Leach and Saha, 7thEd., 2011, Tata McGraw
8. Fundamentals of Digital Circuits, Anand Kumar, 2nd Edn, 2009 PHI learning Pvt. Ltd.
9. Digital Circuits and systems, Venugopal, 2011, Tata McGrawHill
10. Digital Systems: Principles & Applications, R.J Tocci, N.S Widmer, 2001,PHI Learning
11. M. Nahvi & J. Edminister, "Electrical Circuits", Schaum's Outline Series TMGH 2005
12. S. A. Nasar," Electrical Circuits", Schaum's outline series, Tata McGraw Hill,2004
13. J. Millman and C. C. Halkias, "Integrated Electronics", Tata McGraw Hill,2001
14. A S Sedra,K C Smith,A N Chandorkar "Microelectroniccircuits", 6thEdn., Oxford University Press, 2014
15. J.J Cathey, "2000 Solved Problems in Electronics", Schaum's outline Series, TMG1991

ELE-CP1: Electronic Devices and Circuits Lab

(Hardware and Circuit Simulation Software)

Minimum of TEN Experiments to be performed excluding demonstration experiments

1. Verification of Thevenin's and Maximum Power Transfer Theorem
2. Verification of Superposition Theorem
3. Study of the I-V Characteristics of a p-n junction Diode, and Zener diode
4. Study of the I-V Characteristics of LED withtwo different colors and 7-segmentdisplay.
5. Study of Half wave rectifier without and with shunt capacitor filter-ripple factor for different values of filter capacitors.
6. Study of full wave bridge rectifier without and with shunt capacitorfilter-ripple factor for different values of filter capacitors.
7. Study of Zener diode as a Voltage Regulator using bridge rectifier with shunt capacitor filter (Load and line regulation)
8. Study of Clipping, Clamping and Voltage Multiplier circuits.
9. Study of Transistor characteristics in CE configuration- determination of h-parameters
10. Study of single stage CE amplifier (frequency response, input andoutput impedances in mid-band)
11. Study of two stage RC-coupled CE amplifier (A_{v1}, A_{v2}, A_v) at mid-band frequency.
12. Study of Series and Parallel Resonance circuits–determination of its
    (a) Resonant frequency
    (b) Impedance at resonance
    (c) Bandwidth

(d) Quality Factor

13. Verification of truth table of OR, AND, NOT, NAND, NOR, EOR and XNOR gates using resistors IC's. Realization of EOR and EXOR using basic gates.

14. Universal property of NAND and NOR gate

EE-OE3.1: Renewable Energy and Energy Harvesting

(Credits: Theory–02, Tutorial–01) Total Teaching hours:30

Unit-1 **15Hours**

Fossil fuels and Alternate Sources of energy: Fossil fuels and nuclear energy, their limitation, need of renewable energy, non-conventional energy sources. An overview of developments in Offshore Wind Energy, Tidal Energy, Wave energy systems, Ocean Thermal Energy Conversion, solar energy, biomass, biochemical conversion, biogas generation, geothermal energy, tidal energy, Hydroelectricity.

Solar energy: Solar energy, its importance, storage of solar energy, solar pond, non-convective solar pond, applications of solar pond and solar energy, solar water heater, flat plate collector, solar distillation, solar cooker, solar green house, solar cell, absorption air conditioning. Need and characteristics of photovoltaic (PV) systems, PV models, equivalent circuits, and sun tracking systems.

Wind Energy harvesting: Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces and grid interconnection topologies.

Unit – 2 **15 Hours**

Ocean Energy: Ocean Energy Potential against Wind and Solar, Wave Characteristics, and Statistics, Wave Energy Devices, Tide characteristics and Statistics, Tide Energy Technologies, Ocean Thermal Energy, Osmotic Power, Ocean Bio-mass.

Geothermal Energy: Geothermal Resources, Geothermal Technologies.

Hydro Energy: Hydro power resources, hydro power technologies, environmental impact of hydro power sources. *Piezoelectric Energy harvesting* Introduction, Physics and characteristics of piezoelectric effect, materials and mathematical description of piezoelectricity, Piezoelectric parameters and modeling piezoelectric generators, Piezoelectric energy harvesting applications, Human power. *Electromagnetic Energy Harvesting:* Linear generators, physics, mathematical models, recent applications, Carbon capture technologies, cell, batteries, power electronics, Environmental issues and Renewable sources of energy, sustainability.

Demonstration Experiments: **30 Hours**

1. Demonstration of working models of solar energy, wind energy etc.
2. Conversion of vibration to voltage using piezoelectric voltage.
3. Conversion of thermal energy into voltage using thermoelectric module.

Reference Books:

1. Non-conventional energy sources, B H Khan, McGraw Hill
2. Solar energy, Subas P Sukhatme, Tata McGraw- Hill Publishing Company Ltd.
3. Renewable Energy, Power for a sustainable future, Godfrey Boyle, Oxford University Press.
4. Renewable Energy Sources and Emerging Technologies, Kothari et al., PHI Learning.
5. Solar Energy- Resource Assessment Handbook, P Jayakumar.
6. J Balfour, M Shaw and S Jarvis, Photovoltaics, Laxmi's J Goodrich(USA).
7. http://en.wikipedia.org/wiki/Renewable_energy

ELE-OE12: Basics of Electronics, Computers and PCB Design

(Credits: Theory-02, Tutorial-01) Total Teaching hours-30

Unit-1 **15 Hours**

Generation of and distribution of electricity: Mention of hydro electric generator, diesel generator, thermal generator, wind power, solar power, nuclear. Generation of DC power-Mention of batteries. Single phase, two phase and three phase Transformers. Power transmission and distribution. Domestic electrical wiring-connection from AC line to the meter, symbols, mention of phase, neutral and the need of earthing. Mention of electric shock and safety. Mention of power type (ac or dc) and current ratings for home appliances. Mention of meter. Electric motor working principle.

Computer fundamentals: History of computer system, block diagram of a computer system, functions of each units (Input, Output, Memory and CPU). Mention of various input and output devices, Memories - registers, primary memory, secondary memory, cache memory. Software - system software (operating system, program language, translators-assembler, interpreter and compiler), utility programs, communication software, performance monitoring software), application software. Software hierarchy and dependence between the different layers, computer languages – Machine, Assembly level and High level, Inverter, Uninterrupted Power supply (UPS) - online and offline UPS, SMPS.

Unit –2 **15Hours**

PCB Design: Types of PCB, Single sided board – double sided – Multilayer boards –Plated through holes technology – Benefits of Surface Mount Technology (SMT) –Limitations of SMT– Surface mount components: Resistors, Capacitor, Inductor, Diode and IC's.

LAYOUT AND ART WORK: Layout Planning-General rules of Layout-Resistance, Capacitance and Inductance – Conductor Spacing – Supply and Ground Conductors–Component Placing and mounting–Cooling requirement and package density–Layout check. Basic artwork approaches– Artwork taping guidelines-General art work rules–art work check and inspection.

LAMINATES AND PHOTO PRINTING: Manufacture of copper clad laminates,

–Properties of laminates – Types of Laminates – Manual cleaning process – Basic printing process for double sided PCB's – Photo resists – wet film resists – Coating process for wet film resists – Exposure and further process for wet film resists – Dry film resists

ETCHING AND SOLDERING: Introduction–Etching machine–Exhaust system. Soldering: Principles of Solder connection – Solder paste – Solder alloys–Soldering fluxes. Soldering Tools: Soldering, De soldering tools and Techniques – Manual Soldering – Solder mask – Safety, health and medical aspects in Soldering practice

Demonstration Experiments: 30 Hours

1. Unboxing and assembling of desktop computers
2. Types of motors and transformers used in household appliances
3. Understanding voltage, current, frequency etc. of ac mains
4. Upgradation of RAM, hard disk and SSD
5. SMPS: Block diagram and working
6. Inverter
7. Types of PCB and fabrication process

Reference books:

1. Electrical Circuits, K.A Stuthland R.E Alley, Cambridge University Press
2. A text book in Electrical Technology -B L Theraja- S Chand &Co
3. A text book of Electrical Technology -A K Theraja
4. Performance and design of AC machines-MG Say-ELBS Edition
5. Basic electrical engineering - V K Mehta and Rohit Mehta, S Chand and Company
6. Computer fundamentals-Anita Goel, Pearson Edition
7. Fundamentals of Computers-V Rajaram, Prentice Hall-PHI
8. Computer Fundamentals- Peter Norton, McGraw-Hill Education
9. Walter C. Bosshart "PCB Design and Technology" Tata McGraw-Hill Publications, Delhi, 1983

Semester II

ELE-CT2: ANALOG AND DIGITAL ELECTRONICS

(Credits: Theory–04, Practical–02) Total Teaching hours:60

Course Objectives

Upon completing the syllabus content of ELE-CT2, the student will become familiar with various working principles of widely used electronic devices, linear and digital ICs which help the students to build small projects and also be able to answer some basic questions that appear in competitive examinations.

UNIT-1 **15HOURS**

JFET–Types-p-channel and n-channel; working and I-V characteristics-n-channel JFET, parameters and their relationships. Comparison of BJT and JFET.

MOSFET: E-MOSFET, D-MOSFET-n-channel and p-channel. Construction, working, symbols, biasing, drain and transfer characteristics. MOS logic, symbols and switching actions of NOS, NMOS inverter, CMOS logic, CMOS – inverter circuit and working, CMOS characteristics, IGBT construction and working

UJT – basic construction, working, equivalent circuit and I-V characteristics, intrinsic stand-off ratio, relaxation oscillator.

SCR – Construction, VI characteristics, working, symbol, and applications – HWR and FWR.

UNIT-2 **15HOURS**

Op-Amp: Differential Amplifier, Block diagram of Op-Amp, Characteristics of an Ideal and Practical Op-Amp, Open and closed loop configuration, Frequency Response, CMRR, Slew Rate and concept of Virtual Ground.

Applications of op-amps: Concept of feedback, negative and positive feedback, advantages of negative feedback (Qualitative Study), Inverting and non-inverting amplifiers, Summing and Difference Amplifier, Differentiator, Integrator, Comparator and Zero-crossing detector.

Filters: First and second order active low pass, high pass and band pass Butter worth filters.

Oscillators: Barkhausen criteron for sustained oscillations, Colpitt's oscillator and crystal oscillators using transistor, Phase Shift oscillator, Wien-bridge oscillator – (no derivation for each).

IC 555Timer: Introduction, Block diagram, Astable and Monostable multivibrator circuits. (Numerical Examples wherever applicable)

UNIT-3 **15HOURS**

Combinational Logic Circuits: Minimization techniques using K-map - SOP and POS, Minterm, Maxterm, SSOP, SPOS, Simplification of Boolean expressions, K-Map for 3 and4 variable

Design of Arithmetic logic circuits: Half Adder, Full Adder, Half Subtractor, Full Subtractor, 4-bit parallel binary adder, 2-bit and 4-bit magnitude comparator, Encoder, decimal to BCD priority encoder, Decoder, 2:4 decoder using AND gates, 3:8 decoder using NAND gates, BCD to decmal decoder, BCD to 7-Segment decoder, Multiplexer - 4:1 and 8:1 multiplexer, De multiplexer - 1:4 and 1:8 demultiplexer – logic diagram and truth table of each.

UNIT 4 **15 HOURS**

Sequential Logic Circuits: Flip-Flops - SR Latch, RS, D and JK Flip-Flops, Clocked (Level and Edge Triggered) Flip-Flops, Preset and Clear operations, Race-around conditions in JK Flip-Flop, Master- Slave JK and T Flip-Flops, Applications of Flip-Flops in semiconductor memories, RAM, ROM and types.

Registers and Counters: Types of Shift Registers, Serial-in-Serial-out, Serial-in-Parallel-out, Parallel-in-Serial-out and Parallel-in-Parallel-out Shift Registers (only up to 4 bits), applications: Ring counter, 3-bit twisted ring counter applications, Asynchronous Counters: Logic diagram, Truth table and timing diagrams of 4bit ripple counter, modulus-n counters, 4 bit Up-Down counter, Synchronous Counter-Introduction, Design of Mod-3, Mod-5 and decade Counters using K-maps.

Course Outcomes

At the end of this course, students will be able to

- Reproduce the I-V characteristics of various MOSFET devices
- Apply standard device models to explain, calculate critical terminal parameters of semiconductor devices.
- Explain the behavior and characteristics of power devices such as UJT, SCR, Diac, Triac etc.
- Perform experiments for studying the behavior of semiconductor devices
- Calculate various device parameters' values from their IV characteristics
- Interpret the experimental data for better understanding the device behaviour
- Understood basic logic gates, concepts of Boolean algebra and techniques to reduce/ simplify Boolean expressions
- Analyze combinational and sequential circuits

Reference Books:

(1) Electronic devices and circuit theory by Boylestad, Robert Nashelsky
(2) Electronic Devices Conventional Current Version by Thomas L Floyd
(3) David A. Bell "Electronic Devices and Circuits", 5th Edition, Oxford Uni Press, 2015
(4) OP-Amps and Linear Integrated Circuit, R.A Gayakwad, 4th edn,2000, Prentice Hall
(5) Operational Amplifiers and Linear ICs, David A Bell, 3rd Edition, 2011, Oxford University Press
(6) R.S Sedha, "A Textbook of Applied Electronics", 7th edition, S Chand and Company Ltd.2011
(7) Thomas L. Floyd, Digital Fundamentals, Pearson Education, Asia (1994)
(8) Digital Principles and Applications, A.P Malvino, D P Leachand Saha, 7th Ed., 2011, Tata Mc Graw
(9) Fundamentals of Digital Circuits, Anand Kumar, 2nd Edn, 2009, PHI Learning Pvt. Ltd.
(10) Digital Circuits and systems, Venugopal, 2011, Tata McGraw Hill
(11) Digital Systems: Principles & Applications, R.J Tocci, N.S Widmer, 2001, PHI Learning
(12) R.L Tokheim, Digital Principles, Schaum's Outline Series, Tata McGraw-Hill(1994)
(13) Digital Electronics, S.K Mandal, 2010,1st edition, Mc GrawHill

ELE-CP3: ANALOG AND DIGITAL ELECTRONICS Lab

(Hardware and Circuit Simulation Software)

PART A (Any FIVE)

1. Study of JFET-MOSFET characteristics-determination of parameters
2. Study of single stage JFET amplifier (frequency response and bandwidth)
3. UJT characteristics and relaxation oscillator
4. Design of inverting and non-inverting amplifier using Op-amp & study of frequency response
5. Op-amp inverting and non-inverting adder, subtractor and averaging amplifier
6. Study of the zero-crossing detector and comparator
7. Design and study of first order high-pass and low-pass filters using op-amp
8. Study of Colpitt's and crystal oscillator using transistor
9. Astable multivibrator using IC 555 timer
10. Study of SCR Characteristics

PART B (Any FIVE)

11. Half Adder and Full Adder using (a) logic gates (b) using only NAND gates
12. Half Subtractor and Full Subtractor(a) logic gates(b) using only NAND gates
13. 4-bit parallel binary adder & subtractor using IC 7483
14. Study of BCD to decimal decoder using IC 7447
15. Study of the Encoders and priority encoders
16. Study of Multiplexer and De multiplexer using ICs
17. Study of 2-bit and 4-bit magnitude comparators
18. Study of Clocked RS, D and JK Flip-Flops using NAND gates
19. Study of 4-bit asynchronous counter using JK Flip-Flop IC 7476, modify to decade counter and study their timing diagrams
20. Study of 4-bit Shift Register –SISO, modification to ring counter using IC 7495
21. Digital to Analog converter using binary weighted resistor method, determination of resolution, accuracy and linearity error

ELE-OE2.1: Electronics for Everyone

(Credits: Theory–02, Tutorial–01) Total Teaching hours: 30

Unit-1

Timer and PLL: Functional block diagram of 555timer. Monostable operation and its Application, Astable operation and its application.

Phase Locked Loop: Functional block diagram-Phase detector Comparator, Voltage Controlled Oscillator, Low pass filter, Applications: Frequency multiplier Divider, AM detection.

Unit-2

Operational Amplifier: Inverting and non-inverting amplifier, Op-amp parameters, Summing Amplifier, Difference Amplifier, Integrator, Differentiator, Instrumentation Amplifier, Audio Amplifier (LM386), Voltage to current converter, Current to Voltage converter, Sample and Hold circuits.

First order active filters (Circuit diagram and formula only): low pass, high pass, band pass, band reject and all pass filters. Phase-shift and Wien bridge oscillator using op-amp.

Unit-3

Transducers (Basic Working): Displacement Transducers-Resistive (Potentiometer, Strain Gauges-Types, Gauge Factor, bridge circuits, Semi-conductive strain gauge) Capacitive (diaphragm), Hall effect sensor, magneto-electric transducers, Microphone, Touch Switch, Piezoelectric sensor, light (photo-conductive, photo-emissive, photovoltaic, semiconductor, LDR), Temperature (electrical and non-electrical), Pressure sensor.

A-D and D-A Conversion: D-A conversion: 4-bit binary weighted resistor type circuit and working. Circuit of R-2R ladder.Basic concept A-D conversion, characteristics, successive approximation ADC. (Mention the relevant ICs for all).

Unit-4

Data Acquisition using Arduino: Arduino Birth, Open Source community, Functional Block Diagram, Functions of each Pin, Arduino Development Boards, IDE, I/O Functions, Looping Techniques, Decision Making Techniques, Designing of 1st sketch, Programming of an Arduino (Arduino ISP), Serial port interfacing, Basic Interfacing and I/O Concept, Interfacing LED, Switch, Using LED different sensors.

SuggestedBooks:

1. B. C. Sarkar and S. Sarkar, Analog Electronics Devices and Circuits (Revised edition), Dasnodar Group (Publishers), Bardhaman, ISBN 978-81-937715-15-4(2019)
2. Measurement Systems, 4th, Doeblin, McGrawHill, NewYork, 1983.
3. Electrical Measurement &Electronic Measurements by A.K.Sawhney
4. B. C. Sarkar and S. Sarkar, Digital Electronics: Circuits and Systems, 5 UTPrakashani, Bardhaman, ISBN 978-81-933991-57-8(2018)
5. Instrumentation: Devices and Systems By Rangan, Sarma, and Mani, Tata McGrawHill
6. Electronic Instrumentation by H.S Kalsi, McGraw Hill
7. Instrumentation measurements and analysis by Nakra & Choudhary
8. Measurement &Instrumentation- D.V.S Murthy
7. R.A.Gayakwad, Op-Amps and Linear IC's Pearson Education(2003)
8. Electronic Sensor Circuits and Projects, III Volume, For enthusiasts, Master Publishing Inc.
9. Timer, Op Amp, and Optoelectronic Circuits &Projects, Forest M.Mims, Master Publishing Inc.
10. Exploring Arduino, Jeremy Blum, Wiley
11. Beginning Arduino, Michael McRoberts, Technology in Action
12. Beginning Arduino Programming, Brian E. ms, Technology in Action
13. Practical Arduino Engineering, Harold Timmis, Technology in Action
14. Practical Arduino : Cool Projects for open source hardware, Jonathan Oxer, Hugh Blemings, Technology in Action

Electronics for Everyone Demonstration Lab

(Hardware and Circuit Simulation Software) **30hours**

1. Study of basic monostable multivibrator
2. Study of basic Astable multivibrator
3. Light detection using 555timer
4. Rain alarm using 555 timer
5. Motor control by PWM using 555 timer
6. LED flasher circuit using 555 timer

7. Analog light wave Transmitter Receiver using IC timer
8. Study of basic inverting and non-inverting amplifier
9. Study of basic integrator circuit
10. Study of basic differentiator circuit
11. Design of first order LPF
12. Study of first order HPF
13. Designing of fiber optic-based Transmitter Receiver using LM386
14. Temperature to voltage converter using 741
15. Shadow sensing using 741
16. Light based PWM using 741and V-F converter
17. Test the different Arduino Boards, Open-Source and Arduino Shields
18. Install Arduino IDE and its development tool
19. Develop a program to Blink LED for1second
20. Develop a program to interface Input Switches and output LEDs with development board (Arduino)
21. Interface7segment display with development board (Arduino)
22. Interface LM35 temperature sensor with Arduino and monitor temperature on serial monitor
23. Interface DC motor using L293D Motor Driver
24. Interfacing of various sensors with Arduino development board

ELE-OE 2.2: Mobile Communication

(Credits: Theory–02, Tutorial–01) Total Teaching hours: 60

Unit 1

Evolution of mobile radio communication-Examples of wireless communication system: paging system, cordless telephone system, cellular telephone system-Trends in cellular radio and personal communication system.

Unit 2

Frequencies for radio transmission- Basics of multiplexing and multiple access techniques-CDMA-Cellular system concept-Frequency Reuse-Channel assignment and handoff strategies- Improving capacity in cellular system: cell splitting, sectoring, repeaters for range extension, a microcell zone concept.

Unit3

Introduction to telecommunicating system-GSM: mobile services (Bearer services, tele-services, supplementary services), system architecture (radio subsystem, network and switching subsystem, operation subsystem)

Unit4

Satellite system: history, application, basics routing, localization and handover-Broadcast system: digital audio broadcasting, digital video broadcasting (basic concepts)

Unit5

Wireless LAN-Infrared vs radio transmission-Bluetooth: user scenario and architecture-WiMAX: basic concepts and features-Wi-Fi-basic concepts

Mobile Communication Demonstration Lab **3Hours**

1. Demonstration of keypad mobile handset
2. Demonstration of smart phone handset
3. Block diagram description

Text Books

1. Rappaport T. S, "Wireless Communication Principles and Practices", Pearson Education Asia, New Delhi, 1st ED 2003
2. Jochen Schiller, "Mobile communication" Pearson Education, Asia

Reference Book

Vijay K Garg, Joseph E Wilkes, Principles and Applications of GSM, Pearson Edu.

SEMESTER III

ELECTIVE COURSE and PAPER: ELECTRONICS – III

1. FORMATIVE ASSESSMENT (Max. Marks = 10)		
ASSESSMENT TYPE	**DETAILS/METHOD**	**MARKS**
Test	Theory paper (1 h test)	10
2. SUMMATIVE ASSESSMENT (End Semester Examination)		
Theory Examination (Max. Marks = 40; Duration -2 Hrs)		
Question Paper Pattern		
Section – A (Medium Length Answer questions)		
• Total Questions = 5. Questions to be answered = 4 • **Each question carries 5 marks** • Max. Marks = 4 x 5 = 20 Marks		
Section – B (Long Answer questions)		
• Total Questions = 3. Questions to be answered = 2 • **Each question carries 10 marks** • Max. Marks = 2 x 10 = 20 Marks		

KUVEMPU UNIVERSITY

CURRICULUM FOR V & VI SEMESTERS (B A)

ENGLISH OPTIONAL (DISCIPLINE CORE SUBJECT)

CHAIRMAN

Dr. Nagya Naik E H
Professor, Kuvempu University, Shankaraghatta

MEMBERS

Dr. Nagabhushan H S	Associate Professor & Principal, KVMC for Women, Shivamogga
Dr. Channappa. C	Professor, SMR FGC, Shankaraghatta
Dr Avinash T	Professor, Sahyadri Arts College, Shivamogga
Dr Metri Mallikarjun, Professor, Sahyadri Arts College, Shivamogga	
Smt. Veena. MV	Associate Professor, GFGC, Shivamogga
Smt. Madhuri Maladkar	Assistant Professor, IDSG FGC, Chikkamagalur

Kuvempu University

Curriculum for B.A. English Optional (5&6 Semesters)

Name of the Degree Program: III B.A.

Discipline Core Subject: English

Total Credits for the Subject:

12+12=24(for 5 &6 Semesters)

Starting year of implementation:

2023-24

Program Outcomes

By the end of the program the students will be able to:

1. Provide a comprehensive foundation in literary studies and linguistic competencies.
2. Introduce multiple areas of writings in English language and translations in English.
3. Connect liberal arts Humanities and Social Sciences through a multidimensional curriculum.
4. Develop the students' ability to read, process, think critically and independently.
5. Explore texts and contexts of writings and readings, from varied spaces.
6. Establish a multidisciplinary approach towards higher studies and research.
7. Develop in students an inclusive outlook and responsible citizenship, inculcate ethical thinking and a sense of social commitment.
8. Provide training to students in multiple areas of employment – conventional and new.
9. Train students in professional skills relevant to career opportunities.
10. Prepare students for the technologically advanced world, its challenges and opportunities.
11. To enable practical and experiential learning.

General Proposed Learning Outcomes for the Bachelor of Arts English Program:

At the end of the BA program, the learners will be

1. Exposed to and demonstrate a broad knowledge of major and minor writers, texts and contexts and defining issues of canonical and non-canonical literature.
2. Will be enriched by familiarity with other literatures and more importantly with Indian writers their ethos and tradition of writing and discourse.
3. Would have honed their skills of remembering, understanding, applying, analyzing evaluation and creating literature.
4. Would be able to write with clarity, creativity and persuasiveness.
5. Most importantly, learners would develop and demonstrate an awareness of the significance of literature and literary forms and the debates of culture they generate as values.
6. Be equipped with advanced literary, linguistic skills.
7. Competency in the use of English from for a variety of domains.
8. Have a spirit of inquiry and critical thinking.
9. Be able to articulate thoughts and generate/understand multiple interpretations.
10. Locate and contextualize texts across theoretical orientations, cultural spaces.
11. Possess Reading and writing skills catering to academic and other professional discipline viz. print and electronic media, advertising, content writing etc.
12. Imbibe a multi-disciplinary approach in higher education and research.
13. Be skilled in multiple domains and careers.
14. Become adept at use of English in the current technological climate.
15. Have hands-on work experience.

Curriculum Structure for V and VI Semester BA English (DSC)

A1 – Curriculum and Content Chart for V and VI Semester B.A. English Optional (DSC)

Semester	Title Name of the course Credits	Vocational	Assessment
V DSC – A9	Literary Criticism (4)		60 F+40 S
V DSC – A10	Subaltern Studies (4)		60 F+40 S
V DSC – A11	Life Narratives (4)		60 F+40 S
VI SEMESTER			
VI DSC – A12	Post-Colonial Studies (4)		60 F+40 S
VI DSC – A13	Introduction to the History of English Language (4)		60 F+40 S
VI DSC – A14	World Literature in English & in Translation (4)		60 F+40 S

Pedagogy for student engagement is predominantly lectures. However, other pedagogies enhancing better student engagement to be recommended for each course. The list includes active learning, course projects, problem or project-based learning, case studies, self-study like seminar, term paper or MOOC. Every course needs to include assessment for higher order thinking skills (Applying, Analysing, Evaluating, Creating). However, this column may contain alternate assessment methods that help formative assessment (i.e. assessment for learning).

B. A

English

Semester V
Course – A9
Title of the Course – Literary Criticism

Course	A9
Type of Course	DSC
Theory/ Practical	Theory
Credits	04
Instruction hours per week	04
Total No. of Lectures Hours Semester	60
Duration of Exam	2 hours
Formative Assessment Marks	40
Summative Assessment Marks	60
Total Marks	100

Content of Course A9: Literary Criticism		60 Hrs
Unit - 1	**Introduction to Criticism**	20
What is criticism? Meaning, Definitions, Functions Methods of Criticism :- Biographical, New critical, Cultural) **Concepts/Schools**: New Criticism, Structuralism, Post Structuralism, New Historicism, Popular Culture, Postmodernism		
Unit – 2	**Classical Criticism**	12
From *Poetics*: Aristotle's Concept of Tragedy • What is Tragedy? • Idea of Tragic Hero • Plot and Character • Catharsis-Peripetaia & Anagnorisis • Three Unities		
Unit – 3	**Romantic Criticism**	12
S T Coleridge– Concept of Imagination/ fancy (from Literaria Biographia) William Wordsworth– Preface to the Lyrical Ballads		
Unit – 4	**Modern Criticism/Essays**	16

1. T.S Eliot: Tradition and Individual Talent 2. Wolfgang Iser: Act of Reading	

Suggested Reading

Adams, Hazard. *Critical Theory Since Plato*. New York: Harcourt Brace Jovanovich, 1971.

Abrams, M. H. *A Glossary of Literary Terms*. (8th Edition) New Delhi: Akash Press, 2007.

Baldick, Chris. *The Oxford Dictionary of Literary Terms*. Oxford: Oxford University Press, 2001.

Barry, Peter. *Beginning Theory: An Introduction to Literary and Cultural Theory*. New Delhi: Viva Books, 2003.

Drabble, Margaret and Stringer, Jenny. *The Concise Oxford Companion to English Literature*. Oxford: Oxford University Press, 2007.

Fowler, Roger. Ed. *A Dictionary of Modern Critical Terms*. Rev. ed. London: Routledge & Kegan Paul, 1987.

Habib, M. A. R. *A History of Literary Criticism: From Plato to the Present*. London: Blackwell, 2005.

Hall, Donald E. *Literary and Cultural Theory: From Basic Principles to Advanced Application*. Boston: Houghton, 2001.

Pedagogy: Lectures, Seminar, Role play, Group discussion

Formative Assessment	
Assessment Occasion/ type	**Weightage in Marks**
First Internal Test	10
Second Internal Test	10
Assignment	10
Seminar	10
Total	**40**

B. A. English Semester V Course - A10

Title of the Course: Subaltern Studies

Content of the Course A11: Subaltern Studies	
Course	A10
Type of Course	DSC
Theory/ Practical	Theory
Credits	04
Instruction hours per week:	04
Total No. of Lectures Hours per Semester	60
Duration of Exam	2 hours
Formative Assessment Marks	40
Summative Assessment Marks	60
Total Marks	100

Content of Course A10: Subaltern Studies	60 Hrs
Unit –1: Introduction	15
• Concept: Understanding Subaltern-subaltern history • *Annihilation of Caste* – Dr. B.R. Ambedkar • *On Some Aspects of Historiography of Colonial India* – Ranajit Guha	
Unit – 2: Fiction	15
Mahasweta Devi- *Douloti*	
Unit – 3: Play/Short Stories • *Amma*-Dr. Amma Mahadeva • *Bakha*-Vasula Yellooti (Excerpts)	10
Unit – 4: Prose/Narratives	20
Gosu-Kavi(Part-I) -Siddalingaiah	

Suggested Reading

Guha, Ranajit (ed.). *A Subaltern Studies Reader*. Oxford University Press, Delhi, 2000.

Guha, Ranajit (ed.). *Subaltern Studies: Writings on South Asian History and Society*. OUP, New Delhi, 19822.

Cary Nelson and Lawrence Grasberg (eds.). *Marxism and the Interpretation of Culture* University of Illinois Press, 1987.

Vinayak Chaturvedi (ed.). *Mapping Subaltern Studies and the Postcolonial*. Verso, London, 2000.

Chakrabarty, Dipesh. "Subaltern Studies in Retrospect and Reminiscence," *South Asia: Journal of South Asian Studies*, vol. 38, no. 1, 2015.

Chibber, Vivek. *Postcolonial Theory and the Specter of Capital*. Verso Books, 2014.

Guha, Ranajit., and Gayatri Chakravorty. *Spivak: Selected Subaltern Studies*. Oxford University Press, 1988.

Lubben, David E. *Reading Subaltern Studies: Critical History, Contested Meaning, and the Globalization of South Asia*. Permanent Black, 2001.

Spivak, Gayatri Chakravorty. *Can the Subaltern Speak? Reflections on the History of an Idea*. 1988.

Spivak, Gayatri Chakravorty. *A Critique of Postcolonial Reason: Toward a History of the Vanishing Present*. Harvard UP, 1999.

Pedagogy: Lectures, Seminar, Role play, Group discussion

Formative Assessment	
Assessment Occasion/ type	**Weightage in Marks**
First Internal Test	10
Second Internal Test	10
Assignment	10
Seminar	10
Total	**40**

BA English
Semester V
Course: A11
Title of the Course: Life Narratives

Course	A11
Type of Course	DSC
Theory/ Practical	Theory
Credits	04
Instruction hours per week	04
Total No. of Lectures/ Hours Semester	60
Duration of Exam	2 hours
Formative Assessment Marks	40
Summative Assessment Marks	60
Total Marks	100

Content of Course A11 - Life Narratives	60 Hrs
Unit –1: Introduction to Life Narratives	15
• What are Life Narratives? – Genres of Life Writings • 'Introduction' from *The New Critical Idiom: Autobiography*-Linda Anderson	
Unit – 2: Autobiography	22
• M K Gandhi- *My Experiments with Truth* (Excerpts: Chapters 1,2,5,15 &32) • Manoranjan Byapari- *Interrogating My Chhotkal Life* (Chapters 1,2 &3) • Kamala Das—*My Story* (Chapters-1, 2, 23,24, &25)	
Unit – 3: Memoirs &Narratives	15
1. Mukhtar Mai-*In the Name of Honour*	
Unit – 4 Biography & Biopics	08
1. *BLACK*- Directed by Sanjay Leela Bansali (film text)	

Suggested Reading

Anderson, Linda. *Autobiography*. Routledge, London. 2011.

Anderson, Linda. *Women and Autobiography in the Twentieth Century: Remembered Futures*. Prentice hall, Harvester Wheatsheaf, London.1997.

Andrews, William L. and Douglas Taylor. *Richard Wright's Black Boy (American Hunger): A Casebook*. Oxford University Press, New York, 2003.

Baggerman et al (eds.) *Controlling Time and Shaping the Self: Developments in Autobiographical Writing since the Sixteenth Century*. Brill, Leiden. 2011.

Lejeune, Philippe. *On Autobiography*. U of Minnesota P, Minneapolis.1988.

Lionnet, Françoise. *Autobiographical Voices: Race, Gender, Self-Portraiture*. Cornell UP, Ithaca. 1991.

Smith, Sidonie A. & Julia Watson, eds. *Reading Autobiography: A Guide for Interpreting Life Narratives*. U of Minnesota P, Minneapolis. 2001.

Weintraub, Karl J. *The Value of the Individual: Self and Circumstance in Autobiography*. Chicago UP, Chicago. 1982.

Pedagogy: Lectures, Seminar, Role play, Group discussion

Formative Assessment	
Assessment Occasion/ type	**Weightage in Marks**
First Internal Test	10
Second Internal Test	10
Assignment	10
Seminar	10
Total	**40**

B. A. English
Semester VI
Course – A12
Title of the Course: Postcolonial Studies

Course	A12
Type of Course	DSC
Theory/ Practical	Theory
Credits	04
Instruction hours per week	04
Total No. of Lectures-Hours Semester	60
Duration of Exam	2 Hours
Formative Assessment Marks	40
Summative Assessment Marks	60
Total Marks	100

Content of Course A12: Postcolonial Studies	60 Hrs
Unit – 1: Introduction to Postcolonial Studies	15
• Key concepts: Colonialism, Imperialism, Neo-colonialism, Orientalism, Postcolonialism, Postcolonial Literatures, Hybridity, Race	
Unit – 2: Essays on Postcolonial Studies	15
• Ngugi Wa Thiango- The Universality of Local Knowledge • Bill Ashcroft, Gareth Griffiths and Helen Tiffin (eds)- 'Introduction' to *The Empire Writes Back*	
Unit – 3: Postcolonial Texts	12
• Banu- *Just One Word* (Short Story) • Wole Soyinka- *Telephone Conversation* (Poem) • Vasudhendra-*Red Parrot*(Short Story)	
Unit – 4: Fiction	08

• [illegible]	[illegible]

Suggested Reading

Abrams M H, and Harpham. *A Glossary of Literary Terms*. Cengage Learning, New Delhi, 2014.

Barry, Peter. *Beginning theory: An introduction to literary and cultural theory*. MUP, Manchester, 201".

Habib M A R. *A History of Literary Criticism: From Plato to the Present*. London: Blackwell, 2005

Loomba, Ania. *Colonialism/Postcolonialism*. Routledge, London 2001

Trivedi, Harish & Meenakshi Mukherjee eds. *Interrogating Post colonialism: Theory, Text and Context*. IIAS, New Delhi, 1996

Vincent B., et al., The Norton Anthology of Theory and Criticism, WW Norton and Company, London, 2018.

Pedagogy: Lectures, Seminar, Role play, Group discussion

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
First Internal Test	10
Second Internal Test	10
Assignment	10
Seminar	10
Total	40

B. A. English
Semester VI
Course – A13

Title of the Course: Introduction to the History of English Language

Course :	A13
Type of Course	DSC
Theory/ Practical	Theory
Credits:	04
Instruction hours per week	04
Total No. of Lectures Hours Semester	60
Duration of Exam	2 Hours
Formative Assessment Marks	40
Summative Assessment Marks	60
Total Marks	100

Content of Course A13: Introduction to the History of English Language :	66 Hrs
Unit – 1: Origin and Development of the English Language	15
• Language Families Indo-European Family of Languages English as part of Germanic Family • Landmarks in the development of the English Language	
Unit – 2: Influences on English Language :	15
• Latin Influence • Greek Influence • French Influence • Other Influences: Scandinavian, Indian, Arabic	

Unit – 3: Makers of English Language	15
1. William Shakespeare 2. Bible Translators 3. John Milton 4. John Dryden 5. William Wordsworth	
Unit – 4: Language Development	15
• Development of English as Language • Standard English, English as World Language • Varieties of English • Influence of Radio, Television, Cinema, Pop Culture and Social Media on English	

Suggested Reading

Wrenn C. L. *The English Language*. Vikas Publishing, India. 2012.

Baugh A. C. *A History of English Language*. Routledge, India. 2012.

Emerson and Oliver Farrar. *An Outline History of the English Language*. MacMillan, New York. 1936.

Crystal David. *English as a Global Language*. Cambridge University Press, New York. 1997.

Pedagogy: Lectures, Seminar, Role play, Group discussion

Formative Assessment	
Assessment Occasion/ type	**Weightage in Marks**
First Internal Test	10
Second Internal Test	10
Assignment	10
Seminar	10
Total	**40**

B. A. English
Semester VI
Course - A14
Title of the Course- World Literature in English & in Translation

Course	A14
Type of Course	DSC
Theory/ Practical	Theory
Credits	04
Instruction hours per week	04
Total No. of Lectures/ Hours/ Semester	60 Hours
Duration of Exam	3 Hours
Formative Assessment Marks	40
Summative Assessment Marks	60
Total	100

Content of Course A14: World Literature in English & in Translation	60 Hrs
Unit – 1 **Introduction to World Literature**	15
• **Concepts:** World Literature, Modern Play, Heroism, Adventure, Theism, Magical Realism, Realism, Cultural Conflicts, Tradition v/s Modernity • **Show Your Acquaintance with major works:** Vyasa- *The Mahabharatha* Fyodor Dostoevsky- *Crime and Punishment* Gustave Flaubert- *Madame Bovary* Jonathan Swift- *Gulliver's Travels: 4th Book* Shashi Deshpande- *That Long Silence* Prem Chand- *Godan*	
Unit – 2: **Novel**	15
Earnest Hemingway- *The Old Man and the Sea*	
Unit – 3: **Short Stories**	10
Guy de Maupassant- *The Diamond Necklace* R.K. Narayan- *An Astrologer's Day*	
Unit – 4: **Play**	20

Gmah Kamard-Taghalig	

Suggested Reading

Richardson William Lee and Jesse M Owen. *Literature of the World: An Introductory Study*.

Segwan Press. New York. 2018.

D'haen Theo. *The Routledge Concise History of World Literature*. Routledge, India. 2011. D'haen Theo, et al. *World Literature: A Reader*. Routledge, India. 2012.

Das, Sisir Kumar and Sukanta Chaudhuri (eds.). *Selected Writings on Literature and Language: Rabindranath Tagore*. Das Gupta & Co. Pvt. Ltd., Kolkata, 2001.

D'haen, Theo, et al., editors. *World Literature: A Reader*. Princeton University Press. Routledge, India. 2012.

Pedagogy: Lectures, Seminar, Role play, Group discussion

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
First Internal Test	10
Second Internal Test	10
Assignment	10
Seminar	10
Total	40

B.A. Linguistics
Program Structure for Vth and VIth Semester

Semester V									
Sl. No.	Course Code	Title of the Course	Category of Courses	Teaching Hours per Week (L-T-P)	SEE	CIE	Total Marks	Duration of Exam	Credits
13	BA.5.1	Contrastive Linguistics and Error Analysis	DSC	3-2-0	60	40	100	3	4
14	BA.5.2	Dialectology	DSC	3-2-0	60	40	100	3	4
15	BA.5.3	Lexicography	DSC	3-2-0	60	40	100	3	4
Sub –Total (E)					180	120	300		12

Semester VI									
Sl. No.	Course Code	Title of the Course	Category of Courses	Teaching Hours per Week (L-T-P)	SEE	CIE	Total Marks	Duration of Exam	Credits
16	BA.6.1	Language Planning and Policy in India	DSC	3-2-0	60	40	100	3	4
17	BA.6.2 Elective	Translation Studies	DSC	3-2-0	60	40	100	3	4
18	BA.6.3	Language Teaching Methods	DSC	3-2-0	60	40	100	3	4
Sub –Total (F)					180	120	300		12

BA, Linguistics
Program Structure for Vth Semester

5.1 Contrastive Linguistics and Error Analysis (DSC)

Main Objectives of this Course:

The chief aim of this course is to acquire knowledge of the basic concepts of modern methods and Important Principles of the Contrastive Linguistics and Error Analysis, and also, to know various kinds of Contrastive methods and types of error description in detail.

UNIT - 1 Introduction to Contrastive Linguistics: Definition-Nature and Scope of Contrastive Linguistics, Contrastive Linguistics and Bilingualism, Contrastive features of Two of more languages.

UNIT 2. Principles of Contrastive Linguistics: Theoretical Principles of contrastive linguistics, study of interference, comparing Phonological, Morphological, Syntactical and Lexical systems.

UNIT 3: Description of Errors: Introduction- types of errors creative construction process; causes for errors, inter-lingual and intra-lingual errors.

UNIT 4: Error analysis; L1 and L2 hypothesis, errors- as necessary conditions for language learning, errors-mistakes and lapses Goofing, inter language and target language comparison, systematic and a systematic Errors.

Reference:

Allen And Corder	1974	Techniques in Applied Linguistics, Vol 3Corder
	1967	The Significance of Learners Errors, Ital Vol 5:
Jack. C Richards	1974	Error Analysis
Jacquelyn, S.,	1974	An Error in Error Analysis; Language Learning Vol 24
Lado, R.,	1957	Linguistics Across Culture
Nayak, H. M.,	1967	Kannada-Literary and Colloquial
Nickel, G.,	1974	Papers in Contrastive Analysis
Pillai, K. T.,	1975	Contrastive Linguistics and Language Teaching
Pointer, R. L.,	1972	Linguistics And Applied Linguistics Aims & Methods
Stig Johan Son	1975	The Use of Error Analysis and Contrastive Analysis, English Language Teaching Vol 29

Course Outcomes:

At the end of the course, the students will be able to

1.understand the Contrastive Linguistics and Bilingualism, Contrastive features of Two of more languages.
2.understand to Theoretical Principles of contrastive linguistics,
3.follow the procedures of Communication models and Society
4.types of errors creative Construction process, causes for errors, interlingual and intralingual errors, error analysis.
5.know necessary conditions for language learning.

5.2. Dialectology (DSC)

Main Objectives of this Paper:

This Paper has been designed basically as an introduction to the study of Dialects. Language can be studied mainly from the point of view of Dialectology. The study of Dialects, which are varieties of a Language, used by groups, which are smaller, than the total Community of Speakers of the Language. This Study is useful for the present Education and in understanding the Social attitudes towards Languages.

Course Content

UNIT 1: Introduction Aims and objectives of Dialectology, Idiolect, Dialect, Focal Area, Relic Area, Mutual intelligibility, Common core, Isoglosses, Dialect Atlas, Overall pattern and, Dialect distance etc.,

UNIT 2: Social, Regional and Temporal Dialects, Different Approaches To Dialectology, Traditional and Structural, Synchronic and Diachronic and Comparative Dialectology

UNIT 3: A Brief Survey of the History of Dialectology, A brief sketch of Linguistic survey of Germany, New England, France, and other countries

UNIT 4: A brief sketch of Linguistic survey of India, Dialects of Kannada

Reference

Agesthialingom, S., And Karunakaran,K. (Ed)	1980	Sociolinguistics and Dialectology
Allen & Underwood	1971	Readings in American Dialectology
Arokianathan,S. (Ed)	1980	Dialectology
Bloomfield,L.,	1933	Language
Francis, W.N.,	1983	Dialectology, An Introduction
Giglioli, P.G., (Ed)	1972	Language and Social Context
Kurath, H.,	1939	Hand Back Of Linguistic Geography Of New England
	1949	World Geography of The Eastern United States
Pei,M.M.,	1980	The Study Of Dialects An Introduction Dialectology
Sebeok, (Ed.)	1968	Current Trends in Linguistics, Vol.Ix
Sengupta,	1978	Field Study
Somasekaram Nair,S., (Ed.A.)	1973	Dialectology (Seminar Papers)
Trudgill, P.,		Dialectology
Weinrich, U.,	1953	Languages in Contact
William, J.S.,	1972	Field Linguistics
ಕಿಟ್ಟೆಲ್, ಕೆ. ಎಸ್.,	1973	ಕನ್ನಡ ಇಂಗ್ಲಿಷ್, ಇಂಗ್ಲಿಷ್ ಕನ್ನಡ ನಿಘಂಟು
ಕೃಷ್ಣಮೂರ್ತಿ, ಕೆ.ಎಂ.,	1958	ಕನ್ನಡ ಭಾಷಾ ಭೂಪಟ, ಧಾರವಾಡ, ಕರ್ನಾಟಕ ವಿಶ್ವವಿದ್ಯಾಲಯ
ಗಣೇಶಯ್ಯ, ಕೆ.,	1993	ಕನ್ನಡ ಭಾಷಾ ವಿಜ್ಞಾನ, ಮೈಸೂರು, ಕನ್ನಡ ಅಧ್ಯಯನ ಸಂಸ್ಥೆ, ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ
ಜಿ.ಎಸ್. ಆರ್. ಕೃ.	1973	ಭಾಷಾವಿಜ್ಞಾನದ ಮೂಲತತ್ವಗಳು, ಮೈಸೂರು, ಕನ್ನಡ ಅಧ್ಯಯನ ಸಂಸ್ಥೆ, ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ
ಶೆಟ್ಟರ್, ಈ. ಎಂ.,	1972	ಉಪಭಾಷೆ, ಧಾರವಾಡ, ಕರ್ನಾಟಕ ವಿಶ್ವವಿದ್ಯಾಲಯ

[illegible]

[illegible]	1998	[illegible]
	2003	[illegible]
	2004	[illegible]
[illegible]	1972	[illegible]
[illegible]	1975	[illegible]
	1976	[illegible]
	1999	[illegible]

Course Outcomes:

At the end of the course, the students will be able to

1.understand the fundamentals of Dialects.
2.to draw isoglosses and prepare dialect areas based on given data.
3.familiarize themselves with approaches to dialectology.

5.3. Lexicography (DSC)

Main Objectives of this Paper:

The chief aim of the Present course is to equip the Students with the major Techniques and Methods of Lexicographical Analysis and Description. And also, to motivate them to understand the basic concepts of Lexicography in proper manner. Hence unique elementary concepts of Lexicography and an over view on the subject Lexicography are briefly mentioned in this course.

Course Content

UNIT-I: Lexicography as Applied linguistics- Lexicology and Lexicography- Nature of Lexicon in a Language Lexicon and Grammar- Morpheme, Word and Lexeme, Item and System- Structure of Lexeme- Simple and compositive lexemes- Set Continuumsy- Collocative, derivative, compounds, proverbs and idioms- Collocation and context- Dialectal, Sociolect and context.
UNIT II : Form- Meaning Relationship: Polysemy, Homonymy, Synonymy, Antonymy, Hyponymy- Semantically related words- Semantic field- Functional Words- Proper names

UNIT III : Types Of Dictionaries: Synchronic and Diachronic dictionary-Monolingual and Bilingual dictionary.
UNIT IV: Restricted and Non-restricted Dictionary- Thesaurus, Learners dictionary and Encyclopedia- Making of a Dictionary and collection of materials factors and variables

Reference

Bejoint, Henri 2000. *Modern Lexicography: An Introduction*. Oxford. Oxford University Press.

Jackson, Howard 2002. *Lexicography: An Introduction*. London: Routledge.

Landau, S.I.	1989. *Dictionaries: The Art and Craft of Lexicography*. Cambridge, New York: Cambridge University Press.
Singh, R. A.	1982. *An Introduction to Lexicology and Lexicography*. Mysore: Central Institute of Indian Languages.
Householder, Fred W & Sol Saporta	1567. *Problems in Lexicography*. Bloomington (eds). Indiana University Press.
Katre, S.M.	1565. *Lexicography*. Annamalainagar: Annamalai University Press.
Svensen, B.	1993. *Practical Lexicography: Principles and methods of Dictionary-Making*. London: Oxford University Press.
Zgusta, L. et al.	1971. *Manual of Lexicography*. The Hague: Mouton. Lm-C-304.
[illegible]	1999. [illegible]
[illegible]	1993. [illegible]

Course Outcomes:

At the end of the course, the students will be able to

1. understand lexicography
2. understand Form-Meaning Relationship
3. link the language data and usage contexts
4. know specialized dictionaries

BA., Linguistics

Program Structure for VI[th] Semester

6.1. Language Planning & Policy in India (DSC)

Main Objectives of This Paper:
The present Paper has been practically Designed to give introductory knowledge of Language Planning and policy in India; to Understand the basics, concepts of Language Planning, Dimensions and Process, Development and Use.

Course Content

UNIT 1: Introduction: An Introduction to language planning-language problems, Language Situations-Relationship between language and various sectors of the Society: education; administration; communication.
UNIT-2: Dimensions and Processes of Language Planning: Three Major dimensions, policy formulation, codification and elaboration, Modernization, Standardization and Graphication.
UNIT- 3: Types of language planning and a model for language planning, Language Policy: Parameters of Language Policy, constraints of language policy.
UNIT-4: Language policy in India, language policy in North and South India, linguistic diversity and language policy.

References:

Cobarrubias, J&J Fishman(eds.) 1983. *Progress in Language planning:International Perspective*. The Hague: Mouton.

Eastman, C.M. 1983. *Language Planning: An Introduction*. San Francisco: Chandler & Sharp.

Fishman, J.A. 1974. ed. *Advances in Language Planning*. The Hague: Mouton.

Rubin, J. and R. Shuy (eds.). 1973. *Language Planning: Current Issues and Research*. Washington, D.C.Singh, Udaya Narayana. 1992. On Language Development and Planning: A Pluralistic Perspective. Shimla: IIAS.

Ahlarabbana, S.T. 1976. *Language Planning for Modernization: The Case of Indonesian and Malaysian*. The Hague: Mouton.

Coulmas, F. (ed.) 1984. *Linguistic Minorities and Literacy*. Berlin/New York: Mouton.

Gvishchinsky, S.C. 1984. *Literacy: The Growing Influence of Linguistics*. The Hague: Mouton.

Joseph, J.E. 1987. *Eloquence and Power*. London: Frances Printer.

Khubchandani, L.M. 1983. *Plural Languages, Plural Culture*. East-West Centre Book: University of Hawaii Press.

Krishnamurti, BH & A. Mukherji (eds.). 1983. *Modernization of Indian Languages in News Media*. Hyderabad: Osmania University Press.

Ray, P.S. 1963. *Language Standardization*. The Hague: Mouton.
Stubbs, M. 1980. *Language and Literacy: The Sociolinguistics of Literacy*. Boston: Routledge & Kegan Paul.

Course Outcomes:

At the end of the course, the students will be able to

1. reveal and explore the important aspects of language planning
2. make aware students about processes of planning and Understand language attitudes
3. explain implicational facts and recent developments in Language planning
4. understand the parameters of Language Policy

6.2. Translation Studies (DSC)

Main Objectives of this Paper:

This paper mainly introduces the basics, Concepts, various theories, and Techniques of Translation and also to understand the different types of Translations, Issues of Translation, Kinds of Texts and Applicational Approaches of Translation.

Course Content

UNIT- I: Translation and Types of Translations: A short history of Translation as an activity— Definition and Processes of translation, Source language, and Target language

UNIT- II: Kinds of translation: intra-lingual, inter-lingual and inter-semiotic. Translation: written and spoken, full and partial, total and restricted, bound and unbound.

UNIT III: Issues of Translation: Equivalence, Loss and Gain, Problems and Facilities of translating; Structural and Cultural uniformity; Lexical differences. Un-translatability-Linguistic, Stylistic and cultural.

UNIT IV : Translation of different kinds of texts: Scientific, Technical, Legal, Administrative and Literary- Translation of literary texts; Problems of Lexical adjustments in translation; Metaphor and figures of speech.

Reference

Bassnett, S. & Lefevere, A. ed. 1990. Translation, History and Culture. London: Printer Publishers.
Catford, J.C. 1965. A Linguistic Theory of Translation. Oxford University Press.
Gargesh, R. & K.K. Goswami (eds) 2007. Translation and Interpreting. Delhi: Orient Longman Pvt. Ltd.
Newmark, P. 1981. Approaches to Translation. Pergamon Press.
Nida, Eugene A. 1975. Language, Structure and Translation (Essays selected by A.S. Dil) Stanford Univ. Press.
Nida, Eugene A. & Taber, C.R. 1974. The Theory and Practice of Translation. Leiden: E.J. Brill.
Ramakrishna, S. ed. 1997. Translation and Multilingualism. Delhi: Pencraft.
Singh, Udaya Narayana 2009. Translation as Growth. Delhi: Pearson Longman.

Somers, H. (ed) 2003. Computers and Translation: A Translators Guide. Amsterdam: John Benjamins.
Bell, R.T. 1991. Translation and Translating. London: Longman.
Duff, Alan. 1989. Translation. Oxford: Oxford University Press.
Savory, T. 1968. The art of Translation. London: Cox and Wyman Ltd.
Bhatnagar, Y.C. 1993. Theory and Practice of Translation. Delhi: Ajanta Publications.
Newmark, P. 1987. Approaches to Translation. Oxford: Pergamon Press.
Nida, E.A. 1964. Towards A Science of Translating. Leiden: E.J. Brill.
_____: 1975. Language Structure and Translation. Stanford: University Press.
_____ and Taber, 1969. The theory and Practice of Translation. Leiden: E.J. Brill.

Course Outcomes :

At the end of the course, the students will be able to

1. understand basics, Concepts, various theory and Techniques of Translation.
2. understand the different types of Translation, Issues of Translation, Kinds of Texts and Applicational Approaches of Translation.
3. understand the Machine Translation and Its new approach.

6.3. Language Teaching Methods (DSC)

Main Objectives of this Course

The chief aim of this course it to acquire knowledge of the basic concepts of modern methods and Important Principles on the First or Foreign Language Teaching. And also, to know various kinds of language Teaching Aids, Language Testing and Evaluation.

UNIT1: Language Teaching: Language learning, second language learning and language teaching, Psychology of language learning. Purpose of language teaching. Qualifications of language teacher. language teaching methods

UNIT2: Language Teaching Methods: Grammar Translation method, Direct method, Bilingual method, Substitution method, Audio lingual and Audio-Visual method, Bilingual method, Linguistic Method, Communicative method, programmed instruction method etc., Scope and Limitations.

UNIT3: Principles of Language Teaching: Theoretical Principles of Language teaching: Teaching vocabulary, Pronunciation, speaking, reading and writing. Language Testing

UNIT4: Methods of testing. Formal and informal tests, Language Teaching Aids - Audio-Visual and Audio lingual, Language laboratory, programmed instructions.

Reference:

Allen, H.B., 1936. Reading In Applied Linguistics.
Allen And 1974. Techniques In Applied Linguistics, Vol 3

Corder		
Bennet,	1974	Applied Linguistics And Language Learning
Brown, H.D.,	1981	Principles Of Language Learning Teaching
Brumfit, C.,	1984	Communicative Methodology In Language Teaching
Corder	1967	The Significance Of Learners Errors, Iral Vol. 5,
Fries		The Language Teaching And Learning Of A Foreign Language
Jack. C.Richards	1974	Error Analysis
Jacquelyn, S.,	1974	An Envy In Error Analysis, Language Learning Vol 24
Klein, W.,	1986	Second Language Acquisition
Krashen, S.,	1981	Second Language Acquisition And Second Language Learning
Lado Robert	1964	Language Teaching A Scientific Approach
	1969	Language Testing
	1957	Linguistics Across Culture
Mackey, W.F.,	1963	Language Teaching Analysis
Narasimha Rao, K. V. V. L.,	1980	Evaluation In Language Education
Nickel, G.,	1974	Papers In Contrastive Analysis
Pillai, K. T.,	1973	Contrastive Linguistics And Language Teaching
Richter , R. L.,	1972	Linguistics And Applied Linguistics Aims & Methods
Ramachandra, C.S.,	1999	Studies In Kannada Linguistics
Stig Johan Son	1973	The Use Of Error Analysis And Contrastive Analysis, Elglish Language Teaching Vol 28
Thirumalai, M.S.	1978	Learning Theories And Linguistics
Wilkins, D.A.,	1972	Linguistics in Language Teaching
[illegible]	1972	[illegible]
[illegible]	1982	[illegible]
[illegible]	1972	[illegible]
[illegible]	1966	[illegible]
[illegible]	1987	[illegible]
[illegible]	1988	[illegible]
[illegible]	1971	[illegible]
[illegible]	1999	[illegible]
[illegible]	1980	[illegible]

Course Outcomes:

At the end of the course, the students will be able to

1.understand the basic concepts of language Teaching methods
2.know the important Principles of Language Teaching method And
3.know various kinds of language Teaching Aids, Language Testing and Evaluation

KUVEMPU UNIVERSITY

JNANASAHYADRI, SHANKARAGHATTA, SHIVAMOGGA-577451

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Kuvempu University NEP Proposed Curricular and Credits Structure under Choice Based Credit System (CBCS) of English Major& One Minor Discipline Scheme for the Four Years B.A. Undergraduate Honors Program with effect from 2021-22

FIRST YEAR, SEMESTER-1

Objective: Understanding, exploration & ability to solve well defined problems

Category	Course code	Title of the Paper	Marks			Teaching hours/week			Credit	Duration of exams (Hrs)
			IA	SEE	Total	L	T	P		
AECC1	21BA1AEKN1	Kannada	40	60	100	4	-	-	3	3
AECC2	21BA1AEEN1	English Language	40	60	100	4	-	-	3	3
DSC1	21BA1CEN1	Introduction to English Literature	40	60	100	3	-	-	3	3
DSC2	21BA1CEN2	Indian Literature in English up to 1947	40	60	100	3	-	-	3	3
SEC1	21BA1SEP1	English for Effective Communication	20	30	50	1	2	-	2	2
VAC1	21BA1VEP1	Physical Education for fitness	20	30	50	-	-	2	1	2
VAC2	21BA1VEW1	Health & Wellness	20	30	50	-	-	2	1	2
GEC1	21BA1GEP1	Gender Studies	40	60	100	3	-	-	3	3
Semester Credits										

FIRST YEAR, SEMESTER-2										
Objective: Understanding, exploration&ability to solve well defined problems										
Category	Course code	Title of the Paper	Marks			Teaching hours/week			Credit	Duration of Exams (Hrs)
			IA	SEE	Total	L	T	P		
AEC3	21BA2A01E2	Kannada	40	60	100	4	-	-	3	3
AEC4	21BA2A41E2	English Language	40	60	100	4	-	-	3	3
DSC3	21BA2C22S3	Introduction to Phonetics and Linguistics	40	60	100	3	-	2	3	3
DSC4	21BA2C23S3	Basic Indigenous Indian Disciplinal English	40	60	100	3	-	-	3	3
AEC5	21BA2A1E51	Environmental Studies	25	25	50	2	-	-	2	2
VBC3	21BA2V32E2	Physical Education-Yoga	50	50	100	-	-	2	1	2
VBC4	21BA2V41FR1	NCC/NSS/R&R (SAQ)-Optional	25	25	50	-	-	2	1	2
OEC2	21BA2O2E72	Professional English	40	60	100	3	-	-	3	3
Subtotal Credits										

SECOND YEAR: SEMESTER-3										
Objective: Focus, immersion and ability to solve broadly defined problems										
Category	Course code	Title of the Paper	Marks			Teaching hours/week			Credit	Duration of exams (Hrs)
			IA	SEE	Total	L	T	P		
ABCC6	21BA3A8LK3	Kannada	40	60	100	4	-	-	3	3
ABCC7	21BA1A7LE3	English Language	40	60	100	4	-	-	3	3
DSCC5	21BA3S7DE3	British Literature – up to 1800	40	60	100	3	-	-	3	3
DSCC6	21BA3C4DE6	Indian Writing in English Translation	40	60	100	3	-		3	3
SBCC2	21BA3S2BS2	Academic Writing	30	30	60	1	-	2	2	2
VBCC3	21BA3V3PE3	Physical Education (for sports	30	30	60	-	-	2	1	2
VBCC4	21BA3V4NS3	NCC/NSS/RWP/CSD/Cultural	30	30	60	-	-	2	1	2
OEC3	21BA3OE3[ ]	Open Elective	40	60	100	3	-	-	3	3
Semester Credits										

SECOND YEAR: SEMESTER-4										
Objective: Focus, immersion and ability to solve broadly defined problems										
Category	Course code	Title of the Paper	Marks			Teaching hours/week			Credits	Duration of exams (Hrs)
			IA	SEE	Total	L	T	P		
AECC4	21BA4AELN4	Kannada	40	60	100	4	-	-	3	3
AECC4	21BA4AELE4	English Language	40	60	100	4	-	-	3	3
DSC4	21BA4CBEC1	British Literature (19th and 20th	40	60	100	3	-	-	3	3
DSC4	21BA4CBEC2	Gender Studies	40	60	100	3	-	-	3	3
AECC4	21BA4AECP1	Constitution of India	20	30	50	2	-	-	2	2
VAC4	21BAVVTP24	Physical Education/Games	20	30	50	-	-	2	1	2
VAC4	21BA4VSWE3	[illegible]	20	30	50	-	-	2	1	2
OEC4	21BA4OEEC1	English for Competitive Exams	40	60	100	3			3	3
Semester Credits										

THIRD YEAR: SEMESTER-5										
Objective: Real time learning& ability to solve complex problems that are ill-structured										
Category	Course code	Title of the Paper	Marks			Teaching hours/week			Credit	Duration of exams (Hrs)
			IA	SEE	Total	L	T	P		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Semester Total										

THIRD YEAR: SEMESTER-6										
Objective: Real time learning& ability to solve complex problems that are ill-structured										
Category	Course code	Title of the Paper	Marks			Teaching hours/week			Credit	Duration of exams (Hrs)
			IA	SEE	Total	L	T	P		
DSC10 minor	21BAE61[illegible]	World Literature in English and in Translation	40	60	100	4	-	-	4	3
DSC11 minor	21BAE61[illegible]	Postcolonial Literature	40	60	100	4	-	-	4	3
DSC12	21BAE61[illegible]	History of English Language	40	60	100	4	-	-	4	3
DSE 2	21BAE62[illegible]	Caribbean Literature	40	60	100	3	-	-	3	3
	21BAE62[illegible]	Rhetorical Studies	40	60	100	3	-	-	3	3
VOC	21BAE6V[illegible]	Technical Writing	40	60	100	3	-	-	3	3
SEC4	21BAE6S[illegible]	Creative Writing	20	30	50	1	-	2	2	2
UEC	21BAE6U[illegible]		25	50	75	-	-	4	3	2
Semester Credits										

Concept Note, Abbreviation, Explanation and Coding:

Concept Note:

1. CBCS is a mode of learning in higher education which facilitates a student to have flexibility in selecting his/her own choice, across various disciplines for completing a UG/PG programme.
2. A credit is a unit of study of a final degree. For the purpose of computation of workload as per UGC across the following sessions is adopted in the university:
   One credit (01) = One Theory Lecture (L) period of one (1) hour.
   One credit (01) = One Tutorial (T) period of one (1) hour.
   One credit (01) = One practical (P) period three (3) hours.
3. Course / paper subject encodes with ABC, DSC, DSE, GE, VSC, SEC, TC, IC and MIL.
4. In case of B.A. once a candidate choose two course/papers of a particular two department in the beginning, he/she shall continue the same till the end of the degree. There is no provision to change the course(s) and department(s).
5. A candidate shall choose one of the department course as major and other department course as minor in the fifth and sixth semester and major course get continued in higher semester.
6. Wherever there is a practical there will be no tutorial and vice-versa.
7. A major subject is the subject that is the main focus of one's degree coursework.
8. A minor is a secondary choice of subject that complements one's major coursework.
9. Vocational course is a course that enables an individual to acquire skill sets that are required for a particular job.
10. Internship is a designated activity that carries some credits and requiring more than 30 days of working in an organization (either in the same organization or outside) under the guidance of an identified mentor. Internship shall be an integral part of the curriculum.
11. *OEC: For non-English students, English students have to opt for OEC from departments other than major and minor disciplines.

Abbreviation Explanations:

1. AECC: Ability Enhancement Compulsory Course
2. DSC: Discipline Specific Core Course
3. DSEC: Discipline Specific Elective Course
4. SEC: Skill Enhancement Course
5. VEC: Value Added Course
6. OEC: Open Generic Elective Course
7. VC: Vocational Course
8. IC: Internship Course
9. L1: Language One
10. L2: MIL
11. L= Lecture, T= Tutorial, P=Practical
12. MIL=Modern Indian Language, English or Hindi or Telugu or Sanskrit or Urdu

Program Coding:

1. Code 21: Year of Implementation
2. Code BA: BA Program under the Faculty of Social Science Arts of the University
3. Code 1: First Semester of the Program (Can represent higher semesters)
4. Code 3: AECC, (C for DSC, 3 for SEC, V for VEC and O for OEC)
5. Code 1: First "AECC" Course in semester, similarly a running number for each other courses
6. Code LK: Language Kannada, similarly Language English, Language Hindi, Language Telugu, Language Sanskrit, Language Urdu
7. Code 1: Course in that semester
8. EN: English

Ability Enhancement Compulsory Course

AECC2

Course Objectives:

- Hone the LSRW (Listening, Speaking, Reading, Writing) skills
- Appreciate literary art
- Get equipped with knowledge of literary devices and genres
- Be endowed with creativity to express one's experiences
- Sensitize oneself with social concerns
- Develop students' ability as critical readers and writers
- Increase students' reading speed, presentation skills and analytical skills

Course Outcomes:

The course will enable students to:

CO1. Learn to appreciate and obtain the knowledge of literary devices and genres

CO2. Acquire skills of creativity and critical thinking to express one's experiences

CO3. Be aware of one's social responsibilities

CO4. Acquire and develop students' ability in logical reasoning, comprehension and translation

CO5. Enable students to increase reading speed, use correct and appropriate English

First Semester B.A. / B.S.W. English: 2021-22

AECC2: English Language

Course Title – Ability Enhancement Course – Semester I – English Language (Text Books –Imaginations and Course Book)	
Total Contact Hours : 56 (4)	Course Code : 3
Formative Assessment Marks: 40	Teaching Hours : 4 Hours per week
Summative Assessment Marks: 60	Duration of Exam : 03 Hours

UNIT I – POETRY — 18 Marks

1. *Still I Rise* by Maya Angelou
2. *Kitchen Rage* by Vijaya Chandola
3. *Let Me Not to the Marriage of True Minds* – Sonnet 116 by William Shakespeare
4. *Night of the Scorpion* by Nissim Ezekiel

UNIT II – PROSE — 20 Marks

1. *The Child* by Rose Chand
2. *The Birth of Kindness* by U.R. Ganesh
3. *After Twenty Years* by O Henry
4. *My Childhood* by A.P.J. Abdul Kalam

UNIT III–LANGUAGE SKILLS — 24 Marks

Reading Skills:

1. Comprehension Passage
2. Vocabulary
   Prefix, Suffix, Synonyms, Antonyms, Word Pairs
3. Understanding Grammar
   Be, Do and Have forms
   Subject-Verb Agreement
   Tenses – Present and Past

Suggestive Guidelines for Continuous Internal Assessment:

Test	Duration	Marks
Test – 1	At the end of 1st month of the every semester (One Hour)	10
Test -2	At the end of 2nd month of the every semester (One Hour)	10
	Two Assignments each for 5 marks	10
	Seminar for 5 marks	10
	Overall Assessment	10
	Total Marks	40

Second Semester B.A. / B.S.W: 2021-22
AECC2: English Language

Course Title – Ability Enhancement Course – Semester II – English Language (Text Books – Imagination and Course Book)	
Total Contact Hours : 30/60	Course Credits : 02
Formative Assessment Marks : 40	Teaching Hours : 4 Hours per week
Summative Assessment Marks: 60	Duration of SEA Exam : 02 Hours

UNIT I – POETRY — 16 Marks

1. *The Road not Taken* by Robert Frost
2. *Small Scale Reflections on a Great House* by A.K.Ramanujan
3. *Introduction* by Kamala Das
4. *Work of Artifice* by Margaret Atwood

UNIT II – PROSE — 20 Marks

1. *Letter to a Teacher* by The School at Barbiana
2. *The Door* by Leo Tolstoy
3. *India: Gift to the World* by Lucia Perillo
4. *The Thief's Story* by Ruskin Bond

UNIT V - LANGUAGE SKILLS — 24 Marks

Articles, Prepositions

Transformation of Sentences – Active Voice and Passive Voice, Affirmative, Negative and Interrogative

Vocabulary Exercises

Homonyms, Homophones, One-word Substitution

Dialogue Writing

Suggestive Guidelines for Continuous Internal Assessment

Test	Duration	Marks
Test – 1	At the end of 2nd month of the semester (On Prose)	10
Test – 2	At the end of 4th month of the semester (On Prose)	10
	Two Assignments each for 5 marks	10
	Seminar	05
	Overall Assessment	05
	Total Marks	40

First SemesterB.COM.BBA TDM : 2021-22
AECC2: English Language

Course Title – Ability Enhancement Course – Semester I – English Language (Text Books– Anthology and Course Book)	
Total Contact Hours : 56 Hr	Course Credits : 02
Formative Assessment Marks: 40	Teaching Hours +Hrs per week
Summative Assessment Marks: 60	Duration of ESA Exam : 03 Hours

UNIT I – POETRY — 16 Marks

1. *The Road Not Taken* by Robert Frost
2. *The Clothes Peg* by [illegible]
3. *The Seven Ages of Man* by William Shakespeare
4. *Burning of the Books* by Bertolt Brecht

UNIT II – PROSE — 20 Marks

1. *Not Just Oranges* by Sai Tamhankar
2. *Luncheon* by Somerset Maugham
3. *If War is an End* by Yakoob Mohammad Badsar
4. *My Greatest Olympic Prize* by Jesse Owens

UNIT III – LANGUAGE SKILLS — 24 Marks

Reading Skills:

1. Comprehension Passages
2. Vocabulary
   Prefix, Suffix, Synonym, Antonym, Word Form
3. Understanding Grammar
   Be, Do and Have forms
   Subject Verb Agreement
   Tenses: Present and Past

Suggestive Guidelines for Continuous Internal Assessment:

Test	Duration	Marks
Test - 1	At the end of 3rd month of the semester (One Hour)	10
Test - 2	At the end of 4th month of the even semester (One Hour)	10
	Two Assignments each for 5 marks	10
	Seminar for 5 marks	05
	Overall Assessment	05
	Total Marks	40

Second Semester B.COM./BBA TDE 2021-22
AECC2: English Language

Course Title – Ability Enhancement Course – Semester I – English Language (Text – Ambitions and Course Book)	
Total Contact Hours - 36 (2)	Course Credits - 02
Formative Assessment Marks - 40	Teaching Hours - 4 Hours per week
Summative Assessment Marks - 60	Duration of ESA Exam - 2 Hours

Enhancing Language I

UNIT I – POETRY **16 Marks**

1. *We Real Among the Trees* by William Wordsworth
2. *Commando* by P B Shelly
3. *Patriot* by Nissim Ezekiel
4. *I Know Why the Caged Bird Sings* by Maya Angelou

UNIT II – PROSE **20 Marks**

1. *The Kabuliwallah* by Rabindranath Tagore
2. *Dangers of Drug Abuse* by Martin B Jones
3. *Bells of Buddha* by Mahatma Gandhi
4. *Struggle* by Sane Chandra Chatterjee

UNIT III – LANGUAGE SKILLS **24Marks**

Articles, Prepositions,

Transformation of Sentences – Active Voice and Passive Voice, Affirmative, Negative and

Interrogative

Vocabulary Exercises

Homonyms, Homophones, One-word Substitutions

Dialogue Writing

Suggestive Guidelines for Continuous Internal Assessment

Test	Duration	Marks
Test - 1	At the end of 7th week of every semester (One Hour)	15
Test - 2	At the end of 14th week of the every semester (One Hour)	15
	Two Assignments each for 5 marks	10
	Seminar for 5 marks	05
	Overall Assessment	05
	Total Marks	40

First Semester B.Sc./ B.C.A./ B.Sc (Home Science) : 2021-22
AECC2: English Language

Course Title – Ability Enhancement Course – Semester I – English Language (Text Books – Aspirations and Course Book)	
Total Contact Hours : 36 (2)	Course Credits : 2
Formative Assessment Marks : 40	Teaching Hours : 2 Hours per week
Summative Assessment Marks: 60	Duration of ESA Exam : 02 Hours

UNIT I – POETRY — 16 Marks

1. *The Boy I Loved First* by Sarabjeet Sandhawar
2. *On Television* by Roald Dahl
3. *A Piece of Advice* by William Shakespeare
4. *Once Upon a Time* by Gabriel Okara

UNIT II – PROSE — 20 Marks

1. *The World as I See It* by Albert Einstein
2. *An Ode to Make Up* by Chimamanda Adichie
3. *The Kid* by Charlie Chaplin
4. *The Rightful Inheritors of the Earth* by Tribes Mohamad Sarfaraj

UNIT III – LANGUAGE SKILLS — 24 Marks

Reading Skills

1. Comprehension Passages
2. Vocabulary
   Prefix, Suffix, Synonyms, Antonyms, Word Forms
3. Understanding Grammar
   Be, Do and Have forms
   Subject-Verb Agreement
   Tenses : Present and Past

Suggestive Guidelines for Continuous Internal Assessment

Test	Duration	Marks
Test - 1	At the end of 7th week of every semester (One Hour)	10
Test - 2	At the end 14th week of the every semester (One Hour)	10
	Two Assignments each for 5 marks	10
	Seminar for 5 marks	05
	Overall Assessment	05
	Total Marks	40

Second Semester B.Sc. / B.C.A./B.Sc (Home Science): 2021-22
AECC2: English Language

Course Title – Ability Enhancement Course – Semester I - English Language (Text Books – Aspirations and Course Book)	
Total Contact Hours - 30 Hrs	Course Credits - 02
Formative Assessment Marks - 40	Teaching Hours / Week per week
Summative Assessment Marks - 60	Duration of Exam - 2 Hours

UNIT I – POETRY — 16 Marks

1. *Telephone Conversation* by Wole Soyinka
2. *Sigiriya* by W. W. Gibson
3. *Refugee Blues* by W. H. Auden
4. *Further Retrograde Road* by Dilip Chitre

UNIT II – ONE ACT PLAYS — 20 Marks

1. *The Proposal* by Anton Chekhov
2. *Refund* by Rose Kennedy
3. *Never Never Nest* by Colin Morrell

UNIT III – LANGUAGE SKILLS — 24 Marks

Articles, Prepositions,
Transformation of Sentences – Active Voice and Passive Voice, Affirmative, Negative and Interrogative
Vocabulary Exercises:
Homonyms, Homophones, One-word Substitution
Dialogue Writing

Suggestive Guidelines for Continuous Internal Evaluation:

Test	Duration	Marks
Test – 1	At the end of 2nd month (Every semester One Test)	10
Test – 2	At the end of 4th month (Every semester One Test)	10
	Two Assignments each for 5 marks	10
	Seminar for 5 marks	05
	Overall Assessment	05
	Total Marks	40

Kuvempu University

Undergraduate Courses – English Language (as per NEP 2020)

Question Paper Pattern for B.A. B.S.W.

I Semester – English Language – Course I

Paper 1: Imaginations and Course Book

Time: 3 Hours Max. Marks: 80

Instruction: Answer all the questions.

SECTION – A (PROSE)

1. Write short notes on any TWO of the following in about a page each. (Two out of Three) 2x15=30
2. Answer any ONE of the following in about two pages. (One out of Two) 1x20=20

SECTION – B (POETRY)

3. Annotate any TWO of the following: 2x15=30
4. Answer any ONE of the following in about one and a half page. (One out of Two) 1x10=10

SECTION – C (LANGUAGE SKILLS)

5. Read the following passage and answer the questions listed as :
   a) Answer the following questions in a word or a phrase or a sentence as required. 1x6=06
   b) Answer the following questions in two or three sentences. 3x4=12
6. Rewrite as directed. (Vocabulary – synonyms, antonyms, suffixes, prefixes) 4x1=04
7. a) Fill in the blanks with the suitable form of verb given in brackets. (Active voice) 2x1=02
   b) Fill in the blanks with the suitable form of verb given in brackets. (Subject-verb agreement) 2x1=02
8. Rewrite as directed. (Tenses – Present and Past Tenses) 4x1=04

Kuvempu University

Undergraduate Courses – English Language (as per NEP 2020)

Question Paper Pattern for B.Sc. B.C.A.

I Semester – English Language – Course I

Paper 1: Aspirations and Course Book

Time: 3 Hours Max. Marks: 80

Instruction: Answer all the questions.

SECTION – A (PROSE)

1. Write short notes on any TWO of the following in about a page each. (Two out of Three) 2 x 5 = 10

2. Answer any ONE of the following in about two pages. (One out of Two) 1 x 15 = 15

SECTION – B (POETRY)

3. Annotate any TWO of the following 2 x 4 = 08

4. Answer any ONE of the following in about one and a half page. (One out of Two) 1 x 8 = 08

SECTION – C (LANGUAGE SKILLS)

5. Read the following passage and answer the questions (a) or (b).

   a) Answer the following questions in a word or a phrase or a sentence as required 1 x 8 = 08

   b) Answer the following questions in two or three sentences. 2 x 2 = 04

6. Rewrite as directed. (Vocabulary – synonyms, antonyms, suffixes, prefixes) 4 x 1 = 04

7. a) Fill in the blanks with the suitable forms of verbs given in brackets. (Verb forms) 3 x 1 = 03

   b) Fill in the blanks with the suitable forms of verbs given in brackets. (Subject-verb agreement)

   3 x 1 = 03

8. Rewrite as directed. (Tenses – Present and Past Tenses) 4 x 1 = 04

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Undergraduate Courses – English Language (as per NEP 2020)

Question Paper Pattern for B.Com/B.B.A./T.T.M.
I Semester – English Language – Course I
Paper 1: Ambitions and Course Book

Time: 3 Hours Max. Marks: 60

Instruction: Answer all the questions.

SECTION – A (PROSE)

1. Write short notes on any TWO of the following in brief in page each. (Two out of Three) 2 x 7 = 14
2. Answer any ONE of the following in about two pages. (One out of Two) 1 x 10 = 10

SECTION – B (POETRY)

3. Annotate any TWO of the following 2 x 4 = 08
4. Answer any ONE of the following in about one and a half page. (One out of Two) 1 x 8 = 08

SECTION – C (LANGUAGE SKILLS)

5. Read the following passage and answer the questions based on it.
   a) Answer the following questions in a word or a phrase or a sentence as required 1 x 6 = 06
   b) Answer the following questions in two or three sentences. 2 x 2 = 04
6. Rewrite as directed. (Vocabulary – synonyms, antonyms, collocations, prefixes) 4 x 1 = 04
7. a) Fill in the blanks with the suitable forms of verbs given in brackets. (Verb forms) 3 x 1 = 03
   b) Fill in the blanks with the suitable forms of verbs given in brackets. (Subject-verb agreement) 3 x 1 = 03
8. Rewrite as directed. (Tenses – Present and Past Tenses) 4 x 1 = 04

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Undergraduate Courses – English Language (as per NEP 2020)

Question Paper Pattern for B.A/B.S.W.

II Semester – English Language – Course II

Paper 2: Imagination and Course Book

Time: 3 Hours Max. Marks: 80

Instruction: Answer all the questions.

SECTION – A (PROSE)

1. Write short notes on any TWO of the following in about a page each. (Two out of Three) 2 x 5 = 10
2. Answer any ONE of the following in about two pages. (One out of Two) 1 x 20 = 20

SECTION – B (POETRY)

3. Annotate any TWO of the following 2 x 4 = 08
4. Answer any ONE of the following in about two and a half page. (One out of Two) 1 x 8 = 08

SECTION – C (LANGUAGE SKILLS)

5. Exercise as directed. (Synonyms, homophones, one word substitute) 4 x 1 = 04
6. a) Fill in the blanks with suitable articles 3 x 1 = 03
   b) Fill in the blanks with suitable prepositions 3 x 1 = 03
7. a) Change the following into negative sentences 3 x 1 = 03
   b) Change the following into Tag-Qs questions 3 x 1 = 03
   c) Frame Wh-questions to get the underlined words as answers 3 x 1 = 03
   d) Add suitable question tags 3 x 1 = 03
8. a) Change the following sentences into Passive Voice 3 x 1 = 03
   b) Change the following sentences into Active Voice 3 x 1 = 03
9. Write a dialogue 04

Kuvempu University

Undergraduate Courses – English Language (as per NEP 2020)

Question Paper Pattern for B.Sc./B.C.A.

II Semester – English Language – Course II

Paper 2: Aspirations and Course Book

Time: 3 Hours Max. Marks: 60

Instruction: Answer all the questions

SECTION – A (PROSE)

1. Write short notes on any TWO of the following in about a page each. (Two out of Three) 2 x 12 = 24
2. Answer any ONE of the following in about two pages. (One out of Two) 1 x 12 = 12

SECTION – B (POETRY)

3. Annotate any TWO of the following 2 x 4 = 08
4. Answer any ONE of the following in about one and a half page. (One out of Two) 1 x 8 = 08

SECTION – C (LANGUAGE SKILLS)

5. Rewrite as directed. (Punctuation, Interjection, one word substitute) 4 x 1 = 04
6. a) Fill in the blanks with suitable articles. 2 x 1 = 02
   b) Fill in the blanks with suitable prepositions. 2 x 1 = 02
7. a) Change the following into negative sentence. 2 x 1 = 02
   b) Change the following into Tag-Yes questions 2 x 1 = 02
   c) Frame Wh-question to get the underlined words as answer. 3 x 1 = 03
   d) Add suitable question tags. 3 x 1 = 03
8. a) Change the following sentences into Passive Voice. 3 x 1 = 03
   b) Change the following sentences into Active Voice. 3 x 1 = 03
9. Write a Dialogue. 04

Kuvempu University

Undergraduate Courses – English Language (as per NEP 2020)

Question Paper Pattern for B.Com/B.B.A./T.T.M.

II Semester – English Language – Course II

Paper 2: Ambitions and Course Book

Time: 3 Hours Max. Marks: 60

Instruction: Answer all the questions

SECTION – A (PROSE)

1. Write short notes on any TWO of the following in about a page each. (Two out of Three) 2 x 5 = 10

2. Answer any ONE of the following in about two pages. (One out of Two) 1 x 10 = 10

SECTION – B (POETRY)

3. Annotate any TWO of the following: 2 x 4 = 08

4. Answer any ONE of the following in about one and a half page. (One out of Two) 1 x 8 = 08

SECTION – C (LANGUAGE SKILLS)

5. Rewrite as directed. (Synonyms, Antonyms, one word substitute) 4 x 1 = 04

6. a) Fill in the blanks with suitable articles. 3 x 1 = 03

   b) Fill in the blanks with suitable prepositions. 3 x 1 = 03

7. a) Change the following into negative sentences. 3 x 1 = 03

   b) Change the following into Yes/No questions. 3 x 1 = 03

   c) Frame Wh-questions to get the underlined words as answers. 3 x 1 = 03

   d) Add suitable question tags. 3 x 1 = 03

8. a) Change the following sentences into Passive Voice. 3 x 1 = 03

   b) Change the following sentences into Active Voice. 3 x 1 = 03

   9. Write a dialogue. 04

First Semester: Optional English
Course 01 – DSC – Paper A1
Title of the Paper - Introduction to English Literature

Course Title – Introduction to Literature	
Total Contact Hours – 90	Course Credits – 03
Formative Assessment – 40	Time Allocated
Summative Assessment Marks- 60	Duration of End Exam – 02 Hours

Course Objectives:

- To introduce the learners to the teaching terms, terms and concepts of literature.
- To provide an overview of the main genres of literature.
- To enable the learners to appreciate literature.

Course Outcomes:

CO1: Learners will be able to define and understand different literary terms and concepts.
CO2: The course will enable the learners to analyse and appreciate different genres.
CO3: It will introduce the learners to different cultures and social norms which in turn develop social and human values.

Unit I. Introduction to Literature — **Teaching hours: 08**

Defining Literature –

1. What is Literature? Why study literature? Literature and Society
2. Terry Eagleton's "What is Literature?" from "Literary Theory"

Unit II. Poetry — **Teaching hours: 08**

1. Forms : Sonnet, Ballad, Epic, Lyric
2. Figurative Language : Simile, Metaphor, Personification, Hyperbole, Irony

Unit III. Drama: — **Teaching hours: 08**

1. Types and Concepts: Comedy, Tragedy, Soliloquy, Chorus

Unit IV. Prose: — **Teaching hours: 06**

1. Types: Novel, Short story, Essay, Autobiography

Unit V: Texts: Teaching hours: 14

Texts:

Poetry:

1. *The Solitary Reaper* — William Wordsworth
2. *The Flea* — John Donne
3. *Ozymandias* — P B Shelley
4. *Lord Ullin's Daughter* — Thomas Campbell

Prose:

1. *A Classical Studies* — Robert Chellton

2. *Rob* — R Lambert

Essay:

I Have a Dream — Martin Luther King

Autobiography:

Extract *Abraham Lincoln* from *Two Years a Passenger's Journey* Texts

Reference Books:

1. Abrams, M.H. *Glossary of Literary Terms*
2. Baldick, Chris. *The Oxford Dictionary of Literary Terms*. OUP 2001
3. Bennett, Andrew. *An Introduction to Literature, Criticism and Theory*. Routledge
4. Barthes, Roland. *Literary Theory: The Basics*. Taylor and Francis, 2013
5. Eagleton, Terry. *How to Read Literature*. Yale University Press
6. Poplawski, Paul. *English Literature in Oxford*. OUP

First Semester: Optional English

Course 02 – DSC – Paper A2

Title of the Paper - Indian Writing in English: Pre-Independent Period

Course Title – Indian Writing in English : Pre-Independent Period	
Total Contact Hours : 32+2	Course Credits : 02
Formative Assessment : 40	Internal Assessment
Summative Assessment Marks: 60	Duration of ESA : 02 Hours

Course Objectives:

- To introduce the learners to the pre-independent Indian writers in English
- To provide knowledge of literature of Indian historical context
- To enable the learners to appreciate Indian writings before independence

Course Outcomes:

CO1: Learners will be able to define and understand different literary terms and concepts

CO2: The course will enable the learners to analyze and appreciate different genres

CO3: It will introduce the learners to different cultures and social issues which in turn develop social and human values

Unit I : History of Indian English Literature: 16 Hours

1. History of Indian English Literature: Introducing authors and texts from the pre-independence era: Aurobindo, Sarojini Naidu, Rabindranath Tagore, M.K. Gandhi, Dr. B.R. Ambedkar, Jawaharlal Nehru, Sarvepalli Radhakrishnan, Jyotiba Phule
2. The Nature and Scope of Indian English Literature: Debates/Stages against Indian English Literature (Reference: M.K. Naik, A History of Indian English Literature, New Delhi, Sahitya Akademi, 1982)

Unit II :Poetry: 04 Hours

1. *Time* – Toru Dutt
2. *Caravandas' Fishes* – Nissim Ezekiel
3. *Where the Mind is Without Fear* – Rabindranath Tagore

Unit III : Essay: 12 Hours

Essay:

1. *Planting for a Tree* – Dr. B. R. Ambedkar
2. Extract from *Hind Swaraj* (Chapter 19 - Sabhyata) – M.K. Gandhi

Short Story:

1. [redacted]
2. [redacted]

Unit IV Novel [redacted]

1. [redacted]

Unit V : [redacted]

1. [redacted]

Reference Books:

1. [redacted]
2. [redacted]
3. [redacted]
4. [redacted]
5. [redacted]
6. [redacted]

Second Semester : Optional English
Course 03 – DSC – Paper A3
Title of the Paper - Introduction to Phonetics and Linguistics

Course Title – Introduction to Phonetics and Linguistics	
Total Contact Hours : 78-42	Course Credits : 03
Formative Assessment : 40	Time Allotment
Summative Assessment Marks: 60	Duration of Exam : 02 Hours

Course Objectives:

- To learn the basic concepts of language, linguistics and phonetics
- To introduce the learners to various structures, parts and functions of language
- To enable the learners to make linguistic analysis and descriptions

Course Outcomes:

CO1: The learners will be able to identify and understand the basic concepts of language, linguistics and phonetics

CO2: The course will enable the learners to comprehend and use various structures of language

CO3: It will enable the learners use the language effectively and efficiently

Unit I : Introduction to Phonetics and Linguistics 13-14

1. Language – its nature, definition, characteristic features
2. Linguistics – Definition, Scope
3. Branches of Linguistics

Unit II : Phonetics and Phonology 13-14

1. Speech Articulation, Organs of Speech
2. Production of Speech Sounds, Classification of Speech Sounds – Vowels and Consonants
3. Transcription of words, Word stress, Phonemic chart, allophone, phoneme

Unit III : Components to be selected

Reference Books:

1. Sethi, J. Dhamija, P.V., A Course in Phonetics and Spoken English, Prentice – Hall of India Pvt. Ltd. New Delhi, 2007
2. Balasubramanian, T., A Text Book of English Phonetics for Indian Students, Macmillan Publishers India Ltd, 2008
3. Yule, George, The Study of Language, Cambridge UP, 2010

4. Aitchison, Jean. Linguistics. Hodder & Stoughton Ltd, London, 2003.
5. Cruse, Alan. Meaning in Language. Oxford UP, 2000.
6. Fromkin, V. Rodman, R. An Introduction to Language. Wadsworth, Cengage Learning, 2007.
7. Rajan, I. and W. Nicola. A Course in Phonology. Rahul, 1999.

Second Semester: Optional English

Course 04 – DSC – Paper A4

Title of the Paper - Indian Writing in English Post-Independence

Course Title – Indian Writing in English Post-Independence	
Total Contact Hours – 78+12	Course Credits – 06
Formative Assessment – 40	Period of Assessment
Summative Assessment Marks- 60	Duration of ESA – 2 hours 30 Marks

Course Objectives:

- To introduce the learners to the evolution of Indian Writing in English
- To familiarize the learners to Indian society of post-independent period

Course Outcomes:

CO1 The learners will be able to identify the evolution of Indian Writing in English

CO2 The course will enable the students to understand the writings of the Indian society and the society of the post independent period

Unit I: Introducing Writers – **06 Hours**

Kamala Das, Shashi Deshpande, Uma Parmeshwar, Girish Karnad, Sarojini Sahoo, Arun Dave, Ruskin Bond, Shivagami

Unit II : Indian English Poetry **06 Hours**

1. Obituary — A K Ramanujan
2. Enterprise — Nissim Ezekiel
3. Punishment in Kindergarten — Kamala Das
4. Selections from Agony – The Sun and an Old Woman — Arundhathi

Unit III : Novel: From to Pakistan / Nayak — Kulkarni Singh — **14 Hours**

Unit IV : Drama – Kanyadaan — Vijay Tendulkar — **10 Hours**

Unit V : Prose: 1. Journalistic writing – I Write as I Feel by E.A. Gibbs **06 Hours**
2. Short Story : A Real Woman by Premchand

Reference Books:

1. Sethi, J. Dhamija, P.V., A Course in Phonetics and Spoken English, Prentice – Hall of India Pvt. Ltd. New Delhi, 2005
2. Balasubramanian T., A Text Book of English Phonetics for Indian Students, Macmillan Publishers India Ltd, 2008
3. Yule, George. The Study of Language, Cambridge UP, 2010
4. Aitchison, Jean. Linguistics, Hodder & Stoughton Ltd, London, 2012
5. Cruse, Alan. Meaning in Language, Oxford UP, 2000
6. Fromkin, V. Rodman, R. And Hyams, N. An Introduction to Language, Thomson, Cengage Learning, 2007.
7. Roca, I. and W. Johnson, A Course in Phonology, Blackwell, 1999

Kavalpa University

Undergraduate Courses – English Optional (as per NEP 2020)

Question Paper Pattern for B.A

I Semester – English Optional – Course I

DSC – Paper A1: Introduction to Literature

Time: 3 Hours Max. Marks: 60

Instruction: Answer all the questions.

SECTION – A – Introduction to Literature

1. Write a short note on any ONE of the following in about a page each. (One out of Two) 1 x 2 = 05
2. Answer any ONE of the following in about two pages. (One out of Two) 1 x 10 = 10

SECTION – B – Literary Terms and Concepts

3. Write short notes on any FIVE of the following. (Five out of Eight) 5 x 4 = 20

SECTION – C – Texts

4. Write short notes on any THREE of the following. (Three out of Five) 3 x 3 = 15
5. Answer any ONE in about two pages each. (One out of Two) 1 x 15 = 10

Kannapa University

Undergraduate Courses – English Optional (as per NEP 2020)

Question Paper Pattern for B.A

I Semester – English Optional – Course II

DSC – Paper A2: Indian Writing in English (Pre-independent period)

Time: 3 Hours Max. Marks: 60

Instruction: Answer all the questions

SECTION – A – History of Indian English Literature

1. Answer any ONE of the following in about two pages. (One out of Two) 1 x 10 = 10

SECTION – B – Poetry

2. Answer any ONE of the following in about two pages. (One out of Two) 1 x 10 = 10

SECTION – C – Essay and Short Stories

3. Write short notes on any TWO of the following. (Two out of Three) 2 x 5 = 10

4. Answer any ONE of the following in about two pages each. (One out of Two) 1 x 10 = 10

SECTION – D – Novel

5. Answer any ONE of the following in about two pages. (One out of Two) 1 x 10 = 10

SECTION – E – Drama

6. Answer any ONE of the following in about two pages. (One out of Two) 1 x 10 = 10

Kuvempu University

Undergraduate Courses – English Optional (as per NEP 2020)

Question Paper Pattern for B.A

II Semester – English Optional – Course III

DSC - Paper A3

Time: 3 Hours Max. Marks: 80

Instruction: Answer all the questions

SECTION – A

1. Write a short note on any FIVE of the following in about 1 page each. (Out of Six) 5 x 7 = 35
2. Answer any TWO of the following in about two pages. (Out of Three) 2 x 10 = 20

SECTION – B

3. Write short notes on any FIVE of the following. (Out of Eight) 5 x 4 = 20

SECTION – C

4. Write short notes on any THREE of the following. (Out of Five) 3 x 5 = 15
5. Answer any TWO in about two pages each. (Out of Three) 2 x 10 = 20

Kannapa University

Undergraduate Courses – English Optional (as per NEP 2020)

Question Paper Pattern for B.A

II Semester – English Optional – Course IV

DSC – Paper A4: Indian Writing in English (Post-independent period)

Time: 3 Hours Max. Marks: 60

Instruction: Answer all the questions

SECTION – A – Introducing Authors

1. Write short notes on any TWO of the following (Two out of three) 2 x 5 = 10

SECTION – B – Poetry

2. Answer any ONE of the following in about two pages (One out of Two) 1 x 10 = 10

SECTION – C – Fiction

3. Write a short note on any ONE of the following (One out of Two) 1 x 5 = 5

4. Answer any ONE of the following in about two pages each (One out of Two) 1 x 10 = 10

SECTION – D – Drama

5. Write a short note on any ONE of the following (One out of Two) 1 x 5 = 5

6. Answer any ONE of the following in about two pages (One out of Two) 1 x 10 = 10

SECTION – E – Journalistic Writings and Short Stories

7. Write short notes on any TWO of the following (Two out of Four) 2 x 5 = 10

Kuvempu University

Undergraduate Courses – English Open Elective (as per NEP 2020)

Open Elective – OEC 1 – Functional English

Section I: Functional English Grammar

1. Grammar of Spoken and Written English
2. Basic Sentence Patterns in English – Analysis of Sentence Patterns (SVO, SV, SVC, SVOA, SVOAC)
3. Functions of Various Types of Phrases: Noun Phrase, Verb Phrase, Adjective Phrase, Adverbial Phrase, Prepositional Phrase
4. Functions of Clauses: Noun Clause, Adjective Clause and Adverbial Clause and Prepositional Clauses
5. Verbs – Tense and Aspects, Modal Verbs, Finites and Non

Section II – Writing Skills

1. Writing as a Skill – Its Importance, Mechanics of Writing, Words and Sentences, Paragraph as a Unit of Structuring the Whole Text, Analysis of Paragraph
2. Functional Uses of Writing: Personal, Academic and Business
3. Writing Process: Planning a Text, Taking Notes, Drafting, Revising, Editing, Finalizing Draft
4. Models of Writing: Expression of Ideas, Dialogue Writing, Drafting an Email

Section III : Reading Skills

1. Meaning and Process of Reading
2. Strategies and Methods to Improve Reading Skill
3. Sub-skills of Reading: Skimming, Scanning, Intensive Reading, Extensive Reading

Suggested Reading:

1. Geoffrey Leech and Svartvik. Communicative Grammar of English. Pearson
2. Geoffrey Leech. English Grammar for Today. Palgrave
3. Prasad P. The Functional Aspects of Communicative Skills
4. Vandana Singh. The Written Word. OUP

Kuvempu University

Undergraduate Courses – English Open Elective (as per NEP 2020)

Open Elective – 02

SPOKEN ENGLISH FOR CORPORATE JOBS

Course and Skill Outcomes:

1. This paper teaches students the skills in the front desk management
2. It introduces them to business English

Section I: English for Front Desk Management

1. Greeting, Welcoming
2. Dealing with Complaints, Giving Instructions or Directions
3. Giving Information About Various Facilities, Services, And Local Specialties
4. Consultation and Solution of Problems
5. Accepting Praises and Criticism, Apologizing

Section II: Fluency and Etiquette

1. Polite sentences and words
2. Use of persuading words
3. Intonation and Voice Modulation
4. Developing Vocabulary

Section III: Business Speeches

1. Principles of Effective Speech and Presentations
2. Speeches: Introduction, Vote of Thanks, Occasional Speech, Theme Speech
3. Use of Audio-Visual Aids in Presentations

Section IV: Cross-Cultural Communication

1. Dealing with Language Differences
2. Probing Questions to get Information
3. Etiquette in Cross-Cultural Communication

Suggested Readings:

1. More Effective Communication – IVY Publishing, Jaya Publications Pvt. Ltd.
2. Effective Documentation & Presentation – Rudi Raj Bhadra Publishing House, Mumbai
3. Commercial Correspondence & Office Management – R.S.N. Pillai Bhagavati, S Chand & Co.
4. Communication Today – Ray Ehrea, Houston Publishing House, Mumbai

5. Business Communication – Locker and Kaur – (ITBS, Publishers, Delhi)
6. Business Communication Today – Bovee, Thill, Dubey – (Pearson Books, Sage Publications, IGNOU)
7. The Essence of Effective Communication – Ludlow & Panton (PHI, IGNOU)
8. Business Communication – Rodrigues (Tata McGraw Hill, Mumbai)
9. Mastering Communication Skills and Soft Skills – [illegible] and others – Excellent, New Delhi, 2021
10. Developing Communication Skills – Krishna Mohan and Singh

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Undergraduate Courses – English Open Elective (as per NEP 2020)

English Open Elective – 3
SPEAKING AND LISTENING SKILLS

1. **Section I: Introduction to Phonetics**
   Speech Organs – Speech Mechanism – Peculiarities of English Sounds, Description of English Vowels and Consonants, Diphthongs, Phonetic and Transcription (words, sentences and short paragraphs), The Syllable Structure, Stress and Intonation – Their Patterns of Stress and Intonation in English Sentences and Words (Transcription of Short Dialogues), Rules for Pronunciation.

2. **Section II: Speaking Skills**
   Formal and Informal Speeches, Language Functions: Greetings, Making Requests, Permitting, Complaining, Apologizing, Asking for and Giving Permission, Instructions and Directions, Agreeing and Disagreeing, Talking on Group, Mini-Formal Writing.

3. **Section III: Listening Skills**
   a. Definition of Listening, Listening versus and Hearing, Forms of Listening, Problems the Students face in Listening, Sub-skills of Listening
   b. What is good listening?
   c. Barriers to listening
   d. Strategies of listening
   e. Listening activities: Listening to news broadcast, telephone and news bulletins

4. **Section IV: Presentation Skills**
   a. Definition, Meaning and Goals of Presentation
   b. Some useful expressions while making presentations – opening remarks, stating purposes, giving an outline, giving preliminary information and moving from it, content, explaining important points, drawing attention to visuals, making recommendations, keeping audience involved, summarizing and concluding, inviting questions.
   c. Presentation as process – Making Welcome speech, Introducing guests to audience, Making farewell speech, Proposing "Vote of Thanks".

Suggested Reading:

1. Ramesh and Anderson and Tony Lynch, Study Speaking, OUP
2. Sethy J. Et Al., Practice Course in English Pronunciation, Foundation Book
3. Prasad P. Communication Skills
4. Balasubrahmanyam, A Course in Phonetics for Indian Students, Macmillan
5. Jayashree Mohanraj, Speak Well, Orient Black Swan

Kuvempu University

Undergraduate Courses – English Open Elective (as per NEP 2020)

Open Elective – 04

TRANSLATION THEORY AND PRACTICE

Syllabus:

1. Translation – Meaning, methods, problems and challenges of translation, source language and target language, translating poetry and prose, technical translation
2. Translation as practice: Practice five passages from Kannada to English and five passages from English to Kannada

Kuvempu University

Undergraduate Courses – English Open Elective (as per NEP 2020)

Question paper pattern - Open Elective I

OEC-1: Functional English

Time: 3 Hours Max Marks: 60

Instruction: Answer all the questions

1.	Very short answer questions on all sections	10 x 2 = 20
2.	Four short notes on all sections	4 x 5 = 20
3.	Short questions on dialogue and expansion of an idea	2 x 5 = 10
4.	One essay type question	1 x 10 = 10

Kuvempu University

Undergraduate Courses – English Open Elective (as per NEP 2020)

Question paper pattern – Open Elective 2

OEC - 2: Spoken English for Corporate jobs

Time: 3 Hours: Max Marks: 80

Instruction: Answer all the questions.

1.	Very short answer questions	10x2=20
2.	Short answers all sections	4x3=12
3.	Essay type questions	2x10=20

Kuvempu University

Undergraduate Courses – English Open Elective (as per NEP 2020)

Question paper pattern – Open Elective 3

OEC - 3: Speaking and Listening Skills

Time: 3 Hours | Max Marks: 40

1.	Very short answer questions on all sections	10 x 2 = 20
2.	Four short notes on all sections	4 x 5 = 20
3.	One question on presentation of speech	1 x 20 = 10
4.	One essay type question	1 x 10 = 10

Kuvempu University

Undergraduate Courses – English Open Elective (as per NEP 2020)

Question paper pattern – Open Elective-4

OEC- 4: Translation: Theory and practice

Time: 3 Hours | Max. Marks: 60

Instructions: Answer all the questions

1.	Essay type questions on translation – meaning, definition, nature, problems and challenges	1 x 10 = 10
2.	Problems of translation	1 x 10 = 10
3.	Short type questions on translation theory	2 x 5 = 10
4.	Translation of short passages	2 x 5 = 10
5.	Translation passage from English to Kannada (one out of two)	1 x 10 = 10
6.	Translation passage from Kannada to English (one out of two)	1 x 10 = 10

Kuvempu University

Undergraduate Courses – English Skills (as per NEP 2020)

Skill Enhancement Course

English and Soft Skills

The course is designed for 28-30 hours:

Syllabus:

Topics to be covered:

1. Attitude
2. Goal Setting
3. Time Management
4. Leadership
5. Employability Skills
6. Team Work
7. Work-place etiquette
8. Group discussion

Karnatak University
Course Matrix for B.A. (History-Hons)
For Academic Year 2022-23 (Third and Fourth Semester)
[As per NEP-2020 Guidelines]

Third Semester

Semester	Course	Title of the Course	Instruction Hours per week	Exam Duration Hours	Marks			Credits
					IA	ESE	Total	
3	DSC-5	Cultural Heritage of India	3	2	40	60	100	3
3	DSC-6	History and Culture of Mysore	3	2	40	60	100	3
3	OE	Introduction to Epigraphy OR Freedom Movement in Karnataka (1800-1947)	3	2	40	60	100	3
Total Credits								09

Fourth Semester

Semester	Course #	Title of the Course	Instruction Hours per week	Exam Duration Hours	Marks			Credits
					IA	ESE	Total	
4	DSC-7	History of Medieval India	3	2	40	60	100	3
4	DSC-8	Cultural Heritage of Karnataka	3	2	40	60	100	3
4	OE	Freedom Movement in India (1885-1947) OR Principles and Practices of Museology	3	2	40	60	100	3
Total Credits								09

[redacted]
[redacted]
[redacted]
[redacted]

[redacted]	
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

[redacted]
[redacted]

Title of the Course: [redacted]

Course 1		Course 2	
Number of Theory Credits	Number of lecture hours/semester	Number of Theory Credits	Number of lecture hours/semester
3	39 or 42	3	39 or 42

Content of Course	39-42 Hrs
Unit – 1 Introduction	[redacted]
Chapter No. 1: [redacted]	[redacted]
Chapter No. 2: [redacted]	[redacted]
Chapter No. 3 [redacted]	[redacted]
Unit – 2 Legends, Narratives and Cultural Epics	[redacted]
Chapter No. 4: [redacted]	[redacted]
Chapter No. 5: [redacted]	[redacted]
Chapter No. 6: [redacted]	[redacted]
Unit – 3 Architecture and Built Heritage	[redacted]
Chapter No. 7: [redacted]	[redacted]
Chapter No. 8: [redacted]	[redacted]
Chapter No. 9: [redacted]	[redacted]

Books for Reference

1. S. Radhakrishnan :
2. K.T. Achaya :
3. Banga I. (Ed) :
4. A.L. Basham :
5. Sachin Shekhar Bandal :
6. N.K. Bose :
7. S. Narayan :
8. Gokulsing K. Moti :
9. Bhatia Shankar Mehta :
10. Patagchaya :
11. S.P Gupta, Krishnaji and Nilima Ramakanta - Cultural Tourism in India
12. [illegible]
13. [illegible]

Semester 3
SSC-3

Course Title: History & Culture of Mysore	
Total contact Hours: 38-42	Course Credits: 3
Formative Assessment Marks: 40	Duration of SEA Exam: 03
Model Syllabus Authors:	Summative Assessment Marks:

Title of the Course: History & Culture of Mysore

Course 2		Course 3	
Number of Theory Credits	Number of lecture hours/semester	Number of Theory Credits	Number of lecture hours/semester
3	38 to 42	3	38 to 42

Content of Course	42 Hrs
Unit – 1 Introduction	
Chapter No. 1 : Historical Writings in Modern Karnataka – James Mano – B.L. Rice	3
Chapter No. 2 : Aspects of Social life – Francis Buchanan & Munro's Tours	5
Chapter No. 3 : A Survey of Economic Conditions – 1800-1924	4
UNIT – 2 Education	
Chapter No. 4 : Education – Mohan Pandit	3
Chapter No. 5 : History of Kannada Journalism	4
Chapter No. 6 : Christian Missions in Karnataka	5
UNIT – 3 Art, Painting	
Chapter No. 7 : Development of Music, Musical instruments	5
Chapter No. 8 : Dances – Activities – Dance different	4
Chapter No. 9 : Temples and Painting	4
Historical Places Mangalore, Mysore, Shrirangapatna, Srirangapattana, Bangalore, Nanjangud, Nilalinga, Malavalli, Sirsi, Honnavara, Bidanur, Channapattana, Bhadravathi, Sagar, Talakaveri, Pattadakal, Kolara, Devanahalli, Badami & Aihole.	

Books for Reference
AUTHORS – BOOKS

01 P.B. Desai – History of Karnataka
02 M.H. Basavaraja – History and Culture of Karnataka
03 B. Shaik Ali B – Tippu Sultan
04 History K.H.D. – Economic Development of Mysore
05 Hayavadana Rao – Mysore Gazetteer Volumes
06 K.A. Nilakanta Shastry – History of South India
07 Kathryn Uhlhar – Dare Parliament in South India
08 G.S. Rajashekaran – Karnataka Architecture
09 Channaiah Lakshmi – Urbanization in South India
10 M.R. Dhavalikar – Karnataka through the Ages
11 Shama Rao M. – History of Mysore
12 B.L. Rice – Mysore Gazetteer Volumes
13 Nagesh R.S. – The Heritage of Karnataka
14 V.R.D. Dandekar – History of Deccan

Open Elective -3

Title of the Course: Introduction to Epigraphy	
Total contact Hours: 39-43	Credits Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 03
Model Syllabus Author:	Summative Assessment Marks:

Introduction to Epigraphy
Open Elective -3
Course Design: Skilling credit

CONTENT OF COURSE	42 HOURS
UNIT-I Introduction to Epigraphy	
CHAPTER-1	08
Evolution of Indian Epigraphy and methods of epigraphy. Definitions: Epi: meaning, epigraphy, paleography.	
CHAPTER-2	08
James Prinsep and the decipherment of Brahmi inscriptions Attempts to decipher the Indus script Methods: eye copy, estampage and photography	
CHAPTER-3	06
Preservation of Tem- Dating- Eras, Kali era, Saka era, Vikrama era Collections of inscriptions during Colonial Period. Epigraphical Series South Indian Inscriptions.	
UNIT-III pigraphia carnatica	
CHAPTER-4	08
Scripts: Brahmi, Kharoshti, Vattelutu, Grantha Medium of inscriptions Metals Stone walls of cave	
CHAPTER-5	05
Types of inscriptions: Memorials, Labels, seal grant, praise	
CHAPTER-6	06
Mentioning Some important Inscriptions Ashoka inscriptions in Karnataka Halmidi inscriptions Uttaranatha inscription Aihole Inscriptions of Vijayanagara period	
UNIT III	
CHAPTER-7	06
South Indian Epigraphy Inscriptions Kanigiritila Inscription of King Kharavela Junnar caves - Alphabet of the Inscription	

CHAPTER-8 South Indian Epigraphy Inscriptions Talegunda Inscription Nasik Inscription	14
CHAPTER-9 Practicals In Kannada Palaeography ❖ Practical Training in taking estampages of stone and copper plate inscriptions by visiting the historical places.	14

REFERENCE BOOK

1. Buhler, G., Indian Palaeography, Indological Book House, Delhi, 1963
2. Pandey, R.B., Indian Palaeography, Motilal Banarsidas, Benares, 1972
3. Dani, A.H., Indian Palaeography
4. Mahalingam, T.V., Early South Indian Palaeography, University of Madras, 1967
5. Sivaramamurthy, Indian Epigraphy and South Indian Scripts
6. Bhirmal, A.C., Elements of South Indian Palaeography
7. Mahalingam, T.V., Early South Indian Palaeography
8. Rajan, K., Kalvettiyal (Tamil), Manu Pathippagam, Thanjavur
9. Mahan Kannadiga, Kalekandukal, (Tamil)
10. Subbarayalu, T.N., South Indian Temple Inscriptions

34

III Semester- GE

Title of the Course: Freedom Movement in Karnataka (1800-1947)	
Total contact Hours: 39-41	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 90
Model Syllabus Authors:	Semester in Assessment Date:

GE, III Semester

GE-3: Freedom Movement in Karnataka (1800-1947)

Course 1		Course 2	
Number of Theory Credits	Number of Lecture hours/semester	Number of Theory Credits	Number of lecture hours/semester
3	39 to 42	3	39 to 42

Content of Course	39-41 Hrs
Unit – 1 Early Uprisings in Karnataka	13-14
Chapter No.1 Dhondiya Wagh, Vasudev Balwant Phadke, Kittur Veerappa, Dalavoy of Bidar, Sattvalingaiah, Sirsiagi Revolt	13
Chapter No.2 Rani Chennamma, Jagapati Rayappa, Venkatappa Nayak, Kodagu Revolt	14
Chapter No.3 1812 and After - Revolt of Halagali, Sangolli Rayanna, Kittur Veerappa, Venkatappa Nayaka, Munisangi Bheema Rao	14
Unit – 2 Nationalism in Karnataka	13-14
Chapter No.4 Impact of Pan-Indian Nationalism, Belgaum Congress 1924	13
Chapter No.5 Khadi Movement, Kanyadan Movement, Rao Bahadur Onakkar, Gangadhar Rao Deshpande, Vishwanath Rao	13
Chapter No.6 Harijana Movement- Gurunna Swamy Sangha - Sardar Veeranna, Gokak Dalit Movement and Adhikari Hobli	14
Unit – 3 Gandhi Movements in Karnataka	13-17
Chapter No.7 Civil Disobedience Movement and Satyagraha, Karnataka's Participation in Uttar Karnataka, Pioneer Satyagrahis	13
Chapter No.8 Genesis of Mysore Congress, Mysore Chalo Satyagraha, Vidhanasoudha Tragedy - Quit India Movement, Sagara Tragedy	13
Chapter No.9 Establishment of Responsible Government in Princely Mysore, Mysore Chalo Satyagraha - Post Congress Ministry	13

Books for Reference

AUTHORS – BOOKS

1. Diwakar R.R.-Karnataka Vaibhava
2. Diwakar R.R.-Karnataka Rashtradarshana
3. Diwakar R.R-Karnataka Through the Ages
4. Devasenapathy P.V-Bharata Ondu Nadugade
5. Halleppa G.S-History of Freedom Movement in Karnataka Volume-2
6. Handa R.C-History of Kodagu (Coorg in Pencil Sketches
7. Jayalakshmamma V.N-Kannada Tagadina Ramayanagalu Part-1
8. Nagarajaiah S-Kannadada Kranthiveera Sangolli Rayanna Chaloo'ali
9. Sardar Veeranagowda Patil-Anna Devalaya
10. Sangolli Sudhi and Raghavendra Rao- Women Freedom Fighters in Karnataka
11. Suryanath Kamat (Ed)-Smaranika Sangrahada Tanthigalu
12. Suryanath Kamath-A Concise History of Karnataka
13. Yes Tha Thamma- Karnatakadalli Swatantra Sangrama
14. Veerabhadrappa, H- Siddaru Samadhanadalli Swatantrya Chaluvali
15. Veerabhadrappa, K- Readings in Modern History of Karnataka Vol-1,2,3
16. [illegible] (1761-1799)
17. [illegible]
18. [illegible]
19. [illegible]
20. [illegible]

BA

Semester 4 DSC-7

Title of the Course: History of Medieval India	
Total contact Hours: 39-42	Course Credit: 3
Formative Assessment Marks: 40	Duration of Exa. Hours: 02
Model Syllabus Author:	Summative Assessment Marks:

Semester 4

Title of the Course: History of Medieval India

Course 1 (DSC-7)		Course 3	
Number of Theory Credits	Number of Lecture hours Required	Number of Theory Credits	Number of Lecture hours Required
3	39 or 42	3	39 or 42

Content of Course		39-42 Hours
Unit -1 Interpreting Medieval Indian History		12
ChapterNo: 1	Interpreting Medieval Indian History	2
ChapterNo: 1	Debate on Indian Feudal System	3
ChapterNo: 2	Interpretations of Persian Sources and Sources of Medieval India-North India & South India-Agrarian System of Mughal and Vijayanagara Period Bhakti Movement – Kabir, Nanak, Meera Bai, Sri Chaitanya – Akbar, Shivaji	8
Unit -2 Political Structure of Medieval Northern India and Southern India		14
ChapterNo: 4	Comparative study of Vijayanagara Delhi Sultanate and Mughals – process of Urbanization in Mughals and Vijayanagara period	3
ChapterNo: 5	Nature of State in Vijayanagara Kingdom, Delhi Sultanate and Mughal dynasties	5
ChapterNo: 6	Military Technology of Mughals and Vijayanagara Empires – Development of Science & Technology in Medieval India	4
Unit -3 Minor Kingdoms of North India		14
Chapter No: 7	Rajputs, Ahoms, Pathans, Palas, Pratiharas	6
Chapter No: 8	Vijayanagara Empire – Amaranayaka System – Creation of Wealth	4
ChapterNo: 9	The rise of the Marathas-Shivaji and his administration–Ashta Pradhana System Map 1. Agra 2. Fatehpur Sikri 3. Delhi 4. Banaras 5. Amritsar 6. Mewar 7. Panipat 8. Pune 9. Jaipur 10. Surat 11. Malwa 12. Kanauj 13. Rameswaram 14. Khaibar 15. Mathura 16. Anegundi 17. Gingee 18. Devakonda 19. Srirangam 20. Kakatiya	4

Books for Reference

1. Anil Chandra Banerjee
2. S.C Rajachoudhary

3. Sarkar, Jadunath
4. Sharma G.R.
5. Tripathi R.P
6. Wheeler Mortimer and Richard Sims
7. Khosala, R.P.
8. Srivastav, A.L.
9. A.C Banerjee
10. Sarib Chandra
11. Ganguly A.C.

12. Kulkarni A.P.
13. R.C Majumdar (Ed.)
14. R.C Majumdar (Ed.)
15. [illegible]
16. [illegible]

BA
Semester 4
DSC-3

Course Title: Cultural Heritage of Karnataka	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of S.E.A Exam: 60
Model Syllabus Authors:	Summative Assessment Marks:

BA Semester 4

Title of the Course: Cultural Heritage of Karnataka

Course 1		Course 2	
Number of Theory Credits	Number of lecture hours/semester	Number of Theory Credits	Number of lecture hours/semester
3	39 or 42	3	39 or 42

Content of Course	39/42 Hrs
Unit – 1 Introduction	13:14
Chapter No. 1 Meaning, Definition and Concepts	05
Chapter No. 2 Characteristic features	05
Chapter No. 3 Significance	04
Unit – 2 Fairs Festivals and Rituals	13:14
Chapter No. 4. Significance – Festivals – Fairs	06
Chapter No. 5. Rituals and Tirtha kshetras	06
Chapter No. 6. Legends and Narratives	01
Unit – 3 Performing Arts	13:14
Chapter No. 7 Folk Dances and Theatre	05
Chapter No. 8 Oral Traditions	03
Chapter No. 9 Architecture and Built Heritage **Historical Places:** 1. Gulbarga 2.Bidar, 3.Basavakalyana 4.Savadatti, 5. Shravana Belagola, 6. Dharmasthala, 7. Udupi, 8. Kollur, 9. Gokarna, 10. Shringeri, 11. Belur 12. Halebeedu, 13. Somanathapura, 14. Talakeri, 15. Melukote, 16. Pattanagere 17. Mysore, 18.Sanehalli, 19. Heggadu, 20 Shikaripura.	04

Books for Reference:

1. K.T. Achaya – Indian food Historical Companion
2. Sachin Shekhar Biswas – Protecting the Cultural Heritage
3. N.K.Bose – Culture Zones of India in culture and Society Inindia
4. S.Natarajan – Indian Classical Dances
5. Prakash, H.S Shiva – Traditional Theatres
6. Krishna N. Reddy – Cultural Heritage of South India
7. Dr. A. Muraleppa – Dakshin Bharat a Janapad Kosh Vol-I II
8. Dr. Suryanth Kamat – Karnataka Sankshipt Itihas
9. Srinivas T – Bhartiya Itihas Mattu Parampare
10. K.R. Basavaraj – Karnataka History and Culture
11. □□ □□□□□ □□□□□□□□□□□□□□□□□□□□□ – □□□□□□□□□ □□□□□□□□□ □□□□□□□□

[illegible] SEMESTER

[illegible] ELECTIVE

Course Title: Freedom Movement in India (1885-1947)	
Total contact Hours: 39-42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 03
Model Syllabus Authors:	Summative Assessment Marks

[illegible] Semester

GE- Freedom Movement in India (1885-1947)

Course 1		Course 2	
Number of Theory Credits	Number of hours/ week/ semester	Number of Theory Credits	Number of hours/ week/ semester
3	39 to 42	3	39 to 42

Content of Course	39-42 Hrs
Unit – I: Indian Nationalism	12 Hr
Chapter No.1: Socio of Indian National Congress-Moderate-Extremist-Techniques-Partition of Bengal-Swadeshi Movement	12
Chapter No.2: Split of Congress-Extremist-Objective-Techniques, League For-Establishment-Aims-Role-Home Charles Pal-Aurobindo Ghosh	10
Chapter No.3: Revolutionary Movement: Bhagat Singh-Chandra Shekar Azad, Rajguru Sukh Dev, Revolutionary Writers: Khudiram Bose, Madan Lal Dhingra, Batukeshwar Dutt, Jatin Mukherjee	14
Unit – 2: 1920 and After	15 Hr
Chapter No.4: First World War and Indian Nationalism	04
Chapter No.5: Home Rule Movement-Satyagrahaswaraj-Tilak and Annibesant	10
Chapter No.6: Lucknow Pact-1916-Emergence of Mahatma Gandhi-Champaran	04
Unit – 3: Gandhian Era	12 Hr
Chapter No.7: Early Experiments of Gandhi-The Congress Movement, Swaraj Party, Simon Commission	07
Chapter No.8: Civil Disobedience movement, Round Table Conference-Communal Award-Poona Pact-Gandhi-Jinnah Pact-1934	08
Chapter No.9: Terrorism and Independence, Cripps Proposal - Quit India Movement-Cabinet Mission, Indian Independence Act of 1947	09

Books for Reference:

1. Aakash Singh Rathore-New Dalits and Indian Freedom Struggle
2. Bipin Chandra- India Struggle for Independence
3. Bipin Chandra-Communalism and Modern India
4. Bipin Chandra-Gandhi and Nehru Gandhi
5. Dominique Lapry-Freedom at Midnight

6. [illegible]
7. [illegible]
8. [illegible]
9. [illegible]
10. [illegible]
11. [illegible]
12. [illegible]
13. [illegible]
14. [illegible]
15. [illegible]
16. [illegible]

Semester 4

Course Title: Principles and Practice of Museology	
Total contact Hours: 39-42	Course Credits: 3
Formative Assessment Marks: 40	Duration of End Exam: 03
Model Syllabus Authors:	Summative Assessment Marks:

Semester 4

PRINCIPLES AND PRACTICE OF MUSEOLOGY

Content of Course	37 Hours
UNIT -1 Introduction to Museology	
Chapter-I	5
History of Museum and Collection - Definition and scope of Museum.	
Chapter-II	4
General Principles of Museums: Functions of Museums.	
Chapter-III	4
Museum Movement in India: international, Europe, and Western Hemisphere.	
UNIT -2 : Functions and types Museums	
Chapter-IV	9
Functions of Museum: (a) Collection (b) Identification (c) Preservation (d) Documentation (e) Presentation (Exhibition) (f) Research (g) Educational activities	
Chapter-V	4
Various Types of Museums: Archaeology Museum, Art Museum, Rural Museum, Children Museum, Military and war Museum, Science Museum	
Chapter-VI	3
New trends in Museum and Legislations (including Museum)	
UNIT -3 : Management and Administration	
Chapter-VII	9
Museum Management and Administration : Location and functioning of Museum (a) Selection of site (b) Interesting (c) Use of space design (d) Planning (e) Construction of museum (f) Special Problems (Air, flood, fire & earthquake etc.)	
Chapter- VIII	3
Museum Conservation and Preservation : Causes, Principles of Conservation (a) Preventive measures (b) Curative measures	
Chapter- IX	4
Classification of Museums based on the nature of collections, concepts of art Museum, Personality Museums, Children Museums, and Virtual Museum.	

Books for Reference

1. Dr. V. Jayaraj - Museology - Heritage Management - Laxmi ns Publications Chennai - 18. 2003
2. M.L. Nigam - Fundamentals of Museology, Devs Publications, Hyderabad, 1988.
3. Grace Morley - The Museum and its functions, Ed. Sahibi Rahman for Lahore Museum, Lahore, 1961.
4. Dr. V. Jayaraj - Manuscripts on Conservation in Museums Published by the Commissioner of Museums, Chennai, 1997.
5. J. Smith, J. Batt and Thomas P. Oversby - Museum Storage, Oxford University, U.K. Archetype Publications, New Delhi, 1997.
6. Agarwala, V. S. - Museum studies, Periyar Publication, Varanasi, 1973.
7. Grace Morley - Museums today, London, 1961.

Course Matrix for B.A. (History-Hons)

For Academic Year 2021-22

[As per NEP-2020 Guidelines]

First Semester

Paper No.	Course	Title of the Course	Instruction Hours per week	Exam Duration Hours	Marks			Credits
					CA	ETE	Total	
1.1	DSC-1	Political History of Karnataka (BCE-3 to 12CE) Part-I	3	3	40	60	100	3
1.2	DSC-2	History and Culture of Ancient India Part-I (From the earliest period to Sixth century B.C)	3	3	40	60	100	3
1.3	GE-1	Cultural History of Karnataka (CE) to CE 1th OR Introduction to Archaeology	3	3	40	60	100	3
		Total Credits						09

Second Semester

Paper No.	Course	Title of the Course	Instruction Hours per week	Exam Duration Hours	Marks			Credits
					CA	ETE	Total	
2.1	DSC-3	Political History of Karnataka (CE-12 to 1760AD)	3	3	40	60	100	3
2.2	DSC-4	History and Culture of Ancient India Part-II (From Imperial Guptas to 12th century A.D)	3	3	40	60	100	3
2.3	GE-2	Cultural History of Karnataka (12 AD to 1760 AD) OR Museology	3	3	40	60	100	3
		Total Credits						09

[illegible]

[illegible]	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

Course Pre-requisite(s): [illegible]

Course Outcomes (COs):
At the end of the course the student should be able to:

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]

[illegible]

BA Semester-I

DSC-1

Paper: Course Title: [illegible]

Content of Course	[illegible]
Unit – Introduction	[illegible]
Chapter No:	1. [illegible]
Chapter No:	2. [illegible]
Chapter No:	3. [illegible]
Unit-I: The Age of Kingdoms	[illegible]
Chapter No:	4. [illegible]
Chapter No:	5. [illegible]
Chapter No:	6. [illegible]
Unit – 2: Formation of State	[illegible]
Chapter No:	7. [illegible]
Chapter No:	8. [illegible]
Chapter No:	9. [illegible]
Chapter No:	10. [illegible]

Books for Reference:

1. [illegible]
2. [illegible]
3. [illegible]

4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]
9. [illegible]
10. [illegible]

Pedagogy:

- Lecture Method – Class Room Teaching
- Learning Through Project work
- Collaborative learning strategies
- Use of Learning Resources like
  - Audio – Visual aids
  - Films
  - Documentaries
  - Visit to historical sites

Assessment:

Weightage for assessment (in percentage)

Formative Assessment		
	Total Internal Assessment	**Theory Part Semester End Examination**
Internal (Session) Test	10+10=20	80
Seminar/ Presentation/ Activity	10	
Assignments/ Case study/ Field work/ Project work etc	10	
Total	40	
Grand Total		100

BA Semester 1 DSC-1

Course Title: History and Culture of Ancient India (from the very earliest to [illegible] AD)	
Total Contact Hours: 30 to 45	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 3h
Model Syllabus Authors:	Summative Assessment Marks

Course Pre-requisite(s): History and Culture of Ancient India (HC)

Course Outcomes (COs):

At the end of the course the student should be able to:

1. Recognise the physical features of India and its impact on Indian culture
2. Know various kinds of sources available for reconstruction of India's past
3. Understand the Indo-Saraswatic culture and its contribution to Indian culture
4. Know the significance of Vedic culture
5. Identify the reasons for the rise of new religious movements in 6th century B.C. and understand the contributions of Jainism and Buddhism to Indian culture.
6. Understand the process of political development in Ancient India and recognise the significance of historical places.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12):

Course Outcomes (COs) / Program Outcomes (POs)	DSC1	DSC2	DSC3	DSC4	DSC5	DSC6	GE1	GE2	SEC1	SEC2
Disciplinary Knowledge	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
Communication Skills	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
Critical Thinking	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Problem Solving			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Analytical Reasoning	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
Cooperation and Team Work		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]
Reflective Thinking		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Self-directed Learning			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Diversity Management and Inclusive Approach	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		
Moral and Ethical Awareness/Reasoning	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
Lifelong Learning		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose assistance is envisaged in this course. Mark '3' in the intersection cell if a course outcome addresses a particular program outcome

B.A Semester-I DSC-1

Paper Course Title: [illegible]

Content of Course	[illegible]
Unit-1	[illegible]
Chapter No. 1 The Geographical features and their influence on historical origin, Indo-Gangetic river basin, Vindhya-Satpura and Aravali mountain ranges, Deccan plateau, Western and Eastern Ghats and Coastal Regions.	[illegible]
Chapter No. 2 Sources: Archaeological sources- Excavations, Epigraphy, Numismatics and Monuments, Literary sources- Indigenous and Foreign accounts- Greek, Chinese and Arab accounts.	[illegible]
Unit-2	[illegible]
Chapter No. 1 Indus Valley Civilization: Origin, Extent, Important sites- Harappa, Mohenjodaro, Lothal, Kalibangan and Dholavira, Town planning, Society, Economy, Religion, Art, Script and Causes for the decline	[illegible]
Chapter No. 2 Vedic Culture: Early Vedic period- Vedic literature, Polity, Society, Economy, and Religion. Later Vedic period- Polity, Society, Economy and Religion.	[illegible]
Unit-3	[illegible]
Chapter No. 1 Some Religious reformation movement: Causes for the rise of new religious movement Jainism: Philosophy of Mahavira, Causes for the rise and decline of Jainism and contributions of Jainism to Indian Culture Buddhism: Philosophy of Buddha, Causes for the rise and decline of Buddhism and contributions of Buddhism to Indian Culture	[illegible]
Unit-4	
Places of Historical importance: Locate, Tell, places and write the historical importance of each in one or two sentence Harappa, Mohenjodaro, Lothal, Kalibangan, Dholavira, Ayodhya, Kaushambi, Sravasti, Nalanda, Rajgir, Vaishali, Pataliputra, Bodhgaya, Sarnath, Kushinagar, Lumbini, Buddha Gaya, Sanchi, Taxila and Kalinga.	[illegible]

Books for Reference

1. Sathyam A.L., (1954) 2007, *Wonder that was India*, Sidwik Publications, Delhi.
2. Jha D.N., (1977) 2015, *Ancient India- an Introductory Outline*, Manohar Publishing House, Bombay.
3. Kosambi D.D., (1965) 2012, *The Culture and Civilization of Ancient India- a Historical Outline*, Vikas Publishing House Pvt. Ltd, New Delhi.
4. Kosambi D.D., (1956) 2011, *An Introduction to the Study of Indian History*, Popular Prakashan, Bombay.
5. Majumdar R.C, Raychaudhuri H.C and Kalikinkar Dutta, (1942) 2011, *An Advanced History of India*, Macmillan Publishers India Ltd.
6. Majumdar R.C, (1952) 2007, *Ancient India*, Motilal Banarsidas Publishers Pvt. Ltd. Delhi.
7. Majumdar R.C. (Gen.Ed.) *The History and Culture of the Indian people*, Vol. No. 1, Bharatiya Vidya Bhavan.
8. Nityanjan Lahiri (Ed.), 2012, *The Decline and Fall of the Indus Civilization*, Permanent Black.
9. Ramakrishna R.V., (1947) 2004, *A Survey of Indian History*, Asia Publishing House, Bombay.
10. Rameshchandra Tripathi (1942) 2004, *History of Ancient India*, Motilal Banarsidas Publishers Pvt. Ltd. Delhi.
11. Romila Thapar, 2002, *The Penguin History of Early India*, Penguin Books.
12. Sharma R.S, 2007, *India's Ancient Past*, OUP.
13. [illegible]
14. [illegible]
15. [illegible]
16. [illegible]
17. [illegible]
18. [illegible]

Pedagogy:

- Lecture Method – Chalk Board Teaching
- Learning Through Project work
- Collaborative learning strategies
- Use of Learning:
  - Resources Books
  - Audio – Visual
  - aids, Films
  - Documentaries

Assessment:

Weightage for assessment (in percentage)

Formative Assessment		
	Total Internal Assessment	Theory Part Semester End Examination
Internal (Session) Test	[illegible]	60
Seminar Presentation/ Activity	10	
Case study/ Assignments Field work / Project work etc.	10	
Total	40	
Grand Total		100

B.A Semester I

Open Elective-I

Course Title: Cultural History of Karnataka (CE I+CE II) : Part I	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of End Exam: 2
Model of Blended Activities	Summative Assessment Marks

Course Pre-requisite(s): Cultural History of Karnataka (CE I+CE II) : Part I

Course Outcomes (COs):

At the end of the course the student should be able to:

- Provide an insight about the cultural development of Karnataka
- Familiarize Karnataka history and culture
- Expertise to analyse factors for development of culture of Karnataka
- Analyze the factors responsible for origin and decline of dynasties
- Provide the opportunity to understand the process of cultural dynamism

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	DSC1	DSC2	DSC3	DSC4	DSC5	DSC6	GE1	GE2	SEC1	SEC2
Disciplinary Knowledge										
Communication Skills										
Critical Thinking										
Problem Solving										
Analytical Reasoning										
Cooperation and Team Work										
Reflective Thinking										
Self-motivated Learning										
Diversity Management and Inclusive Approach										
Moral and Ethical Awareness/Reasoning										
Lifelong Learning										

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes. Each enumerated is assigned at the choice. Mark 'X' at the intersection cell of a course outcome addressing a particular program outcome.

BA Semester – I Open Elective

Paper: Course Title: Cultural History of Karnataka (CE-1/CE-2) (Part-I)

Content of Course	36 ST Hrs
Unit–1 Introduction:	12
Chapter No. 1. Geographical Features and its influence, Language and Script	2
Chapter No. 2. Land Grant – Its Antique Karnataka	2
Chapter No. 3. Agriculture and Emergence of Agrarian to Economic crises	2
Unit–2 : Social Conditions	12
Chapter No. 4. Society, Marriage System, Food habits, Family and Customs.	2
Chapter No. 5. Religion – Traditions and Rituals	2
Chapter No. 6. Festivities and Pilgrimage: Dasara, Kambala, Bandimahakali, Dharmasthala, Sringeri.	2
Unit – 3 Religion and Art	12
Chapter No. 7. Jainism and Buddhism in Karnataka	2
Chapter No. 8. Practices: Different Cults: Bhakti Tradition in Bhagavatas, Kalamukhas, Kapalikas, Bhakti and Sharanaru.	2
Chapter No. 9. Art and Architecture, Paintings, and Fine arts. Contributions of Chalukyas of Badami and Kalyanapura.	2

Books for Reference

1. Basavaraja K.P., 1994, History and Culture of Karnataka: Early times to Chalukyas, Chalukya publication, Dharwad.
2. Desai P.B., 1970, A History of Karnataka, Karnatak Research Institute, Karnatak University, Dharwad
3. Dhavalikar M.K., 1969, Karnataka Through the Ages, Directorate of Culture, Mysore
4. K.A. Nilakantha Sastri, 1955, A History of South India, Oxford University press, New Delhi
5. Krishna Rao U.R., 1970, Glimpses of Karnataka, Indian National Congress, Bangalore
6. S.M. Kulkarni, 2006, Pre and Early Chalukya Epigraphs origin and development, Harnessing mining times, New Delhi
7. Rajashekara S. (ed), Karnataka Architecture, Sapna Publications, Dharwad
8. Veerabhadra Murthy M.V. and Ramakrishnan, R., 1977, A history of Karnataka, from the earliest times to the present day, S Chand Publications, Delhi.
9. Suryanatha U Kamath, 2011, A Concise History of Karnataka, MCC publication, Bangalore
10. Thippeshwar and N., 2014, Karnataka Darshana Samskriti, D T E Murthy publications, Mysore

11. [illegible]
12. [illegible]
13. [illegible]
14. [illegible]
15. [illegible]
16. [illegible]
17. [illegible]
18. [illegible]

Pedagogy:

- Lecture Method – Class Room Teaching
- Learning Through Project work
- Collaborative learning strategies
- Use of Learning Resources like:
  - Audio – Visual aids
  - Films
  - Demonstration
- Visit to Industries/Labs

Assessment:

Weightage for assessment (in percentage):

Formative Assessment		
	Total Internal Assessment	Theory Part Semester End Examination
Internal Test(s)	[illegible]	60
Seminar Presentation/ Activity	10	
Case study/ Assignments/ Field work/ Project work etc.	10	
Total	40	
Grand Total		100

BA Semester 1 Open Elective

Course Title: Introduction to Archaeology	
Total Contact Hours: 30 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 2
Model Syllabus Authors:	Summative Assessment Marks

Course Pre-requisite(s): Introduction to Archaeology

Course Outcomes (COs):

At the end of the course the student should be able to:

- Understand the concept of Archaeology as an ancillary for study of history
- Help to study features of Archaeology in understanding history
- Familiarize the students to know about scope of Archaeology
- Understand the various tools and techniques utilized in Archaeology
- Study various aspects of disciplines of Archaeology

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12):

Course Outcomes (COs) / Program Outcomes (POs)	DSC1	DSC2	DSC3	DSC4	DSC5	DSC6	OE1	OE2	SEC1	SEC2
Disciplinary Knowledge	X	X	X	X	X	X	X	X		
Communication Skills	X	X	X	X	X	X	X	X		
Critical Thinking	X	X	X	X	X	X	X	X	X	X
Problem Solving			X	X	X	X	X	X	X	X
Analytical Reasoning	X	X	X	X	X	X	X	X		
Computations and Team Work		X	X	X		X	X	X		X
Reflective Thinking		X	X	X	X	X	X	X	X	X
Self-motivated Learning			X	X	X	X	X	X	X	X
Diversity Management and Inclusive Approach	X	X	X	X		X	X	X		
Moral and Ethical Awareness/Reasoning	X	X	X	X	X	X	X	X		X
Lifelong Learning		X		X	X	X	X	X		X

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes. Where strongest is emerged in the course. Mark 'X' in the corresponding cell if a course outcome addresses a particular program outcome.

B.A Semester I Open Elective

Title of the Course Paper: Introduction to Archaeology

Content of Course	30-45 Hrs
Unit – Introduction:	13-14
Chapter No. 1: Definition – Scope – Nature	03
Chapter No. 2: Concept – Artifact – Assemblage – Culture – Culture Layer	03
Chapter No. 3: Kinds of Archaeology – Stone, Marine and Salvage	08
Unit-II: Archaeology by Period	13-14
Chapter No. 4: Lower Palaeolithic – Middle Palaeolithic – Upper Palaeolithic Mesolithic – Chalcolithic – Bronze age – Iron Age	05
Chapter No. 5: Development in the Global Context – From Antiquarianism to Scientific Archaeology – Timber Pepys, Pitt Rivers – Leonard Woolly	05
Chapter No. 6: Archaeology in India – William Jones to Wheeler – The Aftermath – V.D. Rao – Archaeological Survey of India – Department of Archaeology Government of Karnataka	04
Unit – 3 Exploration, Excavation and Analysis	13-14
Chapter No.7: Identification of a site – field survey – sampling techniques. Application of scientific methods	04
Chapter No.8: Methods of Excavation – Vertical, horizontal and Quadrant method	05
Chapter No. 9: Dating the Archaeological objects- Relative and absolute dating methods	04

Books for Reference :

1. Agrawal, D.P., 1982. *Archaeology of India*. Copenhagen: Scandinavian Institute of Asian Studies.
2. Allan, W.J., 1990. *Science based dating in archaeology*. Longman, London.
3. Aitken, M.J., 1990. *Physics and Archaeology*. Oxford: Oxford University Press.
4. Allchin, Bridget, Raymond Allchin, 1982. *Rise of Civilization in India and Pakistan*. Cambridge: Cambridge University Press.
5. Allchin, F.R., B. Allchin, 1997. *The Rise of Civilization in India*. New Delhi: Penguin Books.
6. Atkinson, R.J.C., 1953. *Field Archaeology*. London: Hutchinson and Co.
7. Barker, P., 1996. *Techniques of Archaeological Excavation*. London: B.T. Batsford Ltd.

3. Chakrabarti, D. K., [illegible]
9. Chakraborty, D.K., 1988. Theoretical Issues in Indian Archaeology. Delhi: MunshiramManoharlal
10. Ghosh, A (Ed.) 1990. Encyclopedia of Indian Archaeology. Vol. I. New Delhi
11. Mortimer Wheeler, 1954. Archaeology from the Earth, Oxford: Oxford University Press
12. Rajan, K. 2013. Understanding Archaeology. Manonmaniam, Tanjore
13. Raman, K.V., 1998. Principles and Methods in Archaeology. Madras: Prasanna Publications, Madras
14. [illegible]
15. [illegible]
16. [illegible]

Pedagogy

- Lecture Method – Class Room Teaching
- Visit to Archaeological sites
- Lab to techniques of excavations
- Collaborative learning strategies
- Learning about Exploration, Trenching and digging
- Collection and Preservation of Artifacts

Assessment

Weightage for assessments (in percentage)

Formative Assessment		
	Total Internal Assessment	Theory Part Semester End Examination
Internal (Session) Test	12+16=20	60
Seminar Presentation Activity	10	
Case study/ Assignments/ Field work/ Project work etc.	10	
Total	40	
Grand Total		100

[redacted] Semester 2

[redacted]

[redacted]	
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

Course Pre-requisite(s): [redacted]

Course Outcomes (COs):

At the end of the course the student should be able to:

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]										
[redacted]										
[redacted]										
[redacted]										
[redacted]										
[redacted]										
[redacted]										
[redacted]										
[redacted]										
[redacted]										

[redacted]

BA Semester 2 DSC-3

Course/ Paper Title: Political History of Karnataka (CE- 1750-AD) Part-2

Content of Course	No. of Hrs.
Unit – 1 Introduction-Historical Background	5-12
Chapter No. 1 The Rāyas of Śrīraṅgapaṭṭaṇa, Hoysalas, Yadava of Devagiri and Kakatiya	12
Chapter No. 2 The Yadavas : Seuna of Devagiri, Jaitrapala, Bhillama V and Ramachandra Deva III	12
Unit-2 : Medieval Karnataka	13-28
Chapter No. 3 Vijayanagar Dynasties: Introduction, Brief history of religious and Saiva dynasties, Tuluva- Krishnadeva Raya, Rama Raya and the Battle of Talikota	28
Chapter No. 4 The Bahamani Sultanate: Introduction, Brief history of Bahamani Sultanate- Mahamud Gawan- Administration, Attitude of Rajput Muhammad Adil Shah	42
Chapter No. 5 Nāyaka rule in Karnataka: Ikkeri, Keladi and Madura	52
Unit – 3 : Post Vijayanagar Period	11-26
Chapter No. 6: A. Wodeyars of Mysore: Introduction and Chikkadevaraja Wodeyar B. Nawabs of Chitradurga: Introduction and early history C. Nawabs of Kolhapur: Introduction, Shivaji Maratha and Rani Chennamma	64
Chapter No. 7 Major Chieftains: A. Palegaras under Vijayanagar: Keladi Nayaka B. Local History of South Kanara	94
Chapter No. 8: Administration under Vijayanagara: Chandragiri Durga-Keladi, Shivappa Nayaka (1697-71)	102
Chapter No. 9: Places of Historical importance: Locate Ten places and write the historical importance of each in one or two sentences Devarayanadurga, Bidar, Devagiri, Vijayapur, Hampi, Anegundi, Talikota, Penugonda, Chandragiri, Gulbarga, Ahmednagar, Bijapur, Solapur, Kolhapur, Jinji, Chitradurga, Bangalore, Mysore, Srirangapatna	42

Books for Reference

1. Basavaraja K.R. 1994. History and Culture of Karnataka: Early times to Vijayanagar. Chaitra publications. Dharwad.
2. Burton Stein. 1998. Vijayanagara. The new Cambridge history of India I 2. Cambridge.
3. Desai P.B., 1970. A History of Karnataka. Karnata Sahitya Parishat Series. Karnatak University, Dharwad.
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6. King J.S. 1900. History of the Balmahal District. London.
7. Mahalingam T.V., 1940. Administration and Social Life Under Vijayanagar. University of Madras. Madras.
8. Salatore B.A., 1981-1985. Encyclopedia of Indian Culture (5 vols). Sarup publications Pvt. Ltd. New Delhi.
9. ಅಯ್ಯಂಗಾರ್, ಎಸ್.ಕೆ. 1999. ಮಧ್ಯಕಾಲೀನ ಕರ್ನಾಟಕದ ಚರಿತ್ರೆಯ ಮೂಲಗಳು. ಧಾರವಾಡ.
10. ಕಂಬಾರ, ಸಿದ್ಧಲಿಂಗಯ್ಯ. 1983. ಕಂಬಾರ ಸಮಾಜ. ಬೆಂಗಳೂರು.
11. ಕಂಬಾರ, ಸಿದ್ಧಲಿಂಗಯ್ಯ. 1972. ಕಂಬಾರ ಸಮಾಜ = ಮೊದಲ ಭಾಗ. ಧಾರವಾಡ.
12. ಕೃಷ್ಣಾಚಾರ್, ಎಸ್.ಜಿ. ಶ್ರೀನಿವಾಸ್ ರಾವ್. 1974. ಸಂಗಮ ಮತ್ತು ಸಾಳುವ ಅರಸರ ಚರಿತ್ರೆ ಮತ್ತು ಸಂಸ್ಕೃತಿ. ಮೈಸೂರು.
13. ಚಿದಾನಂದ ಮೂರ್ತಿ, ಎಂ. 1994. ಅಭಿನವ ಪಂಪ ಕನ್ನಡ ಕವಿ ಚರಿತೆ. ಧಾರವಾಡ.
14. ಜೋಯಿಸ್, ಎಸ್.ಎಸ್. ಶ್ರೀನಿವಾಸ ಜೋಯಿಸರು.
15. ತಿಮ್ಮಪ್ಪ ಗೌಡ, ಎಸ್.ಎಂ. 1994. ಅಭಿನವ ಪಂಪ ಕನ್ನಡ ಕವಿ ಚರಿತೆ. ಧಾರವಾಡ.
16. ದೇವರಾಜ್, ಎಸ್. 1977. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ ದರ್ಶನ. ಮೈಸೂರು.
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20. ಪಾಟೀಲ, ಪಿ.ಬಿ. ಕರ್ನಾಟಕದ ಪ್ರಾಚೀನ ಚರಿತ್ರೆ ಮತ್ತು ಸಂಸ್ಕೃತಿ. ಧಾರವಾಡ.
21. ಪಾಟೀಲ, ಪಿ.ಬಿ. 1998. ಕರ್ನಾಟಕ ಚರಿತ್ರೆ. ಧಾರವಾಡ.
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23. ಪಾಟೀಲ, ಪಿ.ಬಿ. ಮತ್ತು ಇತರರು. 2003. ಕರ್ನಾಟಕ ಚರಿತ್ರೆ ಮತ್ತು ಸಂಸ್ಕೃತಿ. ಧಾರವಾಡ.
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Pedagogy

- Lecture Method – Chalk Board Teaching
- Learning Through Project work
- Collaborative learning strategies
- Use of Learning Resources Such as
  - Audio – Visual aids
  - Films
  - Documentaries

Assessment:

Weightage for assessment (in percentage)

Formative Assessment		
	Total Internal Assessment	Theory Part Semester End Examination
Internal (Seminar) Test	20+20=20	60
Seminar/ Presentation/ Activity	10	
Case study/ Assignments/ Field work/ Project work etc.	10	
Total	40	
Grand Total		100

BA Semester 2

DSC-4

Course Title: History and Culture of Ancient India Part-II (non-Segmental Histories to 12th century A.D)	
Total Contact Hours: 30 to 45	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 2
Model Syllabus Authors:	Teachers' Name (optional) Marks:

Course Pre-requisite(s): History and Culture of Ancient India Part-I (non-Segmental Histories to 12th century A.D)

Course Outcomes (COs):

At the end of the course the student should be able to:

- Understand the emergence of major imperial dynasties of India which ruled during Ancient period
- Notice the cultural contributions of different dynasties of Ancient India
- Understand development of administrative System, Economy and Society in Ancient India
- Know the development of Art and architecture in Ancient India
- Recognize the glories of classical sculptures

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-11)

Course Outcomes (COs) / Program Outcomes (POs)	DSC1	DSC2	DSC3	DSC4	DSC5	DSC6	OE1	OE2	SEC1	SEC2
Disciplinary Knowledge	X	X	X	X	X	X	X	X		
Communication Skills	X	X	X	X	X	X	X	X		
Critical Thinking	X	X	X	X	X	X	X	X	X	X
Problem Solving			X	X	X	X	X	X	X	X
Analytical Reasoning	X	X	X	X	X	X	X	X		
Cooperation and Team Work		X	X	X		X	X	X		X
Reflective Thinking		X	X	X	X	X	X	X	X	X
Self-motivated Learning			X	X	X	X	X	X	X	X
Diversity Management and Inclusive Approach	X	X	X	X		X	X	X		
Moral and Ethical Awareness Reasoning	X	X	X	X	X	X	X	X		X
Lifelong Learning		X		X	X	X	X	X		X

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in the course. Mark 'X' in the intersection cell if a course outcome addresses a particular program outcome.

BA Semester- I

DSC-1

Title of the Course Paper: [illegible]

Content of Course	No. of Hrs
Unit-1	[illegible]
Chapter No. 1 The Imperial Nigeria: Introduction, Archival [illegible] the Nigeria Administration	[illegible]
Chapter No. 2 Cultural Contributions of Nigerian Introduction, Religion, Literature and Art and architecture.	[illegible]
Unit-2	[illegible]
Chapter No. 1 The Age of Nigeria: Introduction, Religion, Literature, Science and technology and Art and architecture	[illegible]
Chapter No.2 Traditional Nigerian Religion, Education and literature, Philosophy and Art and architecture.	[illegible]
Unit – 3	[illegible]
Chapter No.1 English Age: Introduction and Yoruba literature	[illegible]
Chapter No. 2 The cultural contributions of Political Introduction, Religion, Literature and Art and architecture.	[illegible]
Chapter NO. 3 The cultural contributions of Dance, Introduction, Administration with special reference to local self government, Religion, Literature and Art and architecture.	[illegible]
Unit – 4	[illegible]
Chapter No. 1 The contributions of Nigerians to Indian culture: Introduction, Their society, religion, literature and art and architecture.	[illegible]
Unit-5 Places of historical importance: Explain The factors and write the historical importance of each (1 one or two sentence) Bodhgaya, Hazrat Nizam, Ujjain, Pondicherry, Taxila, Mathura, Gandhara, Nalanda, Kanauj, Vallabhi, Tamralipti, Nalanda, Kanchi, Tagore, Chittaurgarh, Khajuraho, Konark, Chilkas and Rameshwar.	[illegible]

Books for Reference

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2. Jha D.N., (1877- 2012). Ancient India- An Introductory Outline. Anu Publishing House

Bombay.

3. Kosambi D.D. (1965) 2011. *The Culture and Civilization of Ancient India: a Historical Outline*. Vikas Publishing House Pvt. Ltd. New Delhi.
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7. Majumdar R.C. (Gen. Ed.). *The History and Culture of the Indian people*. Vol. Vol. 2 to 5. Bharatiya Vidya Bhavan.
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10. Romila Thapar. 2002. *The Penguin History of Early India*. Penguin Books.
11. Sharma R.S. 1987. *India's Ancient Past*. OUP.
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13. [illegible]
14. [illegible]
15. [illegible]
16. [illegible]
17. [illegible]
18. [illegible]

Pedagogy:

Lecture Method – Class Room Teaching
Learning Through Project work
Collaborative learning strategies
Use of Learning Resources like as
Audio – Visual aids
Films
Documentaries

Assessment:

Weightage for assessment (in percentage)

Formative Assessment		
	Total Internal Assessment	Class Test Semester End Examination
Internal (Section) Test	[illegible]	40
Seminar Presentation Activity	10	
Case study/ Assignments/ Field work/ Project work etc.	10	
Total	40	
Overall Total		100

BA Semester 2

Open Elective - 2

Course Title: Cultural History of Karnataka (1 AD to 1761 AD)	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 2
Model Syllabus Authors:	Summative Assessment Marks:

Course Pre-requisite(s): Cultural History of Karnataka (1 AD to 1761 AD)

Course Outcomes (COs):

At the end of the course the student should be able to:

- Understand the concept of cultural heritage of Karnataka
- Study various cultural factors which influence the flow of culture
- Emphasize the factors which influences in influencing culture and society
- Analyse the factors responsible for formation of pluralistic society
- Understand the concept 'Unity in diversity'.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12):

Course Outcomes (COs) / Program Outcomes (POs)	DSC1	DSC2	DSC3	DSC4	DSC5	DSC6	GE1	GE2	SEC1	SEC2
Disciplinary Knowledge	x	x	x	x	x	x	x	x		
Communication Skills	x	x	x	x	x	x	x	x		
Critical Thinking	x	x	x	x	x	x	x	x	x	x
Problem Solving			x	x	x	x	x	x	x	x
Analytical Reasoning	x	x	x	x	x	x	x	x		
Cooperation and Team Work		x	x	x		x	x	x		x
Reflective Thinking		x	x	x	x	x	x	x	x	x
Self-directed Learning			x	x	x	x	x	x	x	x
Diversity Management and Inclusive Approach	x	x	x	x		x	x	x		
Moral and Ethical Awareness Reasoning	x	x	x	x	x	x	x	x		x
Lifelong Learning		x		x	x	x	x	x		x

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is assigned at the course level. Mark 'X' in the intersection cell of a course outcome address a particular program outcome

B.A Semester 3- Open Elective-2

Title of the Course Paper: Cultural History of Karnataka (1 AD to 12th AD)

Content of Course	36 to 40 Hrs
Unit – 1 Introduction	10 to 14
Chapter No. 1 Administration – Central and Provincial	08
Chapter No. 2 Kingship – Duties of King – Ministers and other officers – Taxation	04
Chapter No. 3 Local Self Government – Village Administration	02
Unit-2 Society and Economy	12 to 14
Chapter No. 1 Social Conditions – Society – Rituals and Customs	02
Chapter No. 2 Economic Conditions – Agriculture	04
Chapter No. 3 Trade and Commerce: Internal and Foreign Trade	02
Unit – 3 Religion and Art	12 to 14
Chapter No. 1 Bhakti Saints Teaching and Philosophy: Ramanujacharya, Madhwacharya and Veerashaiva Movement – Basaveshwara and other Sharana: Influence of Jainism	06
Chapter No. 2 Temple Architecture: Contributions of Vijayanagara Empire: Hindu Architecture Contributions of Kalyana and Ikkeri	04
Chapter No. 3 Painting and Fine Arts: Vijayanagara Empire	04

Books for Reference

1. Ranga Ramachandrappa (Ed. 2017), Karnataka Sangeeta, Karnataka Sahitya Academy, Bangalore.
2. Basavaraj (K.R.) (Ed.), Karnataka History and Culture, Dharwada.
3. Dept. of Archaeology, 1998-2010, Vijayanagara Monuments Vol. II to IV, Govt. of Karnataka.
4. Desai P.B., 1975, A History of Karnataka, Gulbarga Samskrita Sangha, Gulbarga (Second Edition).
5. Hiremath S.R. (ed), Karnataka Darshan for Age, Government of Mysore, Mysore.

6. [illegible]
7. [illegible]
8. [illegible]
9. [illegible]
10. [illegible]
11. [illegible]
12. [illegible]
13. [illegible]
14. [illegible]

Pedagogy

- Lecture Method – Class Room Teaching
- Group Discussion
- Visit to cultural sites
- Preparation of charts
- Learning Through Project work
- Collaborative learning strategies
- Use of Learning Resource like as
  - Audio – Visual aids
  - Films
  - Documentaries

Assessment:

Weightage for assessment (in percentage)

Formative Assessment		
	Total Internal Assessment	Theory Part Semester End Examination
Internal (Session) Test	15+12=27	80
Seminar Presentation Activity	10	
Case study Assignment/ Field work/ Project work etc.	10	
Total	40	
Grand Total		100

BA Semester 2

Open Elective-2

Course Title: Manuscriptology	
Total Contact Hours: 30 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 2
Model Syllabus Authors:	Treasure a Kuruvilla Dalal

Course Pre-requisite(s): Manuscriptology

Course Outcomes (COs):

At the end of the course the student should be able to:

1. Understand the importance of manuscripts
2. Study manuscripts as an ancillary for study of history
3. Understand the concept of cataloguing of manuscripts
4. Practice the ethics of conservation and preservation of manuscripts
5. Visit libraries and Archives to study conservation and preservation

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12):

Course Outcomes (COs) / Program Outcomes (POs)	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	CO1	CO2	CO3	CO4
Disciplinary Knowledge	X	X	X	X	X	X	X	X		
Communication Skills	X	X	X	X	X	X	X	X		
Critical Thinking	X	X	X	X	X	X	X	X	X	X
Problem Solving			X	X	X	X	X	X	X	X
Analytical Reasoning	X	X	X	X	X	X	X	X		
Cooperation and Team Work		X	X	X		X	X	X		X
Reflective Thinking		X	X	X	X	X	X	X	X	X
Self-motivated Learning			X	X	X	X	X	X	X	X
Diversity Management and Inclusive Approach	X	X	X	X		X	X	X		
Moral and Ethical Arguments Reasoning	X	X	X	X	X	X	X	X		X
Lifelong Learning		X		X	X	X	X	X		X

Course Articulation Matrix (Mark cross symbol of course with the corresponding program outcomes whose attainment is attempted in the course. Mark 'X' in the intersection cell of a course outcome addresses a particular program outcome.

BA Semester 2 Open Elective-2

Title of the Course Paper: Manuscriptology

Content of Course 1	36 of 80
Unit – 1 Introduction	12-14
Chapter No. 1 Meaning – Definition – Character	24
Chapter No. 2 Scope and importance	48
Chapter No. 3 Types of Manuscripts – Methods of Study	64
Unit-2 Collection	11-14
Chapter No. 1 History of Manuscriptology	02
Chapter No. 2 Indian Manuscriptology	04
Chapter No. 3 Manuscripts in Kannada, Tigulari, Tamarin, Pali, Tamil Grantha, Telu, Nandinagari and Urdu	08
Unit – 3 Editing	13-14
Chapter No. 1 Collection of Manuscripts	02
Chapter No. 2 Process of Editing	02
Chapter No. 3 Preservation of Manuscripts	04

Books for Reference

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2. Alekar A.S.—Education in Ancient India and Brahmanas (Introduction)
3. Anupam Jain- Indigenous Methods and Manuscript Preservation
4. Belvalkar, S.V.—Descriptive Catalogue and the Govt. Collections of Manuscripts
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23. Raschid Grunwedel –, South Indian Scripts in Sanskrit Manuscripts and Prints: Grantha, Tamil, Malayalam, Telugu, Kannada, Nandinagari, Wiesbaden, Harrassowitz 2003.
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25. Samuel, B.S Granthasamskarana
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27. Shikaripur Jagadish - Granthasampadane Hosa Nelegalu (Kannada)
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29. Subbiahiah V. R., 1944, Critical Studies in the Mahabharata, V. R. Subbiahiah Memorial Edition Committee, Proto-Cultural Heritage of India Vol. I -IV (Sanskrit publications)
30. Udaya Kumar, G.V Eswaramurthy, D. A, Alternative Traditional Writing System in Southern India: Palm Leaf Manuscripts, Design Thoughts, July 2009

Pedagogy

- Class room teaching
- Visit to repositories, Archives and museums.
- Learn in repositories like webpages of Government
- Learn conversation method
- Study and classify manuscripts in different languages

Assessment:

Weightage for assessments (in percentage)

Formative Assessment		
	Total Internal Assessment	Theory Part Semester End Examination
Internal (Session) Test	10+10=20	80
Seminar/ Presentation/ Activity	10	
Case study/ Assignments/ Field work / Project work etc.	10	
Total	40	
Grand Total		100

Blue Print of University exam Question Paper

KUVEMPU UNIVERSITY

First Semester B.A Degree Examinations

HISTORY

Semester Scheme

Paper: [illegible]

Time: 3 hrs. Max. Marks: 80

There are five main sections in the question paper. Section II, III, and IV carry questions with choice, but Section I and V carry no choice.

Section I

Five very short answer questions – All questions carry three marks each 5x3=15

Section II

Short answer questions. Answer any five out of six questions. 5x5=25

Section III

Medium answer question. Answer any one out of two questions. 1x10=10

Section IV

Long answer questions. Answer any one out of two questions. 1x15=15

Section V

On the outline map provided:

A. Locate the following places (Two) and give historical importance in one sentence each. 5+5=10

B. For Blind students only*

Instead of map question one mechanism or question

*Blind students are answering the map questions should receive a copy of the questions of blindness issued by the competent authority.

Blue Print of University exam Question Paper

KUVEMPU UNIVERSITY

First Semester B.A Degree Examinations

HISTORY

Semester Scheme

Paper: Open Elective

Time: 3 hrs. Max. Marks: 60

There are four exam sections in the question paper. Section II and III have questions with choice, but Section I have no choice.

Section I

Five very short answer questions – All questions carry three marks each 5x3=15

Section II

Short answer questions-Answer any three out of six questions 3X8=24

Section III

Long answer questions: Answer any two out of four questions. 2X10=20

ಪದವಿ ವಿದ್ಯಾಲಯ

ಬಿ.ಎ. ಆನರ್ಸ್‌ ಪಠ್ಯಕ್ರಮ

ಅನುಬಂಧ – 1

ಸ್ವಾಯತ್ತ ಕನ್ನಡ ಪಠ್ಯಕ್ರಮ (2023–24ನೇ ಸಾಲಿನ ಆರಂಭ)

ಬಿ.ಎ. ಆನರ್ಸ್ ಪಠ್ಯಕ್ರಮ

DSC KAN C12 : ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯ

ಪಾಠ್ಯದ ಒಕ್ಕೂಟ ಮತ್ತು ವಿಭಾಗದ ಪಠ್ಯಪುಸ್ತಕಗಳು

ಪತ್ರಿಕೆಯ ಪೂರ್ಣಪಥ ಅಂಕಗಳು : ಪಾಠ್ಯ: 80 ಆಂತರಿಕ

ಪತ್ರಿಕೆಗೆ ಬೇಕಾದ ಅವಧಿಗಳು : ಬೋಧನೆ: 60 ಗಂಟೆಗಳು

ಘಟಕ – 1 : ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಭಾವಕ

ಉ. : ಪ್ರಾಥಮಿಕ ಅಧ್ಯಯನ – ಸ್ವತಂತ್ರ ಪಠ್ಯಪುಸ್ತಕ

ಪ. ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಭಾವಕ ಮತ್ತು ಅದರ ವಿಶೇಷತೆ ಪ್ರಾಧಾನ್ಯತೆಗಳು

ಸ. ಪ್ರಾಚೀನ ವ್ಯಕ್ತಿಯಾಗಿರಲಿ ವಿಷಯ ಹಾಗೂ ಅಭಿವ್ಯಕ್ತಿಯಲ್ಲಿ ಪ್ರಭಾವಕ ಶಾಸ್ತ್ರಗಳ ಪ್ರಭಾವ

(ಅನ್ಯ ಅಂಶ ಭಾಗಗಳು)

ಘಟಕ – 2 : ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಕಾರ ವಿವೇಚನೆ

ಉ. ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪ್ರಕಾರಗಳ ಪ್ರಕಾರ ವಿವೇಚನೆ

ಉದಾಹರಣೆ –ಲೌಕಿಕ ಸಾಹಿತ್ಯ-ಮೂಲಕಥೆಗಳು, ಸಾಹಿತ್ಯ- ಅನ್ಯಭಾಷೆಯ

ಪ. ಪ್ರಾಚೀನ ಪ್ರಾಚೀನಗಳಲ್ಲಿ ಅಭಿವ್ಯಕ್ತಿಗೊಂಡ ಅನ್ಯ ಸಂಸ್ಕೃತಿಯ ಪ್ರಭಾವ ಕಂಡುಬರುವ ಸಾಹಿತ್ಯಗಳು

ಘಟಕ – 3 : ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪ್ರಾಚೀನತೆ ಮತ್ತು ಪ್ರಾಚೀನತೆಯ ಪರಿಕಲ್ಪನೆ

ಉ. ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯ – ಪ್ರಾಚೀನತೆಯ ಪರಿಕಲ್ಪನೆ

ಪ. ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯ – ಪ್ರಾಚೀನತೆಯ ಪರಿಕಲ್ಪನೆ

ಸ. ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯ – ಪ್ರಾಚೀನತೆಯ ಪರಿಕಲ್ಪನೆ

ಘಟಕ – 4 : ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪ್ರಾಚೀನತೆಯ ಪರಿಕಲ್ಪನೆ

ಉ. ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯ – ಪ್ರಾಚೀನತೆಯ ಪರಿಕಲ್ಪನೆ

ಪಠ್ಯಪುಸ್ತಕಗಳು

ಪಠ್ಯಗಳ ಪಟ್ಟಿ
ಪಠ್ಯದ ಪುಸ್ತಕ ಸಂಪುಟ

ಪೂರಕ ಪಠ್ಯಪುಸ್ತಕಗಳು
ಪೂರಕ ಪಠ್ಯಪುಸ್ತಕ ಪಟ್ಟಿಯನ್ನು

ಸಂದರ್ಭಗಳು
ಪೂರಕ ಪಠ್ಯ
ಪಠ್ಯ ಪುಸ್ತಕ
ಪಠ್ಯ ಪುಸ್ತಕ ಪಟ್ಟಿ

ಕುವೆಂಪು ವಿಶ್ವವಿದ್ಯಾಲಯ

ಬಿ.ಎ. ಆಡಳಿತದ ಪದವಿ ಪರೀಕ್ಷೆ

ವಿನಿಯೋಗ – ೬

ಸ್ನಾತಕ ಕನ್ನಡ ವಿಷಯ ಪಠ್ಯಕ್ರಮ (೨೦೨೨-೨೫ ರಿಂದ ಅನ್ವಯ)

DSC KAN 13 : ಪತ್ರಿಕಾ ವಾಚನ ಮತ್ತು ಸಂಪಾದನೆ ಹಾಗೂ ಸಾಮಾನ್ಯ ಜ್ಞಾನ

(ಗದ್ಯ, ಪದ್ಯ, ವ್ಯಾಕರಣ ಮತ್ತು ಅನ್ವಯ ಪ್ರಶ್ನೆಗಳು)

ಅವಧಿ: ೩ ಗಂಟೆ ಗರಿಷ್ಠ ಅಂಕಗಳು: ೫೦

ಸೂಚನೆ : ೧) ಎಲ್ಲಾ ಪ್ರಶ್ನೆಗಳಿಗೂ ಉತ್ತರಿಸಿ.

೨) ಪ್ರಶ್ನೆಗಳ ಪಕ್ಕದಲ್ಲಿ ಅಂಕಗಳನ್ನು ಬರೆಯಲಾಗಿದೆ.

ಭಾಗ – ೧ : ಸರಿಯಾದ ಪ್ರತ್ಯುತ್ತರವನ್ನು ಆರಿಸಿ ಬರೆಯಿರಿ. (ಅಂಕಗಳು: ೨೫. ೨೫ x ೧ = ೨೫)

ಭಾಗ-೨ : ಕಿರು ಪ್ರಶ್ನೆಗಳು (೫ಕ್ಕೆ, ೫ನ್ನು, ೫ನೇ, ೫ನೆ, ೫ನ, ೫ಕ್ಕೆ, ೫ರ, ೫ರಲ್ಲಿ, ೫ರಿಂದ)

ಭಾಗ – ೩ : ಅಲ್ಪ ಪ್ರಶ್ನೆಗಳು (೧೦೦, ೧೫೦, ೧೭೫, ೨೦೦, ೨೫೦, ೩೦೦, ೩೫೦, ೪೦೦, ೪೫೦, ೫೦೦, ೫೫೦, ೬೦೦, ೬೫೦, ೭೦೦, ೭೫೦, ೮೦೦, ೮೫೦, ೯೦೦, ೯೫೦)

ಭಾಗ-೪ : ಅನ್ವಯ ಪ್ರಶ್ನೆಗಳು (೧೫೦, ೨೦೦, ೨೫೦, ೩೫೦)

ಭಾಗ- ೫ : ಅಪಠ್ಯಾಂಶ ಆಧಾರಿತ ಪ್ರಶ್ನೆ - ವಿಷಯ ವಿಸ್ತರಣೆ -೨

ಸಂಯೋಜಕರು ಅಧ್ಯಯನ ಮಂಡಳಿ
ಸದಸ್ಯರು
ಅಧ್ಯಕ್ಷರು ಅಧ್ಯಯನ ಮಂಡಳಿ

ಸಂಯೋಜಕರು ಅಧ್ಯಯನ ಮಂಡಳಿ (ಕನ್ನಡ)
ಸದಸ್ಯರು
ಎಂಬಿಎ ವಿಭಾಗದ ಅಧ್ಯಕ್ಷರು
ಎಂ.ಸಿ.ಎ ವಿಭಾಗದ ಅಧ್ಯಕ್ಷರು
ಪ್ರೊಫೆಸರ್‌ಗಳು
ಸ್ನಾತಕ ಪದವಿ ಕಾಲೇಜುಗಳ ಪ್ರಾಚಾರ್ಯರು

ಡೀನ್ ಅವರು
ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಅನುಮತಿಯೊಂದಿಗೆ
ಡೀನ್, ಶೈಕ್ಷಣಿಕ ಅಧ್ಯಯನಗಳು

ಕುವೆಂಪು ವಿಶ್ವವಿದ್ಯಾಲಯ

ಬಿ.ಎ. ಆರನೇಯ ಚಮಸಮಾನ

ಅನಿಕೇತನ – ೬

ಸ್ನಾತಕ ಕನ್ನಡ ಮಾಧ್ಯಮ ಪಠ್ಯಕ್ರಮ (೨೦೨೪-೨೫ ರಿಂದ ಅನ್ವಯ)

DSC KAN 14 : ಸಾಂಸ್ಕೃತಿಕ ಅಧ್ಯಯನಗಳು : ಪಠ್ಯಗಳ ಬಹುಶಿಸ್ತೀಯ ಅಧ್ಯಯನ

ವಿದ್ಯಾರ್ಥಿಯ ಹೆಸರು ಮತ್ತು ಸಂಪೂರ್ಣ ವಿಳಾಸ

ಕ್ರಮಸಂಖ್ಯೆ ಮೊದಲಿನ ಅಂಕಿ : ಪಾಠಕ್ಕೆ ಸಂಖ್ಯೆ ಕೊಡಲಾಗಿದೆ.
ಕ್ರಮಸಂಖ್ಯೆ ಒಳಗಿನ ಅಂಕಿಗಳು : ಗದ್ಯ, ಪದ್ಯ ಭಾಗಗಳು

ಪಾಠಕ್ಕೆ ಪೂರಕವಾದ ಅಂಕಿ : ಪಾಠಕ್ಕೆ ೦೪ ಅಂಕಗಳು
ಪ್ರಾಯೋಗಿಕ ಪರೀಕ್ಷೆಗೆ : ೦೮ ಅಂಕಗಳು

ಭಾಗ – ೧ : ಅಪ್ಪ ಪುಟ್ಟಸ್ವಾಮಯ್ಯನವರ ಮೂಡಲಪಾಯ ಯಕ್ಷಗಾನ ಪ್ರಸಂಗ

೧.೧ : ಪ್ರಸ್ತಾವನೆ

೧.೨ : ಪಠ್ಯ ಭಾಗಗಳ ಹಿನ್ನೆಲೆಯ ಅಧ್ಯಯನಗಳು ಮತ್ತು ಮಾಹಿತಿ ಸಂಗ್ರಹ

ಭಾಗ – ೨ : ಕಂಸ ಬಿಡೂರಾಯ ಪರಾಭವ ಪ್ರಸಂಗ ಮತ್ತು ಮಾಹಿತಿ ಸಂಗ್ರಹ

೨.೧ : ಪ್ರಸ್ತಾವನೆ

೨.೨ : ಪಠ್ಯ ಭಾಗಗಳ ಹಿನ್ನೆಲೆಯ ಅಧ್ಯಯನಗಳು ಮತ್ತು ಮಾಹಿತಿ ಸಂಗ್ರಹ

ಭಾಗ – ೩ : ಮಹಿಷಾಸುರ ಮರ್ದಿನಿ ಯಕ್ಷಗಾನ ಪ್ರಸಂಗ

೩.೧ : ಪ್ರಸ್ತಾವನೆ – ಪೌರಾಣಿಕ ಸಂದರ್ಭ ಮತ್ತು ಆಚರಣೆ

೩.೨ : ಪಠ್ಯ ಭಾಗಗಳ ಅರ್ಥ ಸಹಿತ ವಿವರಣೆ

೧. ಪ್ರಾರ್ಥನೆ

೨. ಅರಿಷಿಣ ಮಾಲೆ

೩. ಬಣ್ಣ ಹಚ್ಚಿ

೪. ಪ್ರವೇಶ

೫. ಮಹಿಷಾಸುರ ಮರ್ದಿನಿ ದೇವಿಯ ಪ್ರವೇಶ ಪ್ರಸಂಗ

ಭಾಗ – ೪ : ಮಾಯಾಸುರ ಕೊಲ್ಲಿ ಆದಿ ಮಹಿಷ ಸಂಹಾರ ಪ್ರಸಂಗ

೪.೧ : ಪ್ರಸ್ತಾವನೆ

೪.೨ : ಪಠ್ಯ ಭಾಗಗಳ ಅರ್ಥ ಸಹಿತ ವಿವರಣೆ

೧. ಪ್ರವೇಶ

೨. ಅರ್ಥ ಮತ್ತು ಪದ್ಯ

೩. ಪ್ರವೇಶ ಮತ್ತು ಅರ್ಥ

೪. ಪ್ರವೇಶ ಮತ್ತು ಅರ್ಥ

೫. ಪದ್ಯ ಮತ್ತು ಅರ್ಥ ಮತ್ತು ಪ್ರವೇಶ

ಭಾಗ – ೫

ಭಾಗ ೬ ಕ್ಷೇತ್ರ ಕಾರ್ಯ

ಕ್ಷೇತ್ರ ಅಧ್ಯಯನ

ಕ್ಷೇತ್ರ ಅಧ್ಯಯನ ಅನುಭವ

ಅನುಬಂಧ

೧. ಪ್ರಾಸಂಗಿಕ ಚಿತ್ರ ಮಾಲೆ

೨. ಪದ ಸೂಚಿ

೩. ಪಠ್ಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ಆಡಿಯೋ ಮತ್ತು ವಿಡಿಯೋ

[illegible]

[illegible]
[illegible]

[illegible]
[illegible]

[illegible]

[illegible]

[illegible]

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[illegible]

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[illegible]
[illegible]

[illegible]

[illegible]

NATIONAL EDUCATION POLICY 2020 INITIATIVES

A REPORT ON MODEL CURRICULA/CONTENTS FOR

B.A/ B.Sc. (Hons) Mathematics,
B.A/B.Sc. with Mathematics as a Major/Minor Subject
&
M.A/M.Sc. Mathematics (One Year)

KARNATAKA STATE HIGHER EDUCATION COUNCIL
Department of PG Studies and Research in Mathematics,
Kuvempu University, Shankaraghatta,
Karnataka - 577451
2021

Preamble

The subject wise expert committee to draft model curriculum courses in Mathematics constituted by the Department of Higher Education, Government of Karnataka, Bangalore vide GO No: ED 250 CHE 2019 (PART-I) DATED 21.10.2021 is pleased to submit its partial report on the syllabus for the First Year (First & Second Semesters) B.A/ B.Sc (Basic Honors) Mathematics and detailed Course Structure for B.A/ B.Sc (Honors) Mathematics and M.Sc (One Year) Mathematics.

The committee discussed various models suggested by the Karnataka State Higher Education Council in its joint meetings with the Chairpersons of Board of Studies of all state universities in Karnataka and resolved to adopt Model BA (Model Program Structure for the Bachelor of Art (Basic Hons.) Bachelor of Science (Basic Hons.) for the subjects with practicals with Mathematics as Major Hons.

To achieve the core objectives of the National Education Policy 2020 it is unanimously resolved to introduce computer based practical's for the Discipline Core (DSC) courses by using Free and Open Source Software's (FOSS) tools for implementation of theory based on DSC courses as it is also suggested by the LOCF committee that the papers can be taught using various Computer Algebra System (CAS) software's such as Mathematica /MATLAB/ Maxima and it to strengthen the conceptual understanding and widen up the horizon of students' self-experience. In view of these observations the subject expert committee suggested the software's Python, R/ Maxima /Scilab /Maple /MATLAB /Mathematica for hands on experience of implementation of mathematical concepts in computer based lab.

The expert committee suggests the implementation this curriculum structure in all the Departments of Mathematics in Government Colleges in Karnataka.

The subject expert committee designed the Course Learning Outcome (CO) to help the learners to understand the vision objectives of studying the courses by keeping in mind of the Programme outcomes (PO) of the graduate degree with Honors in Mathematics or a graduate degree with Mathematics as a major subject.

As the Mathematics syllabi is a bit vibrant in the areas of specializations, it is difficult for every student to learn each branch of Mathematics, even though each paper has its own importance. Hence the subject expert committee suggests number of elective papers for both Discipline electives and Open Electives along with Discipline Core Courses. The BoS in Mathematics of all wishes can include additional electives based on the expertise of their staff and needs of the students. A student can select elective papers as per her/his needs and interest.

The subject expert committee in Mathematics suggests that the concerned Department/Autonomous Colleges University to encourage their faculty members to include necessary topics in addition to courses suggested by the expert committee.

Composition of Subject Expert Committee in Mathematics

1.	Dr. N. B. Nethravathi Professor, Department of Mathematics Gulbarga University, Kalaburagi.	Chairperson
2.	Dr. Sheth Navalagna B. Professor, Department of Mathematics University of Mysore, Mysuru	Member
3.	Dr. P.M.Patil Professor, Department of Mathematics Karnatak University, Dharwad	Member
4.	Dr. H. G. Nagaraj Professor, Department of Mathematics Bangalore University, Bangalore	Member
5.	Dr. Narasimhamurthy S. K. Professor, Department of Mathematics Kuvempu University, Shimoga	Member
6.	Dr. Patil N.Gallappa Professor, Department of Mathematics Tumkur University, Tumakuru	Member
7.	Dr. D. S. Naduvinamani Professor, Department of Mathematics Davangere University, Davangere	Member
8.	Dr. K.V. Prasad Professor, Department of Mathematics VTU, University, Belagavi	Member
9.	Dr. (Smt.) V. S. Shigehalli Professor, Department of Mathematics Rani Channamma University, Belagavi	Member
10.	Sri. Vinaya Kumar Pemmaiah Associate Professor, Yuvaraja's College, Mangalore.	Member
11.	Dr. Christopher Associate Professor, Kristu Jayanti College, Bengaluru	Member
12.	Dr. Rajesh Kumar U. A Associate Professor, Sri D. Devaraj Urs Govt. First Grade College, Kolar	Member
13.	Smt. Geeta S. Thakur Associate Professor, GFGC, Ranebennur	Member
14.	Dr. Venkatesh Kulkarni Associate Professor, SKD Degree College, Kalaburagi	Member
15.	Dr. Tejaswini B. Yadahalli Special Officer, KSHEC, Bengaluru	Member Convener

Name of the Degree Program : B.A./B.Sc.
Discipline Course : Mathematics
Starting Year of Implementation : 2021-22

Programme Outcomes (PO): By the end of the program the students will be able to:

PO 1	**Disciplinary Knowledge:** Bachelor degree in Mathematics is the culmination of in-depth knowledge of Algebra, Calculus, Geometry, differential equations and several other branches of pure and applied mathematics. This also leads to study the related areas such as computer science and other allied subjects.
PO 2	**Communication Skills:** Ability to communicate various mathematical concepts effectively using examples and their geometrical visualizations. The skills and knowledge gained in this program will lead to the proficiency in analytical reasoning which can be used for modeling and solving of real life problems.
PO 3	**Critical thinking and analytical reasoning:** The students undergoing this programme acquire ability of critical thinking and logical reasoning and capability of recognizing and distinguishing the various aspects of real life problems.
PO 4	**Problem Solving:** The Mathematical knowledge gained by the students through this programme develop an ability to analyze the problems, identify and define appropriate computing requirements for its solutions. This programme enhances students overall development and also equip them with mathematical modeling ability, problem solving skills.
PO 5	**Research related skills:** The completing this programme develop the capability of inquiring about appropriate questions relating to the Mathematical concepts in different areas of Mathematics.
PO 6	**Information digital Literacy:** The completion of this programme will enable the learner to use appropriate software to solve system of algebraic equations and differential equations.
PO 7	**Self - directed learning:** The student completing this program will develop an ability of working independently and to make an in-depth study of various aspects of Mathematics.
PO 8	**Moral and ethical awareness reasoning:** The student completing this program will develop an ability to identify unethical behavior such as fabrication, falsification or misinterpretation of data and adopting objective, unbiased and truthful actions in all aspects of life in general and Mathematical studies in particular.
PO 9	**Lifelong learning:** This programme provides self directed learning and lifelong learning skills. This programme helps the learner to think independently and develop algorithms and computational skills for solving real world problems.
PO 10	Ability to pursue advanced studies and research in pure and applied Mathematical sciences.

Assessment

Weightage for the Assessment (in percentage)

Type of Course	Formative Assessment (FA)	Summative Assessment (SA)
Theory	[illegible]	[illegible]
Practical	[illegible]	[illegible]
Projects	[illegible]	[illegible]
Experiential Learning (Internship etc.)	-	-

Courses of Courses for B.A./B.Sc. with Mathematics as Major Subject & B.A./B.Sc. (Hons) Mathematics
Model II.A

Semester	Course No.	Theory/Practical	Credits	Paper Title	Marks	
					I.A.	E.E.
I	MATCOR101.1	Theory	4	Algebra - I and Calculus - I	40	60
	MATCOR101.2	Practical	2	Theory based Practicals on Algebra - I and Calculus - I	30	20
	MATGEN1.1	Theory	3	(A) Basic Mathematics - I (B) Business Mathematics - I (C) Computer Mathematics - I (D) Mathematical Modelling - I	40	60
II	MATCOR102.1	Theory	4	Algebra - II and Calculus - II	40	60
	MATCOR102.2	Practical	2	Theory based Practicals on Algebra - II and Calculus - II	30	20
	MATGEN2.1	Theory	3	(A) Basic Mathematics - II (B) Business Mathematics - II (C) Computer Mathematics - II (D) Mathematical Modelling - II	40	60
Exit Option with Certificate						
III	MATCOR103.1	Theory	4	Ordinary Differential Equations and Real Analysis-I	40	60
	MATCOR103.2	Practical	2	Theory based Practicals on Ordinary Differential Equations and Real Analysis-I	30	20
	MATGEN3.1	Theory	3	(A) Ordinary Differential Equations (B) Quantitative Mathematics	40	60
IV	MATCOR104.1	Theory	4	Partial Differential Equations and Integral Transforms	40	60
	MATCOR104.2	Practical	2	Theory based Practicals on Partial Differential Equations and Integral Transforms	30	20
	MATGEN4.1	Theory	3	(A) Partial Differential Equations (B) Mathematical Finance	40	60
Exit Option with Diploma						
V	MATCOR105.1	Theory	4	Real Analysis and Complex Analysis	40	60
	MATCOR105.2	Practical	2	Theory based Practicals on Real Analysis and Complex Analysis	30	20
	MATGEN5.1	Theory	3	Ring Theory	40	60
	MATGEN5.2	Practical	2	Theory based Practicals on Ring Theory	30	20

	[illegible]	Theory	3	(a) [illegible] (b) [illegible] (c) [illegible]	80	40
VI	[illegible]	Theory	3	[illegible]	80	40
	[illegible]	Practical	2	[illegible]	50	25
	[illegible]	Theory	3	[illegible]	80	40
	[illegible]	Practical	2	[illegible]	50	25
	[illegible]	Theory	3	(a) [illegible] (b) [illegible] (c) [illegible] (d) [illegible]	80	40
	[illegible]					
VII	[illegible]	Theory	3	[illegible]	80	40
	[illegible]	Practical	2	[illegible]	50	25
	[illegible]	Theory	4	[illegible]	80	40
	[illegible]	Practical	2	[illegible]	50	25
	[illegible]	Theory	4	[illegible]	80	40
	[illegible]	Theory	3	(a) [illegible] (b) [illegible] (c) [illegible] (d) [illegible]	80	40
	[illegible]	Theory	4	[illegible]	80	40
	[illegible]	Theory	4	[illegible]	80	40
	[illegible]	Theory	4	[illegible]	80	40
VIII				[illegible]		
	[illegible]	Theory	3	[illegible]	80	40
	[illegible]	Theory	3	(a) [illegible] (b) [illegible] (c) [illegible] (d) [illegible]	80	40

Award of Bachelor of Arts Honours, B.A. (Hons) Bachelor of Science Honours, B.Sc (Hons) Degree in Mathematics

One Year M.Sc. degree in Mathematics (Two Semesters)

Semester	Course Number	Theory/ Practical	Credits	Title of the Course	I.A.	T.E.
I	[illegible]	Theory	3	C++ Programming for Mathematics	40	60
	[illegible]	Practical	2	Computer Exercises in C++ Programming for Mathematics	50	50
	[illegible]	Theory	3	Computational Numerical Methods	40	60
	[illegible]	Practical	2	Computer Exercises in CNM	50	50
	[illegible]	Theory	4	Functional Analysis	40	60
	[illegible]	Theory	3	(A) Fluid Mechanics – I (B) Computational Fluid Mechanics (C) Control Theory (D) Fluid Topology (E) Transcendental Functions and Classical Functions	40	60
	[illegible]	Theory	4	(A) Advanced Graph Theory (B) Number Theory (C) Algebraic Number Theory (D) Computational Complexity	40	60
II	[illegible]	Theory	4	Measure Theory	40	60
	[illegible]	Theory	4	Differential Geometry	40	60
	[illegible]	Theory	3	Mathematical Modelling	40	60
	[illegible]	Theory	3	(A) Fluid Mechanics – II (B) Magnetohydrodynamics (C) Fluid Dynamics and Turbulence (D) Mathematical Modelling	40	60
	[illegible]	Project	8	Research Project	150	150

- (a) [illegible] Project may withdraw elective paper. Alternate one to offered.

Abbreviations for MATH[illegible] / MATH[illegible]:

MAT – Mathematics, CSC – Computer Sci., T – Theory, P – Practical, I – First Semester, II – Second Semester, 1 – Course 1.

MAT[illegible] / MA – Pure Mathematics, MAT – Mathematics, CSC – Computer Sci., T – Theory, I – First Semester, 1 – Course 1

CURRICULUM STRUCTURE FOR UNDERGRADUATE DEGREE PROGRAM

Name of the Degree Program : B.A. / B.Sc. (Hons.)
Discipline Subject : Mathematics
Starting Year of Implementation: 2021-22

PROGRAM ARTICULATION MATRIX

Semester	Course No.	Programme Outcomes that the Course Addresses	Pre-Requisite Course (s)	Pedagogy**	Assessment***
I	MATDSCT1.1	PO 1, PO 4, PO 7		LECT	CLASS TESTS
II	MATDSCT2.1	PO 4, PO 7, PO 8, PO 9	MATDSCT1.1	PRESCRIBED EXERCISES	ASSIGNMENTS
III	MATDSCT3.1	PO 1, PO 4, PO 7, PO 8		PROBLEMS	
IV	MATDSCT4.1	PO 1, PO 4, PO 7, PO 8	MATDSCT3.1	PROJECT BASED LEARNING	QUIZ
V	MATDSCT5.1	PO 1, PO 2, PO 3, PO 7	—		MIDSEMESTER
VI	MATDSCT6.1	PO 1, PO 4, PO 7, PO 8	MATDSCT5.1	ASSIGNMENTS	
VII	MATDSCT7.1	PO 1, PO 4, PO 8	MATDSCT6.1	GROUP DISCUSSION	
VIII	MATDSCT8.1	PO 1, PO 4, PO 7, PO 8, PO 9	MATDSCT1.1 & MATDSCT2.1		
VII	MATDSCT7.2	PO 1, PO 4, PO 7, PO 8, PO 9	MATDSCT6.1 & MATDSCT5.1		TERM END EXAM
VII	MATDSCT7.3	PO 1, PO 4, PO 7, PO 8, PO 9	MATDSCT6.1 & MATDSCT5.1		
VII	MATDSCT7.4	PO 1, PO 4, PO 7, PO 8, PO 9	MATDSCT6.1 & MATDSCT5.1		
VIII	MATDSCT8.2	PO 1, PO 4, PO 7, PO 8, PO 9	MATDSCT7.2		
VIII	MATDSCT8.3	PO 1, PO 4, PO 7, PO 8, PO 9	MATDSCT7.3		
VIII	MATDSCT8.4	PO 1, PO 4, PO 7, PO 8, PO 9	MATDSCT7.4		
VIII	MATDSCT8.5	PO 1, PO 4, PO 7, PO 8, PO 9	MATDSCT7.2 & MATDSCT7.3		VIVA VOCE
VIII	MATDSCT8.6	PO 1, PO 4, PO 7, PO 8, PO 9	MATDSCT7.2 & MATDSCT7.4		

** Pedagogy: (in course suggestion is predominantly Lecture. Some or, other pedagogy methods may also be used as suggested or as recommended by the course. You can include more learning centric methods, such as, Seminar, Term Paper, Assignments, Presentations, Quiz, Group Discussion, Case Study, Project Based Learning, Peer Teaching, Internet Resources, Open Laboratory etc.)

*** Exam: Course tests to include assessment for higher order thinking skills (applying, analyzing, evaluating, creating). Remember, the choice of an appropriate assessment method to test the desired learning outcome is a matter for debate.

B.A./B.Sc. with Mathematics as a Major in the 3rd Year

Semester	Course No.	Theory/ Practical	Credits	Paper Title	Marks	
					U.A.	I.A.
V	MATDSC05T1	Theory	3	Complex Analysis	80	20
	MATDSC05P1	Practical	2	Theory based Practicals on Complex Analysis	30	20
VI	MATDSC06T1	Theory	3	Numerical Analysis	80	20
	MATDSC06P1	Practical	2	Theory based Practicals on Numerical Analysis	30	20

Abbreviation for MATDSC05T1 / MATDSC06T1
(MAT – Mathematics; DSC – Discipline Core; M – Major; T – Theory; P – Practical; # – 5th/6th Semester; 1 – Course)

Credit Distribution for B.A./B.Sc. (Honours) with Mathematics as Major in the 3rd Year (For Model 2.1)

SEMESTER – I

MATDSCT 1.1: Algebra-I and Calculus-I	
Teaching Hours : 4 Hours/Week	Credits: 4
Total Teaching Hours: 56 Hours	Max. Marks: 100 (S.A.-60 + I.A. – 40)

Course Learning Outcomes: This course will enable the students to

- Learn to solve system of linear equations.
- Solve the system of homogeneous and non homogeneous linear of m equations in n variables by using concept of rank of matrix, finding Eigen values and Eigen vectors.
- Sketch curves in Cartesian, polar and pedal equations.
- Students will be familiar with the techniques of integration and differentiation of functions with real variables.
- Identify and apply the intermediate value theorem and L' Hospital rule.

Unit-I: Matrix: Recapitulation of Symmetric and Skew Symmetric matrices. Cayley – Hamilton theorem, inverse of matrices by Cayley-Hamilton theorem (Without Proof). Algebra of Matrices. Row and column reduction to Echelon form. Rank of a matrix. Inverse of a matrix by elementary operation. Solution of system of linear equations. Criteria for existence of non-trivial solutions of homogeneous system of linear equations. Solution of non-homogeneous system of linear equations. Eigen values and Eigen vectors of square matrices, real symmetric matrices and their properties, reduction of real matrices to diagonal form.

14 Hours

Unit-II: Polar Co-ordinates: Polar coordinates, angle between the radius vector and tangent. Angle of intersection of two curves (polar forms), length of perpendicular from pole to the tangent, pedal equations. Derivative of an arc in Cartesian, parametric and polar forms, curvature of plane curves, radius of curvature. Formula in Cartesian, parametric and polar and pedal forms, centre of curvature, asymptotes, curvature and envelops.

14 Hours

Unit-III: Differential Calculus-I: Limit, Continuity, Differentiability and properties. Properties of continuous functions, Intermediate value theorem, Rolle's Theorem, Lagrange's Mean Value theorem, Cauchy's Mean value theorem and examples. Taylor's theorem, Maclaurin's series, Indeterminate forms and evaluation of limits using L'Hospital rule.

14 Hours

Unit-IV: Successive Differentiation with Derivatives of Standard functions e^{ax+b}, $(ax+b)^n$, $\log(ax+b)$, $\sin(ax+b)$, $\cos(ax+b)$, $e^{ax}\sin(bx+c)$,

$e^{ax}\cos(bx+c)$, Leibnitz theorem and its application. Tracing of curves (cartesian curves) 14 Hours

Reference Books:

1. University Algebra – N S Gopala Krishnan, New Age International (P) Limited
2. Theory of Matrices – P R Vasa, New Age International Publishers
3. Matrices – A R Vasista, Krishna Prakashana Mandir
4. Differential Calculus – Shanti Narayan, S. Chand & Company, New Delhi
5. Applications of Calculus, Debasish Sengupta, Books and Allied (P) Ltd., 2019
6. Calculus – Lipman Bers, Holt, Rinehart & Winston.
7. Calculus – S Narayanan & T K Manicavachagom Pillay, S Viswanathan Pvt Ltd., vol I & II
8. Schaum's Outline of Calculus – Frank Ayres and Elliott Mendelson, 5th ed. USA: Mc. Graw.

MATDSCP 1.1: Practical's on Algebra - I and Calculus – I	
Practical Hours: 4 Hours/Week	**Credits: 2**
Total Practical Hours: 64 Hours	**Max. Marks: 50** **(I.A.-30 + E.A.- 20)**

Course Learning Outcomes: This course will enable the students to

- Learn *Free and Open Source Software (FOSS)* tools for computer programming
- Solve problems in Algebra and calculus theory studied in **MATDSCP 1.1** by using FOSS software.
- Acquire knowledge of applications of algebra and calculus through FOSS

Practical/Lab Work to be performed in Computer Lab (FOSS)

Suggested Software: Maxima, Scilab, Octave, GeoGebra, Mathematica, Python, R.

Introduction to the software and commands related to the topic

1. Computation of additions and subtractions of matrices.
2. Computation of Multiplication of matrices.
3. Computation of Trace and Transpose of Matrix.
4. Computation of Rank of matrix and Row reduced Echelon form.
5. Computation of Inverse of a Matrix using Cayley-Hamilton theorem.
6. Solving the system of homogeneous and non-homogeneous linear algebraic equations.
7. Finding the n^{th} Derivative of e^{ax}, trigonometric and hyperbolic functions.
8. Finding the n^{th} Derivative of algebraic and logarithmic functions.
9. Finding the n^{th} Derivative of $e^{ax}\sin(bx+c)$, $e^{ax}\cos(bx+c)$.

10. Finding the Taylor's and Maclaurin's expansions of the given functions.
11. Finding the angle between the radius vector and tangent.
12. Finding the curvature of the given curve.
13. Tracing of standard curves.

Open Elective Course

(For students of Science streams who have not studied Mathematics as one of Core subject)

MATOE11: Basic Mathematics -1	
Teaching Hours : 3 Hours/Week	**Credits: 3**
Total Teaching Hours: 42 Hours	**Max. Marks: 100** **(S.A.40 + I.A. – 40)**

Course Learning Outcomes: This course will enable the students to:

- Learn to solve system of linear equations.
- Solve the system of homogeneous and non homogeneous linear equations by using the concept of rank of matrix, finding Eigen values and Eigen vectors.
- Students will be familiar with the techniques of differentiation of functions with real variables.
- Identify and apply the intermediate value theorem and L' Hospital rule.
- Learn to trace some standard curves.

Unit-I: Matrices: Recapitulation of Symmetric and Skew Symmetric matrices, Cayley – Hamilton theorem, inverse of matrices by Cayley-Hamilton theorem (Without Proof). Algebra of Matrices, Row and column reduction, Echelon form, Rank of a matrix, Inverse of a matrix by elementary operations, Solution of system of linear equations, Criteria for existence of non-trivial solutions of homogeneous system of linear equations, Solution of non-homogeneous system of linear equations, Eigen values and Eigen vectors of square matrices, real symmetric matrices and their properties, reduction of such matrices to diagonal form.

14 Hours

Unit-II: Differential Calculus: Limit, Continuity, Differentiability and properties, Intermediate value theorem, Rolle's Theorem, Lagrange's Mean Value theorem, Cauchy's Mean value theorem and examples, Taylor's theorem, Maclaurin's series, Indeterminate forms and examples. **14 Hours**

Unit-III: Successive Differentiation nth Derivatives of standard functions e^{ax+b}, $(ax+b)^n$, $\log(ax+b)$, $\sin(ax+b)$, $\cos(ax+b)$, $e^{ax}\sin(bx+c)$, $e^{ax}\cos(bx+c)$, Leibnitz theorem and its applications. Tracing of curves (standard curves). **14 Hours**

Reference Books:

1. University Algebra - N.S. Gopala Krishnan, New Age International (P) Limited
2. Theory of Matrices - S. Barnett, New Age International Publishers
3. Matrices – A. R. Vasista, Krishna Prakashan Mandir
4. Applications of Calculus, Debasish Sengupta, Books and Allied (P) Ltd., 2014.
5. Differential Calculus - Shanti Narayan, S. Chand & Company, New Delhi
6. Calculus – Lipman Bers, Holt, Rinehart & Winston.
7. Calculus – S. Narayanan & T. K. Manicavachagom Pillay, S. Viswanathan Pvt Ltd., vol. I & II.
8. Schaum's Outline of Calculus - Frank Ayres and Elliott Mendelson, 5th ed. USA: Mc Graw.

Open Elective

(For Students of other than Science Stream)

MATOE 1.1(B): Business Mathematics-I	
Teaching Hours : 3 Hours/Week	**Credits: 3**
Total Teaching Hours: 42 Hours	**Max. Marks: 100 (S.A. - 60 + I.A. - 40)**

Course Learning Outcomes: This course will enable the students to:

- Translate the real word problems through appropriate mathematical modeling
- Explain the concepts and use equations, formulae and mathematical expressions and relationship in a variety of context
- Finding the extreme values of functions.
- Analyze and demonstrate the mathematical skill require in mathematically intensive areas in economics and business.

Unit-I: Algebra – Set theory and simple applications of Venn Diagram, relations, functions, matrices, logarithms, permutations and combinations. Examples on commercial mathematics.

14 Hours

Unit - II: Matrices: Definition of a matrix, types of matrices, algebra of matrices. Properties of determinants, calculations of values of determinants upto third order. Adjoint of a matrix, elementary row and column operations, solution of a system of linear equations having unique solution and involving not more than three variables. Examples on commercial mathematics.

14 Hours

Unit - III: Differential Calculus: Constant and variables, functions, Limits &

continuity. Differentiability and Differentiation, partial differentiation, curve as a mapping, maxima, minima. Partial Derivatives up to second order. Homogeneity of functions and Euler's Theorem, Total Differential. Differentiation of implicit functions with the help of total differentials. Maxima and Minima, cases of one variable involving second or higher order derivatives. Cases of two variables involving not more than one constraint.

14 Hours

Reference Books:

1. Basic Mathematics, Allal R G A, Macmillan, New Delhi.
2. Mathematics for Economics, Dowling, E T , Schaum's Series, McGraw Hill, London.
3. Quantitative Techniques in Management, Vohra, N D , Tata McGraw Hill, New Delhi.
4. Business Mathematics, Soni R S , Frazzler Publishing House, Delhi.

Open Elective: MATOE 1.1(C): Competitive Mathematics-I

MATOE 1.1(C): Competitive Mathematics-I	
Teaching Hours: 3 Hours/Week	**Credits: 3**
Total Teaching Hours: 42 Hours	**Max. Marks: 100** **(C.A. - 60 + E.A. - 40)**

UNIT-I: Series: NUMBER SERIES: Number series test present numerical sequences that follow a logical rule which is based on elementary arithmetic. An actual sequence is given from which the rule is to be deduced, predict the next number that obeys the rule. ALPHABET SERIES: Under this series letter will be coded or arranged in some pattern, normally based on the position of the letters. CODE/DECODE PATTERN SERIES: These types of questions usually consist of a series of small letters of the small letters which follow a certain pattern. However, some letters are missing from the series. These missing letters are then given in a proper sequence as of alternatives. 14 Hours

UNIT-II: Alphabet Test: ALPHABETICAL ORDER: Arranging words in alphabetical order implies to arrange them in the order as they appear in a dictionary that is as per the order in which the beginning letters of the words appear in the English alphabet. ALPHABETICAL QUERIES: In this type of question generally a letter series is given, be it the English alphabets from A to Z or a randomized sequence of letters. The candidate is then required to solve the letters satisfying certain given conditions in regard their position in the given sequence or the sequence obtained by performing certain given operations on the given sequence. 14 Hours

UNIT-III: Coding and Decoding: CODE is a system of signals. Coding is, therefore a method of transmitting a message between sender and receiver which cannot be understood or comprehended by a third person. The coding - decoding test is set up to judge a candidates ability to decipher or particular word message and finds the exact to decipher the message. In coding, actual alphabet words/numbers are replaced by certain other alphabets, words/numbers/symbols etc. according to a certain rule to solve this type of questions we have to detect the rule and then answer the question. Decoding is the method to find the meaning of something that has written in code. 14 Hours

UNIT-IV: Numbers and Ranking: Number test: In this type of question, generally a set, group or series of numeral is given and the candidate is required to find how many times a number satisfies the conditions specified in the question occurs. Ranking test: Generally a number of questions are arranged in either ascending or descending order of the performance in a certain activity. 14 Hours

References:

1. Quantitative aptitude for competitive exams, R.S. Aggarwal exam series 2020 book by Dr.R.S. Aggarwal and Abhijit Guha
2. Quantum: Aptitude Question for CAT, II Edition, PHI Learning Pvt. Ltd. Delhi, by Abhijit Guha
3. GMAT Volume I and I, Ignou Press Education Publication
4. Faster Track Objective Arithmetic (Revised Edition), Arihant Publications by Rajesh Verma

Open Elective: MATOE 1.1(D): Mathematical Modelling-I

MATOE 1.1(D) – Mathematical Modelling I	
Teaching Hours: 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max Marks: 100 (S.A. 60 + I.A. – 40)

Unit-I: Mathematical Modelling: Need, Techniques, Classification and Simple Illustrations, Simple Situations Requiring Mathematical Modelling, The Technique of Mathematical Modeling, Classification of Mathematical Models, Some Characteristics of Mathematical Models. 14 Hours

Unit-II: Mathematical Modelling: Need, Techniques, Classification and Simple Illustrations: Mathematical Modelling through Geometry, Mathematical Modelling

through Algebra, Mathematical Modelling through Trigonometry, Mathematical Modelling through Calculus. 14 Hours

Unit-III: Mathematical Modelling Through Ordinary Differential Equations of First Order: Mathematical Modelling through Differential Equations, Effect of Immigration and emigration on population size, Linear Growth and Decay Models, Non-Linear Growth and Decay Models 14 Hours

Unit 4: Mathematical Modelling Through Ordinary Differential Equations of First Order: Compartment Models, Mathematical Modeling in Dynamics through Ordinary Differential Equations of First Order, Mathematical Modelling of Geometrical Problems through Ordinary Differential Equations of First Order 14 Hours

References:

1. Mathematical Modelling – J. N. Kapur, New Age International Private Limited.
2. An Introduction to Mathematical Modeling - Edward A. Bender published, Dover Books on Computer Science
3. Mathematical Modelling with Case Studies, Using Maple and MATLAB, Third edition, B. Barnes, G.R. Fulford, CRC Press, Taylor and Francis Group
4. An Introduction to Mathematical Modeling by Michael Alder, Macmillanbooks.com.

SEMESTER – II

MATDSCT 2.1: Algebra - II and Calculus - II	
Teaching Hours : 4 Hours/Week	Credits: 4
Total Teaching Hours: 56 Hours	Max Marks: 100 (S.A.-60 + I.A. – 40)

Course Learning Outcomes: This course will enable the students to

- Recognize the mathematical objects called Groups.
- Link the fundamental concepts of groups and symmetries of geometrical objects.
- Explain the significance of the notions of Cosets, normal subgroups and factor groups.
- Understand the concept of differentiation and fundamental theorems in differentiation and various rules.
- Find the extreme values of functions of two variables.

Unit-I: Real Number System: Recapitulation of number system. Countable and uncountable sets, Cantor's theorem. Real line, bounded sets, supremum and infimum of a set, completeness properties of R, Archimedean property of R. Intervals, neighborhood of a point, open sets, closed sets, limit points and Bolzano-Weierstrass theorem (Without proof)

14 hours

Unit-II: Groups: Definition of a group with examples and properties, congruence, problems. Subgroups, center of groups, order of an element of a group and its related theorems, cyclic groups, Coset decomposition, Factor groups, Lagrange's theorem and its consequences, Fermat's theorem and Euler's ϕ function. **14 hours**

Unit-III: Partial Derivatives: Functions of two or more variables explicit and implicit functions, partial derivatives, Homogeneous functions, Euler's theorem, total derivatives, differentiation of explicit and composite functions, Jacobians and standard properties and illustrative examples, Taylor's and Maclaurin's series for functions of two variables, Maxima-Minima of functions of two variables.

14 hours

Unit-IV: Integral Calculus: Recapitulation of definite integrals and its properties. Line integral: Definition of line integral and basic properties, examples on evaluation of line integrals. Double integral: Definition of Double integrals and its conversion to iterated integrals. Evaluation of double integrals by changing the order of integration and change of variables. Computation of plane surface areas.

volume underneath a surface of revolution using double integral. Triple integral: Definition of triple integrals and evaluation. Change of variables, volume as triple integral. Differentiation under the integral sign by Leibnitz rule.

34 hours

Reference Books:

1. Topics in Algebra, I.N Herstein, Wiley Eastern Ltd., New Delhi.
2. Higher algebra: Barnard & Child, Arihant, ISBN: 9350943169, 9789350943169
3. Modern Algebra, Sharma and Vasista, Krishna Prakashan Mandir, Meerut, U.P.
4. Differential Calculus, Shanti Narayan, S. Chand & Company, New Delhi.
5. Integral Calculus, Shanti Narayan and P.K Mittal, S. Chand and Co. Pvt Ltd.,
6. Schaum's Outline Series, Frank Ayres and Elliott Mendelson, 5th ed. USA: Mc. Graw Hill, 2008
7. Mathematical Analysis, S.C Malik, Wiley Eastern
8. A Course in Abstract Algebra, Vijay K Khanna and S K Bhambri, Vikas Publications
9. Text Book of B.Sc. Mathematics, G.K Ranganath, S Chand & Company

PRACTICAL

MATDSCP-5.1: On Algebra, Real Calculus - II	
Practical Hours: 4 Hours/Week	**Credits: 2**
Total Practical Hours: 85 Hours	**Max. Marks: 50** **(S.A.-30 + T.A. – 20)**

Course Learning Outcomes: This course will enable the students to

- Learn *Free and Open Source Software (FOSS)* tools for computer programming
- Solve problem on algebra and calculus by using FOSS software's
- Acquire knowledge of applications of algebra and calculus through FOSS

Practical/Lab Work to be performed in Computer Lab

Suggested Software's: Maxima, Scilab, Maple, MatLab, Mathematica, Python, R

1. Program for verification of binary operations.
2. Program to construct Cayley's table and test Abelian for given finite set.
3. Program to find all possible proofs of the given finite group.
4. Program to find generators and corresponding possible subgroups of a cyclic group.

5. Program to verification of Lagrange's theorem with suitable examples.
6. Program to verify the Euler's ϕ function for a given finite group.
7. Program to verify the Euler's theorem and its extension.
8. Programs to construct series using Maclaurin's expansion for functions of two variables.
9. Program to evaluate the line integrals with constant and variable limits.
10. Program to evaluate the Double integrals with constant and variable limits.
11. Program to evaluate the Triple integrals with constant and variable limits.
12. Program to evaluate volume using triple integral.

Open Elective

(For students of Science stream - to have an Ancient Mathematics as one of the Core subjects)

MAT0XX 2:0:0: Basic Mathematics - II	
Teaching Hours : 2 Hours/Week	Credits: 2
Total Teaching Hours: 42 Hours	Max Marks: 100 (S.A. - 60 + I.A. - 40)

Course Learning Outcomes: The course will enable the students to:

- Recognize the mathematical objects called Groups.
- Link the fundamental concepts of groups and symmetries of geometrical objects.
- Explain the significance of the notions of Cosets, normal subgroups and factor groups.
- Understand the concept of differentiation and fundamental theorems on differentiation and various rules.
- Find the extreme values of functions of two variables.
- To understand the concepts of multiple integrals and their applications.

Unit-I: Groups: Definition of a group with examples and properties, congruence problems. Subgroups, center of groups, order of an element of a group and its related theorems, cyclic groups, Coset decomposition, Factor groups, Lagrange's theorem and its consequences, Fermat's theorem and Euler's ϕ function. **14 hours**

Unit-II: Partial Derivatives: Functions of two or more variables-explicit and implicit functions, partial derivatives, Homogeneous functions - Euler's theorem, total derivatives, differentiation of implicit and composite functions, Jacobians and standard properties and illustrative examples. Taylor's and Maclaurin's series for functions of two variables. Maxima Minima of functions of two variables. **14 hours**

Unit-III: Integral Calculus: Recapitulation of definite integrals and its properties. Line integral: Definition of line integral and basic properties, examples on evaluation of line integrals. Double integral: Definition of Double integrals and its connection to iterated integrals. Evaluation of double integrals by changing the order of integration and change of variables. Computation of plane surface area, volume underneath a surface of revolution using double integral. Triple integral: Definition of triple integrals and evaluation, change of variables, volume as triple integral. Differentiation under the integral sign by Leibnitz rule.

14 hours

Reference Books:

1. Topics in Algebra, I.N Herstein, 2nd Edition, Wiley Eastern Ltd., New Delhi.
2. Higher algebra, Barnard & Child, Acmillan Pub.
3. Modern Algebra, Sharma and Vasishta, Krishna Prakashan Mandir, Meerut, UP
4. A Course in Abstract Algebra, Vijay K Khanna and S K Bhambri, Vikas Publications.
5. Differential Calculus, Shanti Narayan, S. Chand & Company, New Delhi
6. Integral Calculus, Shanti Narayan and P K Mittal, S. Chand and Co. Pvt. Ltd.
7. Schaum's Outline Series, Frank Ayres and Elliott Mendelson, 5th ed. USA: McGraw Hill, 2008.
8. Mathematical Analysis, S C Malik, Wiley Eastern.
9. Text Book of B.Sc. Mathematics, G K Ranganath, S Chand & Company.

Open Elective

For Students of other Departments

MATDOE 2.1.20: Business Mathematics-II

Teaching Hours: 3 Hours/Week	**Credits: 3**
Total Teaching Hours: 42 Hours	**Max. Marks: 100** **(I.A. 40 + I.A. 60)**

Course Learning Outcomes: This course will enable the students to

- Integrate concept in international business concept with functioning of global trade
- Evaluate the legal, social and economic environment of business
- Apply decision support tools to business decision making
- Will be able to apply knowledge of business concepts and functions in an integrated manner

Unit – I: Commercial Arithmetic: Interest: Concept of Present value and Future value, Simple interest, Compound interest, Nominal and Effective rate of interest Examples and Problems Annuity: Ordinary Annuity, Sinking Fund, Annuity due, Present Value and Future Value of Annuity, Equated Monthly Instalments (EMI) by Interest of Reducing Balance and Flat interest methods Examples and Problems. 14 Hours

Unit – II: Measures of central Tendency and Dispersion: Frequency distribution, Raw data, attributes and variables, Classification of data, frequency distribution, cumulative frequency distribution, Histogram and give curves Requisites of ideal measures of central tendency, Arithmetic Mean, Median and Mode for ungrouped and grouped data Combined mean, Merits and demerits of measures of central tendency, Geometric mean: definition, merits and demerits, Harmonic mean: definition, merits and demerits, Choice of A.M, G.M and H.M Concept of dispersion, Measures of dispersion: Range, Variance, Standard deviation (SD) for grouped and ungrouped data, combined SD, Measures of relative dispersion: Coefficient of range, coefficient of variation, Examples and problems.

14 Hours

Unit – III: Correlation and regression: Concept and type of correlation, Scatter diagram, Interpretation with respect to magnitude and direction of relationship Karl Pearson's coefficient of correlation for ungrouped data, Spearman's rank correlation coefficient (with tie and without tie) Concept of regression, Lines of regression for ungrouped data, problems using lines of regression, Regression coefficients and their properties (without proof) Examples and problems.

14 Hours

Reference Books:

1. Practical Business Mathematics, S. A. Bari New Literature Publishing Company New Delhi
2. Mathematics for Commerce, K. Selvakumar Vetpro Press Chennai
3. Business Mathematics with Applications, Dinesh Khattar S. S. K. Arora & Chand Publishing New Delhi
4. Business Mathematics and Statistics, N.G. Das &D. K. Das McGraw Hill New Delhi
5. Fundamentals of Business Mathematics, M. K. Bansal, Asian Books Pvt. Ltd New Delhi
6. Mathematics for Economics and Finance, Methods and Modelling, Martin Anthony and Norman Biggs Cambridge University Press Cambridge

7. Financial Mathematics and its Applications, Ahmad Nasir Tajuddin, Ventus Publishing ApS Denmark
8. Fundamentals of Mathematical Statistics, Gupta S. C. and Kapoor V. K., Sultan Chand and Sons, New Delhi.
9. Statistical Methods, Gupta S. P., Sultan Chand and Sons, New Delhi.
10. Applied Statistics, Chakrabortty Pramod, New Central Book Agency Pvt. Ltd. Calcutta.
11. Fundamentals of Statistics, Goon A. M., Gupta M. K. and Dasgupta, B. World Press Calcutta.
12. Fundamentals of Applied Statistics, Gupta S. C. and Kapoor V. K., Sultan Chand and Sons, New Delhi.

Open Elective: MATOE 2.1(C): Competitive Mathematics-II (Other than science stream students)

MATOET 2.1(C): Competitive Mathematics-II	
Teaching Hours : 3 Hours/Week	**Credits: 3**
Total Teaching Hours: 42 Hours	**Max. Marks: 100** **(S.A.- 60 + I.A. - 40)**

UNIT-I: Mathematical Operations: Questions on simple mathematical operations. There are four fundamental operations, namely: addition (+), subtraction (−), multiplication (×) and division (÷). There are also statements like less than (<), greater than (>), equal to (=), not equal to (≠) etc. Such operations are represented by symbols different from the usual ones. The candidate have to make the substitution of the real signs and solve the equations accordingly. While attempting to solve a mathematical expression, proceed according to the rule BODMAS – that is brackets of division, multiplication, addition and subtraction. We can perform addition and subtraction in any order.

Unit-II: Direction Sense Test: There are five directions such as north, south, east and west. There are four regions (i) north-east (ii) north-west (iii) south-east (iv) south-west. Based on these directions problems have to perform with different mathematical techniques.

Unit-III: Time and Clock: Find the day of the week on a given date by this use the concept odd days, ordinary year and leap year. For a given time find the degree made by the hands of clock.

Unit-IV: Inserting the missing character: This includes type of questions, a figure, a set of figures, the arrangement of the entire is given, each of which bears certain characters, be it numbers, letters or a group combination of letters, numbers, following a certain pattern. It is required to decipher the pattern and accordingly find the missing

character in the figure.

References:

1. Quantitative aptitude for competitive exams, R.S. Aggarwal, revised 2017 book by Dr.R.S. Aggarwal and Abhijit Guha.
2. Quantitative Aptitude Questions for CAT, II Edition, TMH Learning Pvt Ltd, Delhi by Abhijit Guha.
3. GMAT, Volume I and 2, Ignou Power Education Publication.
4. Fairer Track Objective Arithmetic (for post Entrance), Arihant Publications by Rajesh Verma.

Open Elective: MATOEC 2.1(D): Mathematical Modelling-II

MATOEC 2.1(D): Mathematical Modelling -II	
Teaching Hours : 3 Hours/Week	**Credits: 3**
Total Teaching Hours: 42 Hours	**Max. Marks: 100** **(S.A.: 60 + I.A. : 40)**

Unit-I: Mathematical Modelling through Systems of Ordinary Differential Equations of First Order: Mathematical Modeling in Population Dynamics, Mathematical Modelling of Epidemics through Systems of Ordinary Differential Equations of First Order, Compartment Models through Systems of Ordinary Differential Equations.

Unit-II: Mathematical Modelling through Systems of Ordinary Differential Equations of First Order: Mathematical Modelling in Economics through Systems of Ordinary Differential Equations of First Order.

Unit-III: Mathematical Models in Medicine, Arms Race, Battles and International Trade in Terms of Systems of Ordinary Differential Equations.

Unit-IV: Mathematical Modelling in Dynamics through Systems of Ordinary Differential Equations of First Order.

References:

1. Mathematical Modeling Models, Analysis and Applications by Sandip Banerjee, published by CRC Press, Taylor and Francis Group.
2. Mathematical Modeling Techniques - Rutherford Aris, Dover Publications.
3. Mathematical Analysis for Modeling, Nitish Rozenblatt, Houghton Hall, CRC Press, Taylor and Francis Group.

Syllabus for B.Sc. (Honors) Mathematics w.e.f. 2021-22

III SEMESTER

MATHSCT 3.1: Ordinary Differential Equations and Real Analysis-I	
Teaching Hours : 4 Hours/Week	Credits: 4
Total Teaching Hours: 56 Hours	Max. Marks: 100 (T.A. 40 + E.A. 60)

Course Objectives: This course will enable the students to

1. Learn to identify various differential equations
2. Learn to identify suitable methods to solve various differential equations
3. Learn to identify notion of sequence and series.

Course Learning Outcomes: This course will enable the students to

1. Understand the concept of differential equations.
2. Classify the differential equations with respect to their order and linearity.
3. Demonstrate skills in constructing rigorous mathematical arguments.
4. Demonstrate skills in communicating mathematics.
5. Understand and be able to apply basic definitions and concepts of convergence.
6. To prove simple statements involving convergent sequences.
7. Learn to solve differential equations using Frobe's Theorem

III SEMESTER

Ordinary Differential Equations and Real Analysis-I

(4 lectures/week, 4 x 4 = 56 HOURS)

Ordinary Differential Equation

UNIT – I: Differential Equations- I (14 Hours)

Definition, examples of differential equations (Recapitulation). Differential equations of first order- equations of variables (Recapitulation) reducible to variable separable, homogeneous differential equations (Recapitulation) reducible to homogeneous differential equations. Exact Differential Equations (Recapitulation), Equations reducible to exact form. The general solution of a linear equation – Integrating factors found by inspection. The determination of integrating factors, Linear differential equations, Bernoulli's equation, Clairaut's Principles.

UNIT – II: Linear Differential Equations-I (14 Hours)

Ordinary Linear differential equations with constant coefficients – Complementary function – particular integral – Inverse differential operators. Cauchy – Euler differential equations – Simultaneous differential equations (Two variables with constant coefficients).

Real Analysis-I

UNIT –III: Sequences (14 Hours)

Sequence of real numbers – Bounded and unbounded sequences – Infimum and supremum of a sequence – Limit of a sequence – Null, proper and improper limits – Standard theorems on limits – Convergent, divergent and oscillatory sequences – Standard properties – Monotonic sequences and their properties.

UNIT – IV: Infinite Series (14 Hours)

Infinite series of real numbers – Convergence and Divergence – Oscillation of series – Properties of convergence – Series of positive terms – Geometric series – p – series – Comparison tests – D'Alembert's ratio test – Raabe's test – Cauchy's root test

Books for References

1. Daniel A Murray – Introductory Course to Differential equations
2. Earl David Rainville and Philip Edward Bedient – A short course in Differential equations, Prentice Hall College Div; 6thedition
3. F Ayres, Schaum's outline of theory and problems of Differential Equations, 1st ed. USA:McGraw-Hill,2010.
4. S Narayanan and T K Manicavachagom Pillay, Differential Equations, S V Publishers Private Ltd., 1951
5. M D Raisinghania, Advanced Differential Equations, S Chand and Co. Pvt. Ltd.,2013
6. S.C Malik and Savita Arora, Mathematical Analysis, 2nd ed. New Delhi, India: New Age International (P) Ltd.,1992
7. Richard R Goldberg, Methods of Real Analysis, Indian ed.
8. Asha Rani Singhal and M.K Singhal, A first course in Real Analysis
9. Robert G Bartle and Donald R Sherbert, Introduction to Real Analysis, John Wiley and Sons Inc., Fourth Ed.
10. S S Bah – Real analysis
11. B. S. Grewal – Higher Engineering Mathematics
12. E Kreyszig, Advanced Engineering Mathematics, Wiley India Pvt Ltd.

PRACTICALS

Mathematics Lab III

Ordinary Differential Equations and Real Analysis I

(4 hours/week per batch of not more than 15 students)

MATDSCP 3.1: Theory Based Practicals on Ordinary Differential Equations and Real Analysis I	
Practical Hours : 4 Hours/Week	Credit: 1
Total Teaching Hours: 60 Hours	Max. Marks: 50 (ESA: 25 + I.A.: 25)

Mathematics practical with Free and open Source Software (FOSS) tools for computer programs

Programs using Scilab/maxima/Python:

1. Solution of differential equation and plotting the graph of the solution by variable separable method.
2. Solution of differential equation and plotting the graph of the solution for homogeneous differential equations.
3. Scilab/maxima programs to solve exact differential equation.
4. Scilab maxima programs to solve a Linear differential equation.
5. Scilab/maxima programs to solve a Bernoulli's differential equation.
6. Solution of Differential equation using Scilab/Octave and plotting the graph to solution.
7. Scilab/maxima programs to solve a Cauchy-Euler's differential equation.
8. Scilab/maxima programs to solve a differential equation and find particular solution.
9. Illustration of convergent, divergent and oscillatory sequences using Scilab/Octave.
10. Illustration of convergent, divergent and oscillatory series using Scilab/Maxima.
11. Scilab/Maxima programs to find the sum of the series and its radius of convergence.
12. Using Cauchy's criterion determine convergence of a sequence.
13. Using Cauchy's criterion on the sequence of partial sums of the series determine convergence of a series.

Open Elective Course

(For students of Science stream who have not studied Mathematics as one of their subjects)

MATOET 3.1 Ordinary Differential Equations-I	
Teaching Hours: 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max. Marks: 100 (C.I.E. 40 + S.E. 60)

Course Objectives: This course will enable the students to

I) Learn to identify various differential equations

II) Learn to identify suitable methods to solve various differential equations

Course Learning Outcomes: This course will enable the students to

I) Understand the concept of differential equations.

II) Classify the differential equations with respect to their order and linearity.

III) Demonstrate skills in constructing rigorous mathematical arguments

IV) Demonstrate skills in communicating mathematics

Ordinary Differential Equations-I

UNIT – I: (14 Hours)

Definition, examples of differential equations (Recapitulation). Differential equations of first order- separation of variables (Recapitulation), reducible to variable separable, homogeneous differential equations (Recapitulation) reducible to homogeneous differential equations. Exact Differential Equations (Recapitulation).

UNIT – II: (14 Hours)

The general solution of a linear equation – Integrating factors found by inspection. The determination of integrating factors. Linear differential equations, Bernoulli's equation. Illustrative Examples.

UNIT – III: (14 Hours)

Ordinary Linear differential equations with constant coefficients – Complementary function – particular integral – Inverse differential operators. Cauchy – Euler differential equations.

Books for References

1. Daniel A Murray – Introductory Course to Differential equations
2. Earl David Rainville and Philip Edward Bedient – A short course in Differential equations, Prentice Hall College Div; 6th edition
3. W Arwin Wilson's outline of theory and problems of Differential Equations, 1st ed. USA McGraw Hill,2010
4. B Narayanan and T K Manicavachagom Pillay, Differential Equations – S V Publishers Private Ltd., 1987
5. M D Raisinghania, Advanced Differential Equations, S Chand and Co. Pvt Ltd, 2011
6. B. S. Grewal – Higher Engineering Mathematics
7. E Kreyszig- Advanced Engineering Mathematics, Wiley India Pvt Ltd

Open Elective

(For Students of other than Science Stream)

MATOET 31: Quantitative Mathematics	
Teaching Hours : 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max. Marks: 100 (60 Sem End Exam + 40 IA)

Course Objectives: This course will enable the students

- To learn Simple Interest
- To learn Speed and Distance
- To understand the Age based problems

Course Learning Outcomes: This course will enable the students to

- Apply Simple Interest in day today applications
- Solve Speed and Distance related problems
- Solve Present & Past age calculations

Quantitative Mathematics

Unit-I: Problems on Simple Interest (14 Hours)

Calculate Interest, Calculate Profit / Loss, Interest Application, Depreciation.

Unit-II: Problems on Speed & Distance (14 Hours)

Calculate Speed & Velocity, Calculate Speed & Distance Proportion.

Unit-III: Problems on Age (14 Hours)

Age Calculations, Problems on conditional age calculations, Present & Past age calculations.

Books for References:

1. Business Mathematics by Dr. S.K. Saxena and Dr. Goswami Kaur (Published by Sultan Chand & Sons)
2. A Text book of Business mathematics for B.Com and BBA Course by Rasmika Padmalochan, Chand Publications
3. Business Mathematics by T.K Thukral published by Abebooks 2020 first edition
4. Business Mathematics and Statics by N.G Das and J.K Das published Mc Graw Hill Education, 2017

IV – SEMESTER

MATDSCT 4.1: Partial Differential Equations and Integral Transforms	
Teaching Hours : 4 Hours/Week	Credits: 4
Total Teaching Hours: 56 Hours	Max. Marks: 100 (S.A.-80 + I.A. -20)

Course Objectives: This course will enable the students to

i) Learn to identify various Partial differential equations

ii) Understand basic properties of standard partial differential equations

iii) Demonstrate capacity to model physical phenomena using PDEs (in particular using heat and wave equations)

iv) Learn to understand Integral Transforms and its applications

Course Learning Outcomes: This course will enable the students to

i) Understand the concept of Partial differential equation

ii) Classifies the Partial differential equations with respect to their order and linearity

iii) Understand and be able to apply various methods to solve Partial Differential Equations.

iv) Learn to solve Integral Equations and differential equations using Laplace Transforms

IV – SEMESTER

Partial Differential Equations and Integral Transforms

(4 hours Theory/week: 1+0+3 = 56 HOURS)

Partial Differential Equations

UNIT-I: First Order Partial Differential Equations (14 Hours)

Basic concepts-Formation of a partial differential equation by elimination of arbitrary constants and functions – Solution of partial differential equations – Solution by Direct integration, Lagrange's linear equations of the form $Pp + Qq = R$. Standard types of first order non-linear partial differential equations.

UNIT-II: Second Order Partial Differential Equations (14 Hours)

Second Order Partial Differential Equations : Introduction, origin of second order equations, Linear partial differential equations with constant coefficients and equations having operators of the form $(aD + bD' + c)^n$, Equations of one dimensional heat, wave and Laplace equation using separation of variable methods.

Integral Transforms

UNIT –III: Laplace Transform (14 Hours)

Definitions and basic properties-Laplace transforms of e^{at}, $\sin at$, $\cos at$, t^n, $\sinh at$ and $\cosh at$ – Laplace transform of $e^{at}F(t)$, $t^nF(t)$, $\frac{F(t)}{t}$ – problems – Laplace transform of derivatives of functions-Laplace transform of integrals of functions-Laplace transform of periodic functions

UNIT – IV: Inverse Laplace transforms (14 Hours)

Inverse Laplace transforms – problems, Convolution theorem with proof – Simple initial value problems – Solutions of first and second order differential equations with constant coefficients by Laplace transforms method and solutions of integral equations

Books for Reference

1. Daniel A Murray – Introductory Course in Differential Equations
2. Earl D. Rainville, Phillip E. Bedient, Richard E. Bedient – Elementary Differential Equations, Prentice Hall College Div; 6th edition
3. G. Stephenson – An Introduction to Partial Differential Equations
4. B. S. Grewal – Higher Engineering Mathematics
5. M.D Raisinghania – Ordinary Differential Equations & Integral Equations, S Chand and Co Pvt. Ltd. 2013
6. C. Harvey and T.R. Mukherjee – Ordinary Differential Equations, Tata McGraw Hill Pvt. Ltd., 2013.

PRACTICALS

Mathematics Lab-IV

Partial Differential Equations and Integral Transforms

(4 hours/week per batch of not more than 15 students)

MATDSC# 4: Theory Based Practicals on Partial Differential Equations and Integral Transforms	
Practical Hours : 4 Hours/Week	Credits: 2
Total Teaching Hours: 56 Hours	Max. Marks: 50 [Ex.-35 + Lr.— 15]

Mathematics practical with Free and open Source Software (FOSS) tools for computer programs

Programs using Scilab / Octave / Python:

1. Solutions to the Partial differential equations of type/in type4
2. 2Solutions to the Partial differential equations of Lagrange's form (quasi linear)
3. Solutions to the Non-linear first order Partial differential equation using Charpit's Method
4. Solutions to Second order homogenous Partial differential equations with constant coefficients
5. Solutions to Second order nonhomogeneous Partial differential equations with constant coefficients
6. Solutions to the Partial differential equations using separation of variables method (Heat Wave Laplace)
7. Finding the Laplace transforms of some standard functions
8. To evaluate some definite integrals using Laplace transform
9. To find the Laplace transform of periodic functions
10. Finding the inverse Laplace transform of simple functions
11. Verification of Convolution Theorem
12. To solve ordinary linear differential equation using Laplace transform
13. To solve a integral equation using Laplace transform

Open Elective Course

For students of Science streams who have not studied Mathematics as one of their subjects

MATOET 4.3: Partial Differential Equations	
Teaching Hours : 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max Marks: 100 (CIA-40 + SEE - 60)

Course Objectives: This course will enable the students to

I. Learn to identify various Partial differential equations.
II. Understand basic properties of standard partial differential equations.
III. Demonstrate capacity to model physical phenomena using PDEs (in particular using heat and wave equations).

Course Learning Outcomes: This course will enable the students to

I. Understand the concept of Partial differential equations.
II. Classifies the Partial differential equations with respect to their order and linearity.
III. Understand and be able to apply various methods to solve Partial Differential Equations.

Partial Differential Equations

UNIT-I (14 Hours)

Basic concepts – Formation of partial differential equations by elimination of arbitrary constants and functions – Solution of partial differential equations – Solution by Direct integration. Lagrange's linear equations of the form $Pp + Qq = R$. Standard types of first order non-linear partial differential equations.

UNIT – II (14 Hours)

Solution of ordinary second order linear differential equations with variable coefficient by various methods such as: (i) By finding part of a complementary function, (ii) Changing the independent variable, (iii) Changing the dependent variable, (iv) By method of variation of parameters, (v) Exact equations.

UNIT – III

Total differential equations – Necessary and sufficient condition for the equation $Pdx + Qdy = Rdz = 0$ to be exact Problems only – Simultaneous equations of the form $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$.

(14 Hours)

Books for References

1. Daniel A Murray – Introductory Course to Differential equations
2. Ian Dawkins, Paul Dawkins, Philip Efron and Barbara Lorenz – Introduction to Differential equations Prentice Hall College Div; 6th edition
3. Murray R Spiegel – Laplace Transforms
4. E Kreyszig- Advanced Engineering Mathematics, Wiley India Pvt Ltd
5. B. S. Grewal – Higher Engineering Mathematics
6. E Kreyszig- Advanced Engineering Mathematics, Wiley India Pvt Ltd
7. G. Stephenson – An Introduction to Partial Differential Equations
8. B. S. Grewal – Higher Engineering Mathematics
9. S.D Bhavsthi, Advanced Differential Equations, I Chand and Co. Pvt. Ltd. 2013.
10. A Wazwaz and T K Mancho-Holgon Pillai, Differential Equations, I K International Publishing House Ltd., 2011.

Open Elective

(For Students of other than Science Stream)

MATOET 41: Mathematical Finance	
Teaching Hours : 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max Marks: 100 (60 S.A. + 40 IA)

Course Objectives: This course will enable the students:

- To learn to calculate Percentage.
- To learn about True Discount.
- To understand the Profit and Loss.

Course Learning Outcomes: This course will enable the students to:

- Find solutions to the problems related percentage, true discount and profit and loss.

Mathematical Finance

Unit I: Problems on Percentage 14Hours

Calculate Percentage of Profit & Loss. Percentage Calculation on Buying & Selling, Percentage & Proportion.

Unit II: Problems on True Discount 14Hours

Buying & Selling Prices Calculations, Discounts in transaction calculations, Profit/loss calculations.

Unit III: Problems on Profit And Loss 14Hours

Finding Selling Price, Finding Cost Price, Profit And Loss.

Books for References:

1. Business Mathematics by Dr. V.K. Sharma and Dr. Gurmeet Kaur
   Published by Sultan Chand & Sons.
2. A Text book of Business mathematics for B.Com and BBA Course by Manocha
   Publications, Chand Publications.
3. Business Mathematics by T.K. Thakral published by abishek 2020 first edition.
4. Business Mathematics and Statics by P. C. Das and T.K. Das
   publisher Mc Graw Hill Education, 2017

KUVEMPU UNIVERSITY

SYLLABUS

V and VI Semester
B.A./B.Sc., Mathematics
(According to National Education Policy 2020)

DEPARTMENT OF MATHEMATICS,
KUVEMPU UNIVERSITY,
JNANA SAHYADRI, SHANKARAGHATTA - 577451
SHIVAMOGGA, KARNATAKA, INDIA.
PHONE: 08282-256301
Web: www.kuvempu.ac.in

2023-24

Name of the Degree Programme : B.A/B.Sc.
Discipline course : Mathematics
Starting Year of Implementation : 2021-22 (I & II Semester)
: 2022-23 (III & IV Semester)
: 2023-24 (V & VI Semester)

SEMESTER V

Category	Course Code	Title of the Paper	Marks			Teaching Hours/ Week		Credit	Duration of exams (Hours)
			IA	SA	Total	T	P		
DSC	MATDSCT 5.1	Real Analysis-II and Complex Analysis	40	60	100	4	-	4	3
	MATDSCP 5.1	Theory-based Practical on Real Analysis-II and Complex Analysis	25	25	50	-	4	2	3
	MATDSCT 5.2	Advanced Algebra and Vector Calculus	40	60	100	4	-	4	3
	MATDSCP 5.2	Theory-based Practical on Advanced Algebra and Vector Calculus	25	25	50	-	4	2	3
SEC-4	-	Employability Skills: Cyber Security	25	25	50	2	2	2	3

SEMESTER VI

Category	Course Code	Title of the Paper	Marks			Teaching Hours/Week		Credit	Duration of exam (Hours)
			ESE	ISA	Total	T	P		
DSC	MATDSCT 6.1	Linear Algebra and Fourier Series	60	40	100	4	-	4	3
	MATDSCP 6.1	Theory-based Practical on Linear Algebra and Fourier Series	25	25	50	-	4	2	3
	MATDSCT 6.2	Numerical Analysis	60	40	100	4	-	4	3
	MATDSCP 6.2	Theory-based Practical on Numerical Analysis	25	25	50	-	4	2	3
VSEC 4	-	Internship	-	-	-	-	-	2	-

Syllabus for B.A. & Sc. with Mathematics

SEMESTER - V

MATDSCT5.1 : Real Analysis-II and Complex Analysis	
Teaching Hours : 4 Hours/Week	Credits : 4
Total Teaching Hours : 60 Hours	Max Marks: 100 (S.A -80 + I.A -20)

Course Learning Outcomes:

The overall experiences from this course is that the student builds a clear understanding on Riemann integration and elementary complex analysis. The broader course outcomes are listed as follows. At the end of this course, the student will be able to:

1. Carry out certain computations such as computing upper and lower Riemann sums as well as integrals.
2. Describe various criteria for integrability of functions.
3. Exhibit certain properties of mathematical objects such as integrable functions, analytic functions, harmonic functions and so on.
4. Prove logic statements related to Riemann integration as well as in complex analysis.
5. Carry out the existing algorithms to construct mathematical structures such as analytic functions.
6. Applies the gained knowledge to solve various other problems.

Real Analysis - II

Unit-I: Riemann Integration

Definition and examples for partition of an interval, refinement of a partition and common refinement. Riemann Darboux Sums – Upper and lower (Darboux) sum-definition, properties and problems. Riemann Integral-Upper and Lower integrals (definition and problems). Darboux's theorem and Criterion for Integrability. Integrability of sum, difference, product, quotient and modulus of integrable functions. Integral as a limit of sum (Riemann sum) –Problems. Integrability of continuous functions, monotonic functions, bounded functions with finite number of discontinuities.

12 Hours

Unit-II : Riemann Stieltjes and Improper Integrals

Riemann Stieltjes Integrals-Definition and example. Riemann integral as a special case. Improper Integrals-Definitions and examples. Beta functions – definition, properties and problems. Gamma functions – definition, properties and problems. Relation between Beta and Gamma functions, duplication theorem and problems, applications, formula and applications.

13 Hours

Complex Analysis

Unit-III : Complex numbers and functions of complex variables

Complex numbers-Cartesian and polar form, geometrical representation – complex plane. Euler's formula. Functions of a complex variable-limit, continuity and differentiability of a complex function. Analytic function, Cauchy-Riemann equations in Cartesian form, sufficient conditions for analyticity, standard properties of analytic functions-construction of analytic function when real or imaginary part is given – Milne Thomson method. Harmonic functions and problems based on.

13 Hours

Unit-IV : Complex Integration and Bilinear transformation

Complex integration-definition, Line integral, properties and problems. Cauchy's Integral theorem –proof using Green's theorem. Direct consequences. Cauchy's Integral formula with proof-Cauchy's generalized formula for the derivative with proof and applications for evaluation of line integrals.

Bilinear transformation-Definition and examples. Cross ratio of four points - Cross-ratio preserving property- Preservation of the family of circles/lines and circles. Conformal mappings- Definition and discussion of standard examples.

15 Hours

Reference Books:

1. S.C.Malik, Principles of Real Analysis, New Age International (India) Pvt.Ltd., 4th Edition, 2018.
2. S.C.Malik and Savita Arora, Mathematical Analysis, 2nd edition, New Delhi, India: New Age International (P) Ltd., 2007.
3. Richard R. Goldberg, Methods of Real Analysis, Oxford and IBH Publishing.
4. Ajit Kaur and S. Kumaresan - A Basic Course in Real Analysis, Taylor and Francis Group.
5. L.V. Ahlfors, Complex Analysis, 3rd Edition, 12: Tata McGraw Education.
6. Brown & Churchill, Introduction to the Theory of Functions of a Complex Variable, Springer.
7. Serge Lang, Complex Analysis, Springer.
8. Shanthinarayan, Theory of Functions of a Complex Variable, S. Chand Publishers.
9. S.Ponnusamy, Foundations of Complex Analysis, 2nd Edition, Alpha Science International Limited.
10. R.V. Churchill & J.W. Brown, Complex Variables and Applications, 7th ed., 12: Tata McGraw Education.

MATDSCP 5.1 Practical's on Real Analysis II and Complex Analysis	
Practical Hours : 4 Hours/Week	Credits : 2
Total Practical Hours : 60 Hours	Max. Marks : 50 (CA : 25 + LA : 25)

Course Learning Outcomes:

This course will enable the students to

1. Learn Free and Open Source Software (FOSS) tools for computer programming.
2. Write a problem on Real Analysis and Complex Analysis studied in MATDSCT 5.1 by using FOSS software's.
3. Acquire knowledge of applications of Real Analysis and Complex Analysis through FOSS.

Practical/Lab Work to be performed in Computer Lab (FOSS): Suggested Software's: Maxima/Scilab/ Octave/Matlab

Suggested Programs:

1. Program to check whether a given set of real numbers admits supremum or infimum.
2. Program to find upper and lower Riemann sums with respect to given partitions.
3. Program to test Riemann Integrability.
4. Program to evaluate Riemann integral as a limit of sum.
5. Program on verification of Cauchy – Riemann equations. Construct [illegible] is not [illegible] analytic.

6. Program on verification of Cauchy – Riemann equations, Polar form, or test for analyticity.
7. Basic commands on gamma and beta functions with examples.
8. Evaluation of integral value of various functions using gamma and beta functions.
9. Program to check whether a function is harmonic or not.
10. Program to construct analytic functions through Milne-Thomson method.
11. Program to find Cross ratio of points and related aspects.
12. Program to find fixed points of bilinear transformations.

Syllabus for B.A./B.Sc. with Mathematics

SEMESTER – V

MATDSCT5.2: Advanced Algebra and Vector Calculus	
Teaching Hours – 4 Hours/Week	Credits – 4
Total Teaching Hours – 60 Hours	Max. Marks: 100 (S.A.-60 + I.A.-40)

Course Learning Outcomes:

This course will enable the students to:

1. Identify and analyze different algebraic structures such as normal subgroups, rings, integral domains, division ring and fields.
2. Explain the properties of the above mentioned algebraic structures.
4. Prove various statements related to algebraic structures.
5. To solve problems using isomorphism concepts.
6. Apply the gained knowledge to solve various other problems.
7. Get introduced to fundamentals of vector calculus.
8. Get familiar with the various differential operators and their properties.
9. Learn the applications of vector calculus.
10. Learn about the applications of Gauss-Green formulae.

Advanced Algebra

Unit I: Groups-II

Normal Subgroups – properties, examples and problems. Quotient group. Homomorphisms and Isomorphisms of groups – properties examples and problems. Kernel and Range of a Homomorphism. Necessity of the Kernel. Fundamental theorem of Homomorphism. Properties related to isomorphism.

15 hours

Unit II: Rings, Integral Domains and Fields

Definition and properties of rings. Rings of integers modulo n. Subrings. Ideals – Principal, Prime and Maximal ideals in a commutative ring – examples and standard properties following the definition. Homomorphism, Isomorphism – properties. Quotient rings. Integral Domain. Fields – properties following the definition. Fundamental Theorem of Homomorphism of Rings. Every field is an integral domain. Every finite integral domain is a field with examples.

15 hours

Vector Calculus

Unit-III: Geometry of Space Curves

Multiple product-scalar triple product, vector triple product, geometrical interpretation, relative problems; vector function of scalar variable-interpretation as a space curve, derivative, tangent, normal and binormal vectors to space curve, curvature and torsion of a space curve-definitions, derivations and problems. Serret-Frenet formulae

15 hours

Unit-IV: Vector Calculus

Gradient of a scalar field, geometrical meaning, directional derivative, unit normal using surfaces- tangent plane and normal to the surface, Vector field - divergence and curl of a vector field, geometrical meaning, solenoidal and irrotational fields, Laplacian of a scalar field, Vector identities

15 hours

Reference Books:

1. I.N. Herstein (1980), Topics in Algebra, 2nd Edition, Wiley Eastern Ltd., New Delhi.
2. Vijay K. Khanna and S.K. Bhambri (1998), A Course in Abstract Algebra, Vikas Publications.
3. Michael Artin (2017), Algebra, Pallad, Pearson.
4. Joseph A. Gallian (2020), Contemporary Abstract Algebra, 10th edition, Taylor and Francis Group.
5. Murray R. Spiegel – Theory and problems of vector calculus.
6. Shanthinarayan and P.K. Rajput – A text book of Vector calculus
7. A text of B.Sc., Mathematics by G.K. Ranganath, S. Chand Publications, Bangalore.
8. A text of B.Sc., Mathematics by B.S. Satyanarayana, Academic Excellence Series Publications, Bangalore.

MATDSCP3.2: Practicals on Advanced Algebra and Vector Calculus	
Practical Hours - 4 Hours/Week	Credits: 2
Total Practical Hours: 60 Hours	Max. Marks: 50 (IA: 25 + LA: 25)

Course Learning Outcomes:

This course will enable the students to

1. Learn Free and Open Source Software (FOSS) tools for computer programming
2. Solve problems related to Analytical Geometry and Vector Calculus using FOSS software

Practical/Lab Work to be performed in Computer Lab (FOSS): Suggested Software: Chevron Scilab, Python.

Suggested Programs:

1. Program to find all subgroups of a given group.
2. Program to verify Lagrange's theorem.
3. Program to verify Homomorphism of given functions.
4. Program to verify Isomorphism of given mappings.
5. Program to find whether given finite set is ring or not?
6. Program to know whether given subset of a finite ring is a subring or Not?
7. Program to find whether given subset of a finite ring is an ideal or not?
8. Program to find whether given function is a homomorphism or not?

9. Program to find whether given function is an isomorphism or not
10. Program on multiple product of vectors – Scalar and Vector product
11. Program on vector differentiation and finding unit tangent
12. Program to find curvature and torsion of a space curve
13. Program to find the gradient and Laplacian of a scalar function, divergence and curl of a vector function.
14. Program to demonstrate the physical interpretation of gradient, divergence and curl

Syllabus for B.A./B.Sc with Mathematics
SEMESTER – VI

MATDSC13: Linear Algebra and Fourier Series	
Teaching Hours : 4 Hours/Week	Credits : 4
Total Teaching Hours : 60 Hours	Max Marks: 100 (CIA 40 + ESE 60)

Course Learning Outcomes:

The overall expectation from this course is that the student will build a basic understanding in the area of linear Algebra such as vector spaces, linear transformations and inner product spaces. Some broader course outcomes are listed as follows. At the end of this course, the student will be able to

1. Understand the concepts of Vector spaces, subspaces, basis, dimension and their properties
2. Learn properties of inner product spaces and determine orthogonality in inner product spaces
3. Prove various theorems in the context of vector spaces
4. Realize importance of notion of linear transformations and its classifications
5. Know about differences between even and odd functions
6. Find the period of any trigonometric functions
7. To expand any periodic function as a Fourier series

Linear Algebra

Unit-I: Vector spaces

Vector spaces - Definition, examples and properties. Subspaces - Examples, criterion for a subset to be a subspace and some properties. Linear Combination - Linear span. Linear dependence and Linear independence, basic properties of linear dependence and independence, techniques of determining linear dependence and independence of vectors. Vector spaces and related problems: Basis and Dimension - Co-ordinates, ordered basis, some basic properties of basis and dimension and subspace spanned by given set of vectors.

15 Hours

Unit – II: Linear Transformations

Linear transformation - Definition, examples, equivalent criteria, some basic properties and matrix representation, change of basis, effect on associated matrix and similar matrices. Rank - Nullity theorem - Null space, Range space, proof of rank nullity theorem and related problems.

15 Hours

Unit-III: Inner product Spaces

Inner product space – Definition and examples. Cauchy-Schwartz inequality, triangle inequality and related problems. Orthogonal vectors, orthonormal basis, problems on

Gram-Schmidt orthogonalization process: both proof and problems. Orthogonal projection, orthogonal projection of a vector and a subspace on another subspace, problems thereon.

15 Hours

Fourier Series

Unit-IV : Fourier Series

Periodic function-Definition, properties and related problems. Even and Odd functions-Definition and problems. Fourier series expansion of $f(x)$ in the range $(c, c+2l)$, expansion of $f(x)$ in different intervals like $(-\pi, \pi)$ and $(0, 2\pi)$, functions with period 2π and $2l$. Half range Fourier series – Definition and construction of half range sine series, definition and construction of half range cosine series.

15 Hours

Reference Books:

1. N. Herstein, Topics in Algebra, 2nd Edition, Wiley.
2. Stephen H. Friedberg, Arnold J. Insel & Lawrence E. Spence (2005) Linear Algebra 4th Edition, Prentice-Hall of India Pvt. Ltd.
3. P. N. Shankar, Introduction to Linear Algebra, Orient Publications.
4. S. Kumaresan, Linear Algebra, Prentice Hall India Learning Private Limited.
5. Kenneth Hoffman & Ray Kunze (2015) Linear Algebra, (2nd Edition), Prentice Hall India Learning Private Limited.
6. Gilbert Strang (2015), Linear Algebra and its applications, (2nd Edition), Elsevier.
7. Vivek Sahai & Vikas Bist (2013), Linear Algebra (2nd Edition) Narosa Publishing.
8. Serge Lang (2005), Introduction to Linear Algebra (2nd Edition), Springer India.
9. T.M.Manicavachagom Pillai and K.S.Narayanan, Modern Algebra Volume I
10. A text of B.Sc., Mathematics by G.K.Ranganath, S.Chand Publications, Bangalore
11. A text of B.Sc., Mathematics by B.S. Chandrashekar, Academic Excellent Series Publications, Bangalore

MATDSCP 6.1: Practicals on Linear Algebra and Fourier Series	
Practical Hours: 4 Hours/Week	Credits: 2
Total Practical Hours: 60 Hours	Max. Marks: 50 (Int. 25 + Ext. 25)

Course Learning Outcomes:

This course will enable the students to

1. Learn Free and Open Source Software (FOSS) tools for computer programming
2. Solve problems on Linear Algebra (related to MATDSCT 6.1) by using FOSS software's
3. Acquire knowledge of applications of Linear Algebra through FOSS

Practical Lab Work to be performed in Computer Lab (FOSS Supported Software's: Maxima/Scilab/Python)

Suggested Programs:

1. Program on linear combination of vectors.
2. Program to verify linear dependence and independence.
3. Program to find basis and dimension of the subspaces.
4. Program to verify if a function is linear transformation or not.

5. Program to find the matrix of linear transformation.
6. Program on Rank – nullity theorem.
7. Program to verify if the given linear transformation is singular or non-singular.
8. Program to find the minimal polynomial of given transformation.
9. To plot periodic functions with period 2π and $2l$.
10. To find full range trigonometric Fourier series of some simple functions with period 2π and $2l$.
11. Plotting of functions in half range sub including their even and odd extensions.
12. To find the half-range sine and cosine series of simple functions.
13. To find the half-range sine and cosine series of simple functions.

Syllabus for B.A. B.Sc. with Mathematics

SEMESTER – VI

MATHS(T6) : Numerical Analysis	
Teaching Hours : 4 Hours/Week	Credits : 4
Total Teaching Hours : 52 Hours	Exa. Marks : 80 + 20 = 100

Course Learning Outcomes:

The overall objectives from this course is that the student will be equipped with certain numerical techniques for various computations such as finding roots, finding the integrals and derivatives, and finding solutions to differential equations. More broader course outcomes are listed as follows: At the end of this course, the student will be able to

1. Describe various operations arising in numerical analysis such as difference operators, shift operators and so on.
2. Articulate the rationale behind various techniques of numerical analysis such as in finding roots, integrals and derivatives.
3. Recognize the existing algorithms for various tasks in numerical analysis.
4. Apply the rules of calculus and other areas of mathematics in justifying the techniques of numerical analysis.
5. Solve problems using suitable numerical techniques.
6. Appreciate the profound applicability of techniques of numerical analysis in solving real life problems and also appreciate the way the techniques are modified to improve the accuracy.

Numerical Analysis

Unit-I : Algebraic and Transcendental Equations

Algebraic and Transcendental Equations: Errors - significant digits, absolute, relative, percentage errors, rounding off and truncation. Solutions to algebraic and transcendental equations - Bisection method, Regula-Falsi method, iterative method, Newton-Raphson method and Secant method.

12 Hours

Unit-II : Polynomial Interpolations

Finite differences; Forward and backward differences and shift operator; definitions, properties and problems. Polynomial interpolation-Newton-Gregory forward and backward interpolation formulae, Lagrange interpolation formula, Newton's divided difference interpolation formula.

15 Hours

Unit-III : Numerical Differentiation and Integration

Formula for derivatives (all second order) based on Newton-Gregory forward and backward interpolations. Numerical Integration-General quadrature formula, Trapezoidal rule, Simpson's 1/3 rule, Simpson's 3/8 rule and Weddle's rule.

15 Hours

Unit: IV Numerical Solutions of Ordinary Differential Equations

Numerical solution of ordinary differential equations of first order and first degree by Picard's method, Euler's method, Euler's modified method and Runge-Kutta method of fourth-order (No derivation of formula).

15 Hours

Reference Books

1. E Balagurusamy, Numerical Methods, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. S S Sastry, Introductory Methods of Numerical Analysis, PHI Learning Private Limited, Delhi.
3. E Kreyszig, Advanced Engineering Mathematics, Wiley India Pvt Limited, New Delhi.
4. B.S. Grewal, Numerical Methods in Scientific and Engineering Computation, Khanna Publishers, New Delhi.
5. M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering Computation, 6th Edition, New Age International Publishers, New Delhi.
6. M.K. Venkatraman, Numerical Methods in Science and Engineering, National Publishing Company, Chennai.
7. S.D. Conte and Carl de Boor, Elementary Numerical Analysis, Tata McGraw-Hill Education Pvt. Ltd., New Delhi.

MATDSCP 6.2 : Practical's on Numerical Analysis	
Practical Hours : 4 Hours/Week	Credit : 2
Total Practical Hours : 60 Hours	Max. Marks: 50 (CA: 25 + ESE: 25)

Course Learning Outcomes:

This course will enable the students to

1. Learn Free and Open Source Software (FOSS) tools for computer programming.
2. Solve problems in numerical Analysis studied in MATDSCT 6.2 by using FOSS software's.
3. Acquire knowledge of applications of Numerical Analysis through FOSS.

Practical/Lab Work to be performed in Computer Lab (FOSS)
Suggested Software's: Maxima/Scilab/Python.

Suggested Programs:

1. Program to find root of an equation using bisection method.
2. Program to find root of an equation using Regula-Falsi method.
3. Program to find root of an equation using Newton-Raphson method.
4. Program to find root of an equation using Picard method/Euler method.
5. Program to evaluate integral using Simpson's 1/3 and 3/8 rules.
6. Program to evaluate integral using Trapezoidal rule.
7. Program to evaluate integral using Weddle rule.
8. Program/Mini project on interpolations with equal intervals.

9. Program to find differentiation at specified point using Newton-Gregory interpolation method
10. Program to find the missing value of table using Lagrange method
11. Solving ordinary differential equations by modified Euler's method
12. Solving ordinary differential equation by Runge-Kutta method of 4th order

QUESTION PAPER PATTERN FOR B.A/B.Sc. DEGREE COURSES

DSC ——

Semester ——— Degree Examination ——— 20—

(NEP Scheme)

Paper: DSC ———

Time: 02 Hours Max. Marks: 60

Instructions to Students:

1. The students should legibly write section number along with question number.
2. The answer without section number and question number will not be valued.
3. The question numbers should be legibly written with the margin only.

Section – I

I. Select the most appropriate answer from the options provided: 10 × 1 = 10

I-1)

a) b) c) d)

I-2)

a) b) c) d)

I-10)

a) b) c) d)

Section - II

II. Answer any FIVE of the following: 05 × 03 = 15

II-1)

II-2)

II-3)

II-4)

II-5)

II-6)

II-7)

II-8)

Section - III

III. Answer any THREE of the following: 03 × 05 = 15

III-1)

III-2)

III-3)

III-4)

III-5)

Section - IV

VI. Answer the following*: 02 × 10 = 20

IV-1)

OR

IV-2)

OR

*May have a sub questions if required

———————

KUVEMPU UNIVERSITY

BOARD OF STUDIES (BOS) IN PHYSICS
(UNDER GRADUATE PROGRAMME)

APPROVED SYLLABUS

(To be effective from the academic year 2023-24)

For

V AND VI SEMESTER PHYSICS PAPERS

of

B.SC./B.SC.(HONS.) DEGREE PROGRAMME

(Framed in according with the National Education policy (NEP 2020)
Based on *Model Physics Syllabus* prepared by physics expert committee,
Karnataka State Higher Education Council, Bangalore)

(Syllabus approved in the Board of Studies (BOS) meeting held on [illegible] at the
Department of Post-Graduate Studies in Physics and Research, Jnana Sahyadri, Shankaraghatta

Curriculum Structure: Physics
(Core and Electives)

Semesters: V and VI SEM

SEM	DSC	SEC	Core Papers	Teaching Hours (per Week)	Credits
Sem-5	A5 (Theory)	----	Classical Mechanics and Quantum Mechanics I	4	4
	A5 (Lab)	----		4	2
	A6 (Theory)	----	Elements of Atomic, Molecular & Laser Physics	4	4
	A6 (Lab)	----		4	2
Sem -6	A7 (Theory)	----	Elements of Condensed Matter & Nuclear Physics	4	4
	A7 (Lab)	----		4	2
	A8 (Theory)	----	Electronic Instrumentation & Sensors	4	4
	A8 (Lab)	----		4	2
Sem-6	----	Internship/Project work/Dissertation	----	4	2

Government of Karnataka
Model Curriculum

Syllabus for Semester-V

Program Name	BSc in Physics	Semester	V
Course Title	Classical Mechanics and Quantum Mechanics-I (Theory)		
Course Code	PHY-DSE-7	No. of Credits	04
Contact hours	60 Hours	Duration of SEA/Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to

- Understand the concepts of special theory and general theory of relativity
- Get familiarized with Lagrangian formulation and apply it to few common problems
- Explain variational principle and deduce Hamilton's equations from it
- Define canonical transformations and Poisson Brackets, and explain their importance
- Identify the failure of classical physics at the microscopic level
- Concept of matter waves and its experimental verification
- Find the relationship between the normalization of a wave function and the ability to correctly calculate expectation values or probability densities.
- Explain the minimum uncertainty of measuring both observables in any quantum state.
- Describe the time dependent and time independent Schrodinger equation for simple potentials like for instance one-dimensional potential well and harmonic oscillator.
- Apply Hermitian operators, their eigenvalues and eigenvectors to find various commutation and uncertainty relations.

Content	60 Hrs.
Unit-1: Special and General Theory of Relativity	
Special Theory of Relativity Constancy of speed of light. Postulates of Special Theory of Relativity. Lorentz – transformation equations and their derivation. Derivation of expressions for – Length contraction, Time dilation and Relativistic addition of velocities. Relativity of simultaneity. Relativistic dynamics: Mass variation (no derivation), mass – energy relation (derivation), relativistic expression for kinetic energy, energy – momentum relation (derivation). Classical and relativistic concepts of space and time, Minkowski's world, concept of four vectors (only list), world line, space-time interval and its invariance. **General Theory of Relativity** Inertial and gravitational mass, principle of equivalence, curved space time, Einstein theory of gravitation (brief), Experimental verification of general theory of relativity: brief explanation of effect of gravitational field on velocity of light, on path of a planet about the sun	10 5

Unit – 2: Lagrangian and Hamiltonian Mechanics	
Lagrangian Formulation Constraints, Holonomic constraints, non-holonomic constraints, Scleronomic and Rheonomic constraints. Brief explanation with examples. Generalized coordinates, degrees of freedom, Principle of virtual work, D'Alembert's principle, Lagrange equations (Derivation). Newton's equation of motion from Lagrange equations. Application of Lagrange equation to 1D simple pendulum, Atwood's machine and linear harmonic oscillator.	8
Variational principle & Hamiltonian Mechanics Hamilton's principle, Lagrange's equation of motion from Hamilton's principle. The Hamiltonian of a system, Hamilton's equations of motion, Hamilton's equations from variational principle, Integrals of Hamilton's equations, energy integral, Canonical Transformations, Poisson Brackets, fundamental properties and equations of motion in Poisson brackets.	8
Unit – 3: Introduction to Quantum Mechanics	
Brief discussion on failure of classical physics to explain black body radiation, Photoelectric effect, Compton effect, stability of atoms and spectra of atoms, Compton scattering, Derivation for Compton shift (with derivation). Matter waves, de Broglie hypothesis of matter waves, Electron microscope (working principle, construction and applications), Wave description of particles by wave packets, Group and Phase velocities and relation between them (Derivation), Experimental evidence for matter waves: Davisson Germer experiment (with theory), G.P. Thomson's experiment and its significance. Heisenberg Uncertainty principle (statement and explanation of Heisenberg's factor between momentum and position, energy and time, angular momentum and angular position). Statement of uncertainty principle by Gamma ray microscope thought experiment. Consequences of the uncertainty relations: Diffraction of electrons at a single slit, why electron cannot exist in nucleus? Two slit experiment with photons and electrons, wave-particle duality principle as a consequence.	12
Unit – 4: Foundation of Quantum Mechanics	
Probabilistic interpretation of the wave function – Normalization and orthogonality of wave functions, admissibility conditions on a wave function. Schrödinger equation: equation of motion of matter waves – Derivation of 1D time dependent and time independent wave equations for a free particle in one and three dimensions. Probability current density, equation of continuity and its physical significance. Postulates of Quantum mechanics: Hermitian operators, Orthogonal functions as linear combination (superposition principle), momentum, angular momentum, and energy as examples. Eigenvalue values of operators and their time evolution. Ehrenfest Theorem (no derivation). Commutator algebra. Simultaneous Eigen functions. Commutation between position, momentum and angular momentum operators. Particle in a one-dimensional infinite potential well (derivation), degeneracy in three-dimensional case, Qualitative discussion of – particle in a finite potential well, transmission across a potential barrier, the tunnel effect, scanning tunnelling microscope principle and applications. One-dimensional simple harmonic oscillator (qualitative), concept of zero point energy.	12

Ref Materials	
1	Classical Mechanics – Goldstein, C.P. Poole Jr., Safko, 3rd Edn. 2002, Pearson Education
2	Classical Mechanics, Takwale and Puranik 2005, Tata Mcgraw Hill, New Delhi
3	Concepts of Modern Physics, Arthur Beiser, McGraw-Hill, 2008
4	Quantum Physics, Gasiorowicz, Physics Course, Vol. 2, 3 e, Wiley India Pvt. Ltd., 2008

5	Six ideas that Shaped Physics Particle Behave like Waves Thomas A. Moore McGraw Hill, 2003
6	P M Mathews and K Venkatesan, A Textbook of Quantum Mechanics, Tata McGraw Hill publication, ISBN: 9780070146274.
7	Ajoy Ghatak, S. Lokanathan, Quantum Mechanics: Theory and Applications, Springer Publication, ISBN: 978-1-4020-2110-3.
8	Modern Physics, R Murugeshan, Chand Publishing.
9	G Aruldhas, Quantum Mechanics, PHI Learning Private Ltd., 2009 (Reprint 2015)
10	Gupta, Kumar & Sharma, Quantum Mechanics, Jai Prakash Nath Publications.
11	Physics for Degree Students for B.Sc. Third Year, C.L. Arora and Dr. P.S. Hemne, 1st edition, S Chand & Company Pvt. Ltd., 2014.

Course Title	Classical Mechanics and Quantum Mechanics-I Lab (Practical)	No. of Credits	02
Course Code	PHYCCP3	Contact hours	4 Hours per week
Formative Assessment of Marks	25 Marks	Summative Assessment Marks	25

Practical Content (NOTE: Do not repeat the experiment already performed in the previous semesters)

Lab experiments (Students have to perform a minimum of EIGHT Experiments from the list below)

1. To determine 'g', the acceleration due to gravity, at a given place, from the $L-T^2$ graph, for a simple pendulum.
2. Studying the effect of mass of the bob on the time period of the simple pendulum.
   (Hint: With the same experimental setup, take a few balls of different materials (different masses) but of same size. Keep the length of the pendulum same for each case. Starting from a small angular displacement of about 10° find out in each case the time period of the pendulum. Using balls of different masses, does the time period depend on the mass of the pendulum bob? If yes, then see the order in which the change occurs. If not, then do you see an additional reason to use the pendulum as a time measuring device.
3. Studying the effect of amplitude of oscillations on the time period of the simple pendulum.
   (Hint: With the same experimental set-up, keep the mass of the bob and length of the pendulum fixed. For measuring the angular amplitude, make a large protractor on the cardboard and have a scale marked on an arc from 0° to 90° in units of 1°. Fix it on the edge of a table so that the string of the pendulum coincides with the suspension thread of the pendulum at rest. Start the pendulum oscillating with a very large angular amplitude (say 70°) and find the time period T of the pendulum. Change the amplitude of oscillation of the bob in small steps of 5° or 10° and determine the time period in each case till the amplitude becomes small (say 5°). Draw a graph between angular amplitude and T. How does the time period of the pendulum change with the amplitude of oscillation? How much does the value of T for a 10° differ from that for 5°? From the graph you have drawn, find out what amplitude of oscillation, the time period begins to vary? Determine the limit for the pendulum when it ceases to be a simple pendulum.)
4. Determining the acceleration of gravity 'g' by using an Atwood's machine.
5. Study the conservation of energy and momentum using inelastic motion.
6. Verification of the Principle of Conservation of Linear Momentum.
7. Determination of Planck constant and work function of the material of the cathode using Photoelectric cell.
8. To study the spectral characteristics of a photo-voltaic cell (Solar cell).

9. Determination of electron charge/e by Millikan's Oil drop experiment.
10. To find the value of e/m for an electron by Thomson's method using bar magnet.
11. To determine the value of e/m for an electron by magnetron method.
12. To study the tunneling in Tunnel Diode using I-V characteristics.
13. Determination of quantum efficiency of Photocell.
14. A code in C/C++/Scilab to find the first seven eigen states and eigen functions of linear harmonic Oscillator by solving the Schrödinger equation.
15. A code in C/C++/Scilab to plot and analyse the wavefunctions for particle in an infinite potential well.
16. Study of coupled oscillations.

NOTE—Any relevant experiments other than listed above can be performed after evaluation of instruments

References

1	B.Sc Practical Physics by C.L.Arora.
2	B.Sc Practical Physics by Harnam Singh and P.S Hemne
3	Practical Physics by G.L Squires.
4	Scilab Manual for QM-II: Quantum Mechanics & Applications [XXXX0b] by Dr Neetu Agrawal, Deshbandhu College, University of Delhi.
5	Scilab Textbook Companion for Quantum Mechanics by M. C. Jain
6	Scilab Textbook Companion for Quantum Mechanics by M. C. Jain
7	Advanced Practical Physics for Students by Worsnop & Flint Vol I.

Program Name	B.Sc in Physics	Semester	V
Course Title	Elements of Atomic, Molecular & Laser Physics (Theory)		
Course Code	PHY C15 T	No. of Credits	04
Contact hours	68 hours	Duration of SEA/Exam	3 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the completion of the course, the student will be able to

- Describe atomic properties using basic atomic models
- Interpret atomic spectra of elements using vector atom model
- Interpret molecular spectra of compounds using basics of molecular physics
- Explain laser systems and their applications in various fields

Content	No. of hrs.
Unit – 1: Basic atomic models	
Thomson's atomic model, Rutherford atomic model, Theory of alpha particle scattering – Rutherford scattering formula, Bohr atomic model – postulates, Derivation of expression for radius, total energy of electron, Origin of the spectral lines, Spectral series of hydrogen atom, Effect of nuclear motion on atomic spectra – derivation, Pauli exclusion principle, Correspondence principle. Critical potentials – critical potential, excitation potential and ionization potential, Atomic excitation and its types, Frank-Hertz experiment, Sommerfeld's atomic model, Derivation of condition for allowed elliptical orbits. Activities 1. Students to estimate radii of orbits and energies of electron in case of hydrogen atom in different orbits and plot the graph of radii / energy versus principle quantum number 'n', analyse the nature of the graph and draw the inferences. 2. Students to search orbital, excitation and ionization potentials of different elements and plot the graph of orbital / excitation / ionization potentials versus atomic number/mass number/neutron number of element, analyse the nature of the graph and draw the inferences.	12 3
Unit – 2: Vector atomic model and optical spectra	
Vector atom model: model fundamentals, spatial quantization, spinning electron, Quantum numbers associated with vector atom model, Coupling schemes – LS and jj coupling, Pauli's exclusion principle, Magnetic dipole moment due to orbital motion of electron – derivation, Magnetic dipole moment due to spin motion of electron, Lande g-factor and its calculation for different states, Stern-Gerlach experiment with theory, Spin-orbit interaction – qualitative. Optical spectra – spectral terms, spectral notations, selection rules, intensity rules, fine structure of spectral lines with examples, Fine structure of sodium D-line. Zeeman effect: Types, examples, Experimental study and classical theory of normal Zeeman effect – Zeeman shift expression. Stark effect: Experimental study, Types and examples. Activities 1. Students to couple a proton and n-state electron via LS and jj coupling schemes for a system with two electrons and construct vector diagrams for each resultant. Analyse the coupling results and draw the inferences. 2. Students to estimate magnetic dipole moment due to orbital motion of electron for different	12 3

states $^2P_{3/2}$, $^2P_{1/2}$, $^2S_{1/2}$, $^2P_{3/2}$, $^2P_{1/2}$ and $^2S_{1/2}$ and plot the graph of total magnetic moment versus total orbital angular momentum 'l'. Analyse the nature of the graph and draw the inferences.	
Unit–3: Molecular Physics	
Types of molecules based on their moment of inertia. Types of molecular motions and energies. Born-Oppenheimer approximation. Origin of molecular spectra. Nature of molecular spectra. Theory of rigid rotator – energy levels and spectrum. Qualitative discussion on non-rigid rotator and centrifugal distortion. Theory of vibrating molecule as a simple harmonic oscillator – energy levels and spectrum. Electronic spectra of molecules – fluorescence and phosphorescence. Raman effect – Stoke's and anti-Stoke's lines. Characteristics of Raman spectra. classical, Quantum and quantum theory. Experimental study of Raman effect. Applications of Raman effect. **Activities:** 1. Students to estimate energy of rigid diatomic molecules CO, HCl and plot the graph of rotational energy versus rotational quantum number 'J'. Analyse the nature of the graph and draw the inferences. Also, students study the effect of isotopes on rotational energies. 2. Students to estimate energy of harmonic vibrating molecules CO, HCl and plot the graph of vibrational energy versus vibrational quantum number 'V'. Analyse the nature of the graph and draw the inferences.	12 3
Unit–4: Laser Physics	
Characteristics of laser light. Interaction of radiation with matter – Induced absorption, spontaneous emission and stimulated emission with mention of rate equations. Einstein's A and B coefficients – Derivation of relation between Einstein's coefficients and radiation energy density. Possibility of amplification of light. Population inversion. Methods of pumping. Metastable states. Properties of laser – energy source, active medium and laser cavity. Difference between three level and four level lasers with examples. Types of lasers with examples. Construction and working principle of Ruby Laser and He-Ne Laser. Application of lasers (qualitative) in science & medicine, holography, communication, fusion, medicine, industry, war and space. **Activities:** 1. Students to search different types used in medical field as eye surgery, endoscopy, dentistry etc. list their parameters and analyse the need of these parameters for specific application and draw the inferences. Students also make the presentation of the study. 2. Students to search different lasers used in defence fields as range finding, laser weapon etc., list their parameters and analyse the need of these parameters for specific application and draw the inferences. Students also make the presentation of the study.	12 3

References	
1	Modern Physics, R. Murugeshan, Kiruthiga Sivaprasath, Revised Edition 2008, S Chand & Company Ltd.
2	Atomic & Molecular spectra: Laser, Raj Kumar, Revised Edition, 2008, Rajat Vaibhav Publishers, Hapur.
3	Atomic Physics, J.B. Shankar, Revised Edition, 2008, S Chand & Company Ltd.
4	Concepts of Modern Physics, B.L. Arora, 6th Edition, 2008, New Central Book Agency (P) Ltd.
5	Concepts of Modern Physics, Arthur Beiser, Seventh Edition, 2008, Shobhit Mahajan, S. Rai Choudhury, 2002, McGraw-Hill.
6	Fundamentals of Molecular Spectroscopy, C.N. Banwell and E.M. McCash, Fourth Edition, 2008, Tata McGraw-Hill Publishers.
7	Elements of Spectroscopy – Atomic, Molecular and Laser Physics, Gupta, Kumar and Sharma, 2008, Pragati Prakashan.

Course Title	Elements of Atomic Molecular & Laser Physics (Practical)		No. of Credits	02
Course Code:	PHY-C13-P	Contact Hours		4 Hours per week
Formative Assessment of Marks	25 Marks	Summative Assessment Marks		25

Practical Content NOTE: Do not repeat the experiment already performed in the previous semesters

LIST OF EXPERIMENTS (Students have to perform a minimum of Eight Experiments from the list below)

1. To determine Planck's constant using LED
2. To determine wavelength of spectral lines of mercury source using spectrometer
3. To determine the value of Rydberg constant using diffraction grating and hydrogen discharge tube
4. To determine the wavelength of H_α emission line of Hydrogen atom
5. To determine fine structure constant using fine structure separation of sodium D-lines using a plane diffraction grating.
6. To determine the ionization potential of mercury.
7. To determine the absorption lines in the rotational spectrum of iodine vapour
8. To determine the force constant and vibrational constant for the iodine molecule from its absorption spectrum.
9. To determine the wavelength of laser using diffraction by single slit/double slit
10. To determine wavelength of He-Ne laser using plane diffraction grating
11. To determine angular spread of He-Ne laser using plane diffraction grating
12. Study of Raman scattering by CCl_4 using laser and spectrometer/CCD.

NOTE: Any/Alevalid experiment of suitable standard may be performed as per availability of instruments

References	
1	Practical Physics, G.L. Flint, 7th Edition, 2011, Universities Press (India) Limited
2	B.Sc. Practical Physics, C.L. Arora, Revised Edition, 2007, S. Chand & Company Ltd.
3	An Advanced Course in Practical Physics, D. Chattopadhyay, P.C. Rakshit, B. Saha, Revised Edition, 2007, New Central Book Agency Pvt. Ltd.
4	Physics through experiments, R. Saraf, 2018, Vikas Publications

Government of Karnataka
Model Curriculum

Syllabus for Semester VI

Program Name	BSc in Physics	Semester	VI
Course Title	Elements of Condensed Matter & Nuclear Physics		
Course Code:	PHY 614 – T	No. of Credits	04
Contact hours	60 Hours	Duration of SEA/Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs):

After the successful completion of the course, the student will be able to:

- Explain the basic properties of nucleus and get the idea of nuclear structure
- Understand the concepts of binding energy and binding energy per nucleon vs mass number graph
- Describe the processes of alpha, beta and gamma decay based on well established theories
- Explain the basic aspects of interaction of gamma radiation with matter by photoelectric effect, Compton scattering and pair production
- Explain the different nuclear radiation detectors such as ionization chamber, Geiger-Muller counter etc.
- Explain the basic concept of scintillation detectors, photomultiplier tube and semiconductor detector

Contents	60 Hrs.
Unit – 1: Crystal systems, Free electron theory of metals	
Crystal systems: Crystal structure: Space lattice, Lattice Translational vectors, Basis of crystal structure, Types of unit cells, primitive, non-primitive cells. Seven crystal systems, Coordination numbers, lattice constant, expression for inter planner spacing. **X-Rays:** Production and properties of X-rays, Coolidge tube, Continuous and characteristic X-ray spectra, Moseley's law, X-Ray diffraction, Scattering of X-rays, Bragg's law, Crystal diffraction, Bragg's X-ray spectrometer, powder diffraction method, intensity of diffracted beam (qualitative). **Free electron theory of metals:** Classical free electron model (Drude-Lorentz model), expression for electrical and thermal conductivity, Wiedemann-Franz law, failure of classical free electron theory. Quantum free electron theory: Fermi-Dirac distribution function(expression for probability distribution with statement only), Fermi-Dirac distribution at T = 0 and T> 0, K(E) vs E plot. Density of states for free electron (statement only, no derivation), expression for fermi energy and average fermi energy at 0K. Quantitative discussion of specific heat, expression for fermi energy and average fermi energy at 0K. Quantitative discussion of lattice vibration and concept of Phonons, Specific heat of solids: Classical theory (Dulong and Petit's law), Einstein's and Debye's theory of specific heat, Hall effect – metals and insulators.	12
Unit – 2: Magnetic Properties of Matter, Dielectrics and Superconductivity	
Magnetic Properties of Matter: Review of basic formulae, Magnetic intensity, magnetic induction, permeability, magnetic susceptibility, magnetization (M). Classification of dia, para and ferromagnetic materials, Langevin Classical theory of dia- and Paramagnetism. Curie's law, Ferromagnetism and ferromagnetic domains (qualitative). Discussion of B-H Curve, Hysteresis and their uses, Hard and soft	12

magnetic materials. **Dielectrics**: Static dielectric constant, polarizability, electronic, ionic and orientation, Calculation of Lorentz field (derivation), Clausius-Mossotti equation (derivation), dielectric loss, electric breakdown, uses, examples and applications. **Superconductivity**: Definition, Experimental results – Zero resistivity and critical temperature – Persistent current – Critical magnetic field – Meissner effect, Type I and Type II superconductors.	
Unit – 3: General Properties of Nuclei & Radioactive decay	
General Properties of Nuclei: Constituents of nucleus and their intrinsic properties, quantitative facts about nucleus – mass, radii, charge density (matter density), binding energy, main features of binding energy, nuclear mass number curve, angular momentum, parity, magnetic moment, electric quadrupole moments.	12
Radioactivity decay: Radioactivity – definition of radioactivity, half-life, mean life, radioactivity equation; (a) Alpha decay: basics of α-decay processes, theory of α emission (brief), Gamow factor, Geiger-Nuttall law; (b) β-decay: energy considerations for beta-plus, beta-minus emission, electron capture, neutrino hypothesis; (c) Gamma decay: Gamma ray emission & absorption, internal conversion (definition).	
Unit – 4: Interaction of Nuclear Radiation with matter and Nuclear radiation detectors	
Interaction of Nuclear Radiation with matter: Gamma ray interaction with matter: photoelectric effect, Compton scattering, pair production, Energy loss due to ionization (quantitative discussion of Bethe Bloch formula), energy loss of electrons, Interaction of Neutron radiation. **Detector for Nuclear Radiations**: Gas detectors: operation of ionization chamber, multiplication in proportional region, operation of GM counter, basic principle of Scintillation Detectors and construction of photomultiplier tube (PMT), Semiconductor Detectors: Ge and Si for charge particle and photon detection (concept of charge carrier and mobility) – qualitative only, Accelerators: Cyclotron (with theory) and Synchrotron (Qualitative).	23

References

Text Books:

1. Solid State Physics, S. O. Pillai and V.K. Babbar, 3rd and 2nd edition New Age (2004).
2. Fundamentals of Solid State Physics, B. Saxena, R.C. Saxena, Pragati Prakashan, Meerut (2004).
3. Introductory Nuclear Physics by Kenneth S. Krane (Wiley India Pvt. Ltd., 2008).
4. Nuclear Physics, I. Kaur, Pragati Prakashan, Meerut.

Reference Books:

1. Introduction to Solid State Physics, Charles Kittel, 7th edition, Wiley.
2. Solid State Physics, A. J. Dekker, Macmillan India Ltd. (2000).
3. Essentials of crystallography, M. A. Wahab, Narosa Publications (2005).
4. Solid State Physics, S. O. Pillai, New Age Int. Publishers (2005).
5. Concepts of nuclear physics by Bernard L. Cohen, (Tata McGraw Hill, 1998).
6. Introduction to the physics of nuclei & particles, R.A. Dunlap, (Thomson Asia, 2004).
7. Introduction to High Energy Physics, D.H. Perkins, Cambridge Univ. Press.
8. Basic ideas and concepts in Nuclear Physics - An introductory approach by K. Heyde (Institute of Physics (IOP) Publishing, 2004).
9. Radiation detection and measurement, G.F. Knoll (John Wiley & Sons, 2000).
10. Physics and Engineering of Radiation Detection, Syed Naeem Ahmed (Academic Press, Elsevier, 2007).

Course Title	Elements of Condensed Matter & Nuclear Physics Lab (Practical)	No. of Credits	02
Course Code:	PHY C15 P	Contact hours	4 hours per week
Formative Assessment of Marks:	25 Marks	Summative Assessment Marks	25

Practical Content (NOTE: Do not repeat the experiments already performed in the previous semesters)

Students have to perform a minimum of EIGHT Experiments from the list below

CONDENSED MATTER PHYSICS

1. Hall Effect in semiconductor: determination of mobility, Hall coefficient
2. Energy gap of semiconductor (diode/ transistor) by reverse saturation method
3. Thermistor energy gap
4. Fermi Energy of Copper
5. Analysis of X-ray diffraction spectra and calculation of lattice parameter
6. Specific Heat of Solid by Electrical Method
7. Determination of Dielectric Constant of polar liquids
8. Determination of dipole moment of organic liquid
9. B-H Curve Using CRO
10. Spectral Response of Photo Diode and its I-V Characteristics
11. Determination of particle size from XRD pattern using Debye-Scherrer formula
12. Measurement of susceptibility of paramagnetic solution (Quincke's Tube Method)
13. Measurement of susceptibility of paramagnetic solid (Gouy's Method)

NUCLEAR PHYSICS

1. Study the characteristics of Geiger-Muller Tube. Determine the threshold voltage, plateau region and operating voltage
2. Study the absorption of beta particles in aluminium foils using GM counter. Determine mass absorption coefficient of aluminium foils
3. Study the absorption of beta particles in thin copper foils using GM counter and determine mass attenuation coefficient
4. Study the attenuation of gamma rays in lead foils using Co-60 source and GM counter. Calculate mass attenuation coefficient of Lead for Gamma
5. Determine the end point energy of Beta source by studying the absorption of beta particles in aluminium foils
6. Study the attenuation of absorption of gamma rays in polymers / cement using Co-60 source and GM counter

Note: Any relevant experiment suitable can be performed as per availability of instruments

References

1.	[illegible] Practical Physics [illegible]
2.	Sarat Sutradhar [illegible] Physics, [illegible] Publications
3.	S.K. Singh, Advanced experiments [illegible]
4.	Harrison's Experiments in Modern Physics
5.	Worsnop and Flint, Advanced Practical Physics for Students, [illegible]
6.	Squires and Harnett, Practical physics, Progress publishers, [illegible]

Program Name	[illegible]	Semester	VI
Course Title	Electronic Instrumentation & Sensors (Theory)		
Course Code:	[illegible]	No. of Credits	04
Contact hours:	90 Hours	Duration of SEA/Exam	3 Hours
Formative Assessment Marks:	40	Summative Assessment Marks	60

Course Outcomes (COs)

After the successful completion of the course, the student will be able to:

- Identify different types of tests and measuring instruments used in practice and understand their basic working principles.
- Get hands on training in wiring a circuit, soldering, making a measurement using an electronic circuit and instrumentation.
- Have an understanding of the basic electronic components viz. resistors, capacitors, inductors, transistors and integrated circuits, colour codes, values and pin diagram, their practical use.
- Understanding of the measurement of voltage, current, resistance value, identification of the terminals of a transistor and its.
- Identify and understand the different types of transducers and select one in robust and handheld instruments.
- Understand and give a mathematical treatment of the working of rectifier, filter, data converters and different types of transducers.
- Connect the concepts learnt in the course to their practical counterparts in life.
- Develop essential hands on skills in the usage of oscilloscope, multimeters, rectifiers, amplifiers, oscillators and high voltage probes, generators and digital meters.
- Servicing of simple faults of domestic appliances, mixie, juice, immersion heater, fan, rotisserie, battery charger, emergency lamp and the like.

Contents	40 Hrs.
Unit – I Power supply and Measuring Instruments	
Power supply *DC power and its characteristics, Single phase and three phase, need for DC power supply and its characteristics (ripple voltage and frequency), Rectifier bridge, Filters, Capacitor and inductor filter, section and π section filters, ripple factor, electronic voltage regulators, stabilization factor, voltage regulation using IC's.* **Basic electrical measuring instruments** *Cathode ray oscilloscope: Block diagram, basic principle, electron beam, CRT features, signal storage, basic Measurement of amplitude and time using CRO, Basic DC voltmeter for measuring potential difference, Extending Voltmeter range, AC voltmeter using rectifiers, Basic DC ammeter, requirement of a shunt, Extending of ammeter ranges.* **Applications/activities:** *Average value and RMS value of current, Ripple factor, Average AC input power and DC output power, Efficiency of a DC power supply, Analog voltmeter and ammeter.* **Activities:** 1. Design and make your own DC regulated power supply. Power output 5 V, 10 V, ±5 V. Components required: a step down transformer, semiconductor diodes (IN4001/2/7), inductor, capacitor, Zener diode or 3-pin voltage regulator IC. Measure the ripple factor and efficiency at each case. Tabulate the results. 2. Extend the range of measurement of voltage of a voltmeter (analog or digital) using external components and circuits. Design your own circuit and report.	8 8 8

3. Measure the characteristics of the signal waveform using CRO and function generator. Calculate the frequency and time period. Learn the function of Trigger input signal. 4. Learn to use a Storage Oscilloscope for measuring the characteristics of a repetitive input signal. Convince yourself how signal averaging using storage CRO improves S/N ratio.	
Unit–2: Wave form generators and Filters	
Basic principle of standard RF signal generator, Fixed frequency and variable frequency, Any waveform generator, 555 Wein bridge network and its frequency configuration. Triangular and saw tooth wave generators, circuitry and waveforms. Passive and active filters. Fundamental theorem of filters, Proof of the theorem by considering symmetrical T-network. Types of filters, Circuitry and Cut-off frequency and frequency response of Passive (RC) and Active (op-amp based) filters: Low pass, high pass and band pass. **Activities:** 1. Measure the amplitude and frequency of the different waveforms and tabulate the results. Required instruments: A 20 MHz oscilloscope, function generators (sine wave and square wave). 2. Explore where signal filtering methods are used in real life. Visit a nearby telephone exchange and discuss with the Engineers and technicians. Prepare a report. 3. Explore op-amp which works from a single supply voltage (+Vcc). Construct an inverting/non-inverting amplifier powered by a single supply voltage instead of dual or bipolar supply voltage. 4. Op-amp is a linear (analog) IC. Can it be used to function as logic gates? Explore. Construct and implement AND, OR, NAND and NOR gate functions using op-amps. 5. Verify the truth table of any IC/basic gate which can be used. The status of the output may be checked by LED.	8 6 3
Unit – 3: Data conversion and display	
Digital to Analog (D/A) and Analog to digital (A/D) converters – A/D converter with preamplification and filtering, D/A converter – Variable resistor network, Ladder type R-2R D/A converter, Op-amp based D/A converter. (6 hours)	6
Digital display systems and Indicators- Classification of displays, Light emitting diodes (LED) and Liquid Crystal Display (LCD) – Structure and working	4
Data transmission systems – Advantages and disadvantages of digital transmission over analog transmission, Pulse amplitude modulation (PAM), Pulse time modulation (PTM) and Pulse code modulation (PCM). General principles. Principle of Wave length Division (WD)	6
Topic for self study: Discuss principles and its application, phase locked loop	3
Activities: 1. Explore digital modulation and demodulation techniques employed in real life, such as Radio broadcasting station, Television, Mobile phones, Wireless networks, Satellite stations. 2. Explore and find out the difference between a transducer and an instrumentation amplifier. Compare the two and prepare a report.	
Unit – 4: Transducers and sensors	
Definition and types of transducers, Basic characteristics of an electrical transducer, factors governing the selection of a transducer, Resistive transducer-potentiometer, Strain gauge and types (general description), Resistance thermometers-platinum resistance thermometer, Thermistor, Inductive transducer-general principles, Linear variable differential transducer (LVDT)- principle and construction, Capacitive Transducer, Piezo-electric transducer, Photoelectric transducer, Photovoltaic cell, photo diode and photoconductive cell – principle and working.	12

Activities:

1. Construct your own thermocouple for the measurement of temperature with copper and constantan wires. Use the thermocouple and a digital multimeter (DMM). Record the emf (voltage induced) by maintaining one of the junctions at a constant temperature (say at 0 °C using ice and another junction at various temperatures. Tabulate the voltage induced and temperature read out using standard chart (Chart can be downloaded from the internet).
2. Observe a solar water heater. Some solar water heaters are fitted with an anode rod (alloy of aluminium). Study why it is required. Describe the principle behind solar water heater.

References

1. Physics for Degree students (Third Year) – C.L. Arora and P.S. Hemne, S. Chand and Co. Pvt. Ltd. (Unit-1, 2, Power supplies)
2. Electronic Instrumentation, 3rd Edition, H.S. Kalsi, McGraw Hill Education India Pvt. Ltd. 2013 (for rest of the syllabus)
3. Instrumentation – Devices and Systems (2nd Edition) – C.S. Rangan, G.R. Sarma, V.S.V. Mani, Tata McGraw Hill Education Pvt. Ltd. (Especially for circuitry and analysis of signal generators and filters)

Course Title	Electronic Instrumentation & Sensors Lab (Practical)	No. of Credits	02
Course Code	PHY C27P	Contact Hours	4 Hours per week
Formative Assessment of Marks	25 Marks	Summative Assessment Marks	25

Practical Content (NOTE: Do not repeat the experiment already performed in the previous semesters)

List of experiments (Students have to perform a minimum eight experiments from the list below)

1. Construct a DC power supply using a bridge rectifier and a capacitor filter. Use a Zener diode and IC 7805 voltage regulator and study the load and line regulation characteristics. Measure ripple factor with and without filter and compare with theoretical values.
2. Calibration of a low range voltmeter using a potentiometer.
3. Calibration of an ammeter using a potentiometer.
4. Design and construct a Wien bridge oscillator (or any other oscillator) using IC 741 and choose the values of R and C for a desirable frequency of 1 kHz. Vary the value of R and C to change the oscillation frequency.
5. Design and construct a square wave generator using IC 741 or any. Determine its frequency and compare with the theoretical value. Also measure the slew rate of the opamp. If the IC is replaced by LM318, study how does the waveform compare with the previous one.
6. Study the frequency response of a first order Sallen-Key low pass filter.
7. Study the characteristics of an optocoupler (LED and photodiode pair) and determine its efficiency.
8. Study the illumination intensity of a bulb (or any standard photometric source, e.g., Lux meter).
9. Study the characteristics of a LED (variation of intensity of emitted light).
10. Study the characteristics of a thermistor (temperature coefficient of resistance).
11. Study the characteristics of a photo-diode.
12. Determine the coupling coefficient of a piezoelectric crystal.
13. Study the amplitude modulation using a transistor.
14. Performance analysis of A/D and D/A converter using counter (ramp) method and opamp.

NOTE: Any relevant experiment of suitable standard can be performed as per availability of instruments.

References

1. Advanced Practical Physics for students, B. L. Flint and H. T. Worsnop, 1971, Asia Publishing House
2. B.Sc. Practical Physics, C.L. Arora (Revised Edition), S. Chand and Co. Ltd. 2007
3. Practical Physics, G.C. Tewari, Third Edition, Himalaya Publishing House, 2009

KEVEMPT UNIVERSITY
NEP-2020

Pattern of continuous Evaluation and Semester End Examination

Assessment should be a combination of continuous formative evaluation and an end-point summative evaluation as per the Guidelines provided by Karnataka state Higher education Council.

Total marks for each course shall be based on continuous assessment and semester end examinations as per the various patterns of 40: 60 for UG and Semester End theory examinations respectively and 50: 50 for UG and Semester End practical examinations respectively in all the Universities, their Affiliated and Autonomous Colleges.

Total Marks for each course = 100

Continuous assessment (CE) = 20 marks
Continuous assessment (C2) = 20 marks
Semester End Examination (CE) = 60 marks

i) Formative evaluation process (Internal Assessment)

a. The first component (C1) of assessment is for 20 marks. This shall be based on two assignments, seminar, case studies, fieldwork, project work etc. This assessment and award process should be completed after completing 50% of the syllabus of the courses and within 45 working days of the semester program.

b. The second component (C2) of assessment is for 20 marks. This shall be based on the two assignments, seminar, case study, fieldwork, internship / industrial visit/term project work etc. This assessment and award process should be based on the completion of the remaining 50 per cent of the syllabus of the courses of the semester.

Activities	C1	C2	Total Marks
Session Test	15 marks	15 marks	30 marks
Seminar Presentation/ Activity	05 marks	--	05 marks
Case Study/ Assignment/ Fieldwork/ Project work etc.	20 marks	20 marks	40 Marks

ii) Summative evaluation process (Semester End Theory Examination)

During the 17th – 18th week of the semester, a semester end examination shall be conducted by the University for each course. The theory end and final component of assessment (C3) and the maximum marks for the final component will be 60 marks.

iii) Practical Examination: For the practical course of full credit, marks shall be for **50 marks** awarded as follows:

Internal Assessment for 25 Marks: 15 Marks for maintaining Practical record and 10 marks for practical test. Test shall be conducted after the completion of Practical Course.

End Semester Practical Examination: End Semester Practical examination shall be conducted for **25 marks.**

QUESTION PAPER PATTERN FOR DEGREE COURSES
(DSC , OE and Languages)

First Semester ..... Degree Examination, April/May 2022

(CBCS NEP Scheme)

Paper: DSC - .....

Time: 02 Hours **Max. Marks: 60**

I. Select the most appropriate answer from the options provided. 15 x 1 = 15

1) .....

(a) (b) (c) (d)

2) .....

(a) (b) (c) (d)

.

.

.

10) .....

(a) (b) (c) (d)

II. Answer/Write short notes on any **FIVE** of the following 05 x 02 = 10

1)

2)

3)

4)

5)

6)

7)

8)

III. Answer any **THREE** questions from the following 03 x 05 = 15

1)

2)

3)

4)

5)

IV. Answer the following* 02 x 10 = 20

1) .....

(or)

.....

2) .....

(or)

.....

*May have sub questions if required.

KUVEMPU UNIVERSITY

BOARD OF STUDIES (BOS) IN PHYSICS
(UNDER GRADUATE PROGRAMME)

APPROVED SYLLABUS

(To be effective from the academic year 2022-23)

For

III AND IV SEMESTER PHYSICS PAPERS

of

B.SC./B.SC.(HONS.) DEGREE PROGRAMME

(Framed in according with the National Education policy (NEP 2020)
&Model on *Model Physics Syllabus* as per physics expert committee
Karnataka State Higher Education Council, Bangalore)

Syllabus approved in the *Board of Studies*(BOS) meeting held on 22.09.2022 in the
Dept. Hall of Post Graduate in Physics and Research, Jnana Sahyadri, Shankaraghatta

Curriculum Structure-Physics
(Core and Electives)

Semester-III and IV SEM

SEM	DSC	Core Papers
Sem-3:	A3	Wave Motion and Optics
Sem -4:	A4	Thermal Physics and Electronics

Open Electives for 3rd and 4th Semesters

Sl.No.	3rd and 4th Semesters
1.	Optical Instruments (III semester)
2.	Astronomy (III semester)
3.	Climate Science (IV semester)
4.	Energy Studies (IV semester)

Syllabus for III and IV Semesters

Semester-III

Wave motion and Optics

Time: 4 Hrs. /week

Total Marks:[illegible]

	Content	Hrs
Unit – 1: Waves and Superposition of Harmonic Waves		
Chapter 1. Waves	Plane and Spherical Waves, Longitudinal and Transverse Waves, Characteristics of wave motion, Plane Progressive (Travelling) Wave and its equation, Wave Equation – Differential form (derivation), Particle and Wave Velocities, Relation between them (Derivation), Energy Transport – Expression for intensity of progressive wave (Derivation), Newton's Formula for Velocity of Sound, with Laplace's Correction (Derivation), Problems.	[illegible]
	Text Book: 1-4	
Chapter 2. Superposition of Harmonic Waves	Linearity and Superposition Principle, Superposition of two collinear oscillations having (1) equal frequencies and (2) different frequencies (Beats) – Analytical treatment, Applications of Beats, Superposition of two perpendicular Harmonic Oscillations: Lissajous Figures with equal frequencies (Analytical treatment) and Unequal frequencies (Qualitative), Uses of Lissajous figures, Harmonics in musical instruments (Qualitative), Problems.	[illegible]
	Text Book: 1-4	
	Suggested Activity	
	Study of Characteristics of loud speaker and microphone.	
Unit – 2: Standing Waves and Acoustics		
Chapter 3. Standing Waves	Velocity of transverse waves along a stretched string (derivation), Standing (Stationary) Waves on a String – Fixed and Free Ends (qualitative), Theory of Normal modes of vibration in a stretched string, Energy density and energy transport of a transverse wave along a stretched string (Derivation), Vibrations in rods – longitudinal and transverse modes (qualitative), Velocity of Longitudinal Waves in rods (derivation), Normal Modes of vibration in Open and Closed Pipes – Qualitative treatment, Concept of Resonance examples, Theory of Helmholtz resonator, Problems.	[illegible]
	Text Book: 1-4	
Chapter 4. Acoustics	Absorption coefficient, Reverberation and Reverberation time, Sabine's Reverberation formula (derivation), Factors affecting acoustics in buildings, Requisites for good acoustics, Acoustic measurements – intensity and pressure levels.	[illegible]
	Text Book: 1-4	
	Suggested Activities	
	Visit to auditoriums and preparation of report on materials / designs used for good acoustics.	

	Unit – 3: Nature of light and Interference	
Chapter 5 Nature of light	The corpuscular model of light- Limitations. The wave model- Maxwell's electromagnetic wave	3
	Text Book No 3, Sections 2.1 to 2.4 and 2.8	
Chapter 6 Interference of light by division of wavefront	Huygen's theory- Concept of wave front-Interference pattern produced on the surface of water-Coherence-Interference of light waves by division of wave front- Young's double slit experiment- formula for expression for fringe width-Fresnel Biprism- Interference with white light- Numerical Problems. Text Book No 1, Sections 12.1 to 12.3, 14.1 to 14.3, 14.7 to 14.9	4
Chapter 7 Interference of light by division of amplitude	Interference by division of amplitude-Theory of Interference by a plane parallel film illuminated by extended source-Interference by a film with non-parallel reflecting surfaces- role of thin films (Qualitative) —Newton's rings- Reflected light- Michelson Interferometer-Determination of wavelength of light- and difference in two slightly. Theory of interference at an Air wedge- Problems. Text Book No 1, Sections 15.1 to 15.2, 15.9 to 15.11	9
	Suggested Activities	
	Make Your Own Double Slit Experiment	
	Reference (https://www.youtube.com/watch?v=KKGhdF3_Kmc)	
	Activity: What is the reason for the colors like rainbow which we see on ground when oil spills during rainfall?	
	Reference: https://www.sciencefocus.com/article/why-do-rainbow-bands-of	
	Unit – 4: Diffraction and Polarization	
Chapter 8 Fraunhofer diffraction	Introduction- Fraunhofer diffraction- Single slit diffraction pattern (position of) (expression) Minima (Qualitative argument)- Test slit diffraction pattern (position of) Maximum and minima- Theory of plane diffraction grating-Grating spectrum- normal multiple incidence- Resolving power and dispersive power of a Diffraction grating (Qualitative)- Problems. Text Book No 3, Sections 18.1 to 18.2, 18.4 18.8 to 18.9	8
Chapter 9 Fresnel Diffraction	Fresnel Diffraction- Construction of Fresnel half period zones-Expression for radii (Derivation)- Diffraction by a circular aperture and an opaque disc (Qualitative)- The zone plate (Construction)- comparison between zone plate and convex lens- Problems. Text Book No 3, Sections 20.1 to 20.3	7
Chapter 10 Polarization	Introduction-Production of polarized light- Polaroid- Phenomenon of double refraction- properties of O and E rays- Nicol prism- theory its material crystals. Theory of retardation plates - Quarter and half wave plates- Analysis of polarized light- optical activity- Problems. Text Book No 3, Sections 21.1, 22.1 22.4, 22.6 to 22.8	4

Suggested Activities	
	USING CDs AND DVDs AS DIFFRACTION Gratings
	Ref https: [illegible]
	1. What is the physics behind "Diamond" Ring Diamonds
	2. (https: [illegible]

Text Books

Sl No	Title of the Book	Authors Name	Publisher	Year of Publication
1	The Physics of Waves and Oscillations	N K Sinha	Tata McGraw-Hill Publishing Company Ltd., Second Edition	1984
2	Waves and Oscillations	N Subramanyam and Brij Lal	Vikas Publishing House Pvt. Ltd., Second Revised Edition	2010
3	A Text Book of Sound	D R Khanna and R S Bedi	Atma Ram & Sons, Third Edition	1972
4	Oscillations and Waves	Satya Prakash	Pragathi Prakashan, Meerut, Second Edition	2001
5	Optics	Ajoy Ghatak	McGraw-Hill Education (India) Pvt Ltd	2017
6	A text Book of Optics	Brij Lal, N Subrahmanyam, Atul Ghatak	S. Chand Publishing	2012

References Books

Sl. no	Title of the Book	Authors Name	Publisher	Year of Publication
1	Berkeley Physics Course – Waves	Frank S Crawford Jr	Tata Mc Graw-Hill Publishing Company Ltd., Special Indian Edition,	2011
2	Optics	Eugene Hecht	Pearson Paperback	2016
3	Introduction To Optics	Pedrotti and Frank L	Pearson India	3rd Edition
4	Fundamentals of Optics	Francis Jenkins Harvey White	McGraw Hill Education	2017

List of Experiments to be performed in the Laboratory

Sl No	Experiment
1	Velocity of sound through a rod using Sonometer
2	Frequency of AC using Sonometer

3	Study of Lissajous' Figures.
4	To verify the laws of transverse vibrations using Sonometer apparatus
5	Melde's string vibrator using tuning fork
6	Melde's string vibrator using electronic signal generator
7	To determine refractive index of the Material of a prism using sodium source
8	To determine the dispersive power and Cauchy constants of the material of a prism using mercury source
9	To determine the wavelength of sodium source using Michelson's interferometer
10	To determine wavelength of sodium light using Fresnel Biprism
11	To determine wavelength of sodium light using Newton's Rings
12	To determine the thickness of a thin paper by measuring the width of the interference fringes produced by a wedge-shaped Film
13	To determine wavelength of (1) Na source or (2) spectral lines of Hg source using plane diffraction grating
14	To determine dispersive power and resolving power of a plane diffraction grating

NOTE: Any other suitable and relevant experiments may be included, if required.

Reference Book for Laboratory Experiments

Sl. No	Title of the Book	Authors Name	Publisher	Year of Publication
1	Advanced Practical Physics for students	B. L. Flint and H. T. Worsnop	Asia Publishing House	1971
2	A Text Book of Practical Physics	I. Prasad & Ramakrishna	Rana Mahal, 11th Edition	2011
3	Advanced Level Physics Practicals	Michael Nelson and Jon M Ogborn	Heinemann Educational Publishers, 4th Edition	1985
4	A Laboratory Manual of Physics for undergraduate classes	D.P. Khandelwal	Vani Publications	1985

Semester-IV

THERMAL PHYSICS AND ELECTRONICS

Time: 4 Hrs. /week Total Marks: 80

Unit 1:		Laws of Thermodynamics	Hours:
	Chapter 1	Intensive and extensive Thermodynamic variables. Thermodynamic Equilibrium. Zeroth law of thermodynamics. Concept of temperature. Concept of work and heat. State functions. First law of Thermodynamics and its differential form. Internal Energy. First law's various processes – PV diagrams. Applications of first law. Equation of state for an adiabatic process. Work done during isothermal and adiabatic Processes (Derivations). Compressibility and expansion Coefficient. Problems.	4
	Chapter 2	Second Law of Thermodynamics. Reversible and irreversible processes with examples. Conversion of work into heat and heat into work. Heat Engines. Carnot engine & efficiency (derivation). Refrigerator & coefficient of performance. 2nd Law of Thermodynamics: Kelvin-Planck and Clausius statements and their equivalence. Carnot's theorem + statement and proof. Applications of Second Law of Thermodynamics. Thermodynamic scale of temperature and its equivalence to Perfect Gas scale. Problems.	8
	Chapter 3	Entropy: Concept of Entropy, Clausius Theorem, Clausius inequality. Second Law of Thermodynamics in terms of Entropy. Entropy of a perfect gas. Entropy change in reversible and irreversible processes with examples. Entropy of the universe. Principle of increase of Entropy. Temperature-Entropy diagrams for Carnot's Cycle. Problems. Third Law of thermodynamics. Unattainability of absolute zero.	4
	Activities	1. Make a dissertation on Laws of thermodynamics. 2. Make a write up of heat engines and refrigerators. 3. List the reversible and irreversible processes which we may come across. 4. Make important concepts in the study of thermodynamics viz. temperature, heat, and internal energy. Discuss the meaning of these three concepts being careful to distinguish between them. 5. https://www.physics.umd.edu/lecdem/services/demos/demosc4.htm	
Unit 2:	Chapter 4	Thermodynamic Potentials	
		Internal Energy, Enthalpy, Helmholtz free Energy, Gibb's free Energy their Definitions, Properties and significance. Maxwell's thermodynamic relations. Clausius-Clapeyron equation. Joule-Kelvin effect: Joule-Kelvin coefficient for ideal and Van der Waals gases. Inversion curve and temperature of inversion. Thermodynamic equilibrium. Conditions for thermodynamic equilibrium. Thermodynamic criteria for equilibrium. Cooling due to adiabatic demagnetization.	8

	Chapter 5	Maxwell's Thermodynamic Relations	
		Derivation and applications of Maxwell's Relations (1) Clausius Clapeyron Equation (2) Value of $C_p - C_v$ (3) Joule-Thomson Effect and Coefficient for ideal and Van der Waals gas	4
	Chapter 6	Kinetic Theory of Gases	
		Distribution of Velocities, Maxwell's Boltzmann Law of Distribution of Velocities in an ideal Gas (Vx, Vy, Vz and Vector Velocity), Degrees of freedom, Law of Equipartition of Energy (no derivation), Specific heats of Gases	3
	Chapter 7	Radiation	
		Blackbody radiation, spectral distribution, concept of energy density and pressure of radiation (no derivation), Derivation of Planck's law, deduction of Stefan-Boltzmann law and Wien's displacement law from Planck's law, Problems.	4
	Activities	1. Measuring the Solar Constant Materials: Single flat-plate collector and thermometer Activity: Bottle containing water is exposed to solar radiation. The rise in the temperature and time taken are noted. Calculate the heat absorbed by water and relate it to the output of sun 2. Thermoelectric Effects: Suitable two dissimilar metal wires, voltage measuring device. Activity: A thin experiment student will assemble the thermocouple and study the three effects namely, Seebeck, Peltier, and Thomson 3. Inverse square law of radiation Materials: A cardboard with grid, a lamp/bulb with a base, supporting rods, ruler, tabula 4. Activity: Students set the device, they count the light squares on the cardboard with the grid by varying the distance. Accurate necessary measurements and calculations to arrive at inverse square law of radiation. 5. Activity Based Process thinking Problems in Thermodynamics Kinetic Theory 6. http://www.physics.unsw.edu.au/jw/doppler.html#Java	
Unit - 3	Chapter 8	Semiconductor Diode	
		Introduction, p-n junction diode, Characteristics and Parameters, Diode Approximations, Construction and working of rectifiers and its analysis (Half Wave, Full Wave and Bridge), Ripple factor and efficiency (no derivation), Zener diode voltage regulator, Regulator circuit with no load, Loaded Regulator, Numerical examples as applicable Junction transistors, Basics of BJT, BJT operation, Common Base, Common Emitter and Common Collector Characteristics, BJT amplification (DC model), Voltage divider biasing – DC load line and Q point, Problems	07 hours

	chapter-9	Operational amplifier	
		Introduction to Operational Amplifier, Characteristics of ideal OP-AMP, Inverting and non-inverting OP-AMP circuits, Concept of virtual ground, Expression for voltage gain, Definitions of OP-AMP applications: voltage follower, adder, subtractor, integrator and Differentiator circuits with examples	08 hours
	Activities	a. Activity: Write a DC power supply on a bread board or a printed board to give a regulated output voltage of +5 V, +12V, Dual power output +-5 V, Dual power output +-12 V. b. Use 8-pin regulators c. Learn to identify the terminals of different types (packages) of ICs. d. In the case of power transistors, learn how to fix a heat sink for the transistor. e. Understand the concept of virtual ground of an OP-AMP f. Learn the different type of capacitors used for different applications. What is a buffer? Prepare a report on the application of buffers in instrumentation electronics	
Unit-4	chapter-10	Digital electronics	
		Introduction, Switching and Logic levels, Digital Electronics, Number Systems, Decimal Number System, Binary number System, Converting Decimal to Binary, hexadecimal number system, Converting Binary to Hexadecimal, Hexadecimal to Binary, Problems.	08 hours
	chapter-11	Boolean algebra theorems	
		De Morgan's Theorem, Digital Circuits, Logic gates – truth tables for NOT, AND, OR, NAND and NOR Gates – simple IC circuits using discrete components and working, Algebraic simplification, implementation of basic gates using NAND and NOR gates	07 hours
	Activities	1. Learn how to implement logic functions AND and OR using pull diodes and resistors.	

Reference Books:

- Heat and Thermodynamics, M.W. Zemansky, Richard Dittman, 1981, McGraw-Hill.
- Thermal Physics, S. Garg, R. Bansal and Ghosh, 2nd Edition, 1993, Tata McGraw-Hill.
- A Treatise on Heat, Meghnad Saha, and B.N. Srivastava, 1958, Indian Press.
- A Modern Thermodynamics with Statistical Mechanics, Carl S. Helrich, 2008, Springer.
- Thermodynamics, Kinetic Theory & Statistical Thermodynamics, Sears & Salinger, 1986, Narosa.
- An Introduction to Thermal Physics, Daniel T. Schroeder, 2021, Oxford University Press.

Sl. no	Title of the book	Authors name	Publisher	Year of Publication
1.	Electronic Devices and Circuits	David A. Bell	PHI, New Delhi	2004
2.	Integrated Electronics	Jacob Millman and C.C. Halkias		
3.	Digital Fundamentals	Floyd	PHI, New Delhi	2003

Lab Experiments List:

1. Mechanical Equivalent of Heat by Callendar and Barnes method
2. Coefficient of thermal conductivity of copper by Searle's apparatus
3. Coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method
4. Value of Stefan's constant
5. Verification of Stefan's law
6. Variation of thermo-emf across the junctions of a thermocouple with temperature
7. Verification of Clausius–Clapeyron equation and determination of specific latent heat

Sl.No	Experiments on electronics
8	V-I characteristics of Silicon & Germanium PN junction diodes (FB & PB) V-I Characteristics of Zener diode and voltage regulator
9	Characteristics of BJT in Common Emitter Configuration Frequency response of CE amplifier Analog and digital IC Amplifier (Inverting Mode)
10	Half Wave and Full Wave Rectifier with and without Filter.
11	Non-inverting and inverting op-amp circuits-Gain and Frequency response Voltage follower, Adder and Subtractor circuits
12	Truth table verification of logic gates using TTL IC series (IC) Transfer characteristics of a TTL gate using DRO Logic Gates, Combinational circuits, Sequential circuits.

NOTE: Any other suitable and valid lab experiments may be included, if required.

Sl.No	Title of the Book	Author's Name	Publisher	Year of Publication
1	Basic Electronics Lab (PCAP) Manual: 2022-23		National Institute of Technical Education and Research, Bhubaneswar	2023

Suggested Readings:

1. B.L. Worsnop & H.T. Flint, "Advanced Practical Physics for Students", Methuen & Co. Ltd, London, 1951, 3rd
2. S. Rattigan, W. Anderton, "Engineering Practical Physics", Cengage Learning India Pvt. Ltd., 2012, 1st

Student seminars

Student (4 or 5 students in a group) groups may be assigned to give a seminar on a topic. They need to make a detailed study on the topic and prepare power point slides for the presentation. One student out of the group may be called randomly to present the certain portion of the topic. Similarly, other students may be called randomly to present remaining portion of the topic. In this each student must study whole topic as they don't know which portion they present. Each 5 groups may present their topic.

Model Seminar Topics

1. Calorimetry
2. Thermometry
3. Kinetic theory of matter
4. Behavior of real gases
5. Transmission of heat
6. Transport phenomena in gases
7. Radiation laws
8. Laws of thermodynamics
9. Thermodynamical relationships
10. Heat engines
11. Production of low temperatures
12. Air conditioning systems
13. Entropy
14. Global warming
15. Classical and quantum statistics

SYLLABUS FOR OPEN ELECTIVES

THIRD SEMESTER

[illegible]

Time: [illegible] Max Marks:

Content		Hrs
Unit – I: History and Observations		
Chapter: I	Ancient Astronomy Greek Observations, Nilometer, Observations of Surya, Observations, Arabic Observations, Chinese Observations	2
Chapter: 2	Indian Astronomy Vedic Astronomy, Ancient Astronomy – Aryabhata, Varahamihira, Bhaskara, Astronomy in Indian Sanskrit, Discovery of the Eighteen Celebrations of Equinox	3
Chapter: 3	Medieval & Modern Astronomy Invention of Telescope, Models of the Solar System & Cosmos, Observations by Tycho Brahe, Kepler, Galileo, Newton and Other Modern Astronomers	2
Chapter: 4	Optical tools for Astronomy Pin Hole, Binoculars, Telescopes & Imaging	3
Chapter: 5	Mathematical Methods of Observations Angular Measurement, Trigonometric Functions, Spider Paradox	3
Chapter: 6	Observational Techniques Celestial Directions, Azimuth, Altitude, Measurement using Compass and Hour, Equatorial Coordinates, Latitudes, Magnitude, Colours etc	2
Unit – II: Unit-2: Observations of the Solar System		
Chapter: 7.	The Sun Eclipse and the Orientation of the Earth, Seasons, Solstices and Equinox, Observations of the Sun from Earth, Annual motion, Eclipses, Zero shadow day, Sunspots	4
Chapter: 8	The Moon Earth-Moon system – Phases, Lunar Eclipses, Eclipse and Lunar Orbital Plane – Nodes, Lunar Month, Full Moon Names	3
Chapter: 9	Inner Planets: Mercury & Venus Observational History, Observational Features, Appearance, Apparitions, Elongations, Superior Conjunction, Inferior Conjunction, Transits	4
Chapter: 10.	Outer Planets Outer Planets: Mars, Jupiter & Saturn Observational History, Observational Features, Appearance, Frequency of Oppositions, Opposition, Conjunction, Moons, Eclipses, Galilean Moons, Saturn's Rings	3

Unit III Major Astronomic Observations		
Chapter: 11	March to June Prominent Stars and Constellations Visible during this period Methods of Spotting	2
Chapter: 12	June to September Prominent Stars and Constellations Visible during this period Methods of Spotting	2
Chapter: 13	September to December Prominent Stars and Constellations Visible during this period Methods of Spotting	2
Chapter: 14	December to March Prominent Stars and Constellations Visible during this period Methods of Spotting	2

Reference Books:

1 The Stargazer's Guide : How to Read Our Night Sky by Emily Winterburn

2. A guide to the Night Sky : Beginners Handbook by P.N. Shankar

3 The Complete Idiot's guide to Astronomy by Christopher De Pree and Alan Axelrod

Text Books:

1. P. N. SHANKAR A GUIDE TO THE NIGHT SKY
   https://www.nehruplanetarium.org/wp-content/uploads/2020/08/A-Guide-to-the-Night-Sky-by-P.N.-Shankar.pdf
2. Ramachandra Roy of Star Watching , National Book Trust of India 2019

Reference Books:

Christopher De Pree: The Complete Idiot's Guide to Astronomy, Penguin USA, 2000

Emily Winterburn: The Stargazer's Guide: How to Read Our Night Sky, Constable and Robinson, 2008

Activities

Sl No.	Experiment
1	Measuring Astronomical Unit (Parallax)
2	Measuring Distance to the Planets
3	Estimation of the Solar Diameter using Pin Hole
4	Measuring Height of an Object Using Clinometer
5	Star spotting using constellation maps
6	Constellation spotting using Stellarium
7	Estimation of Satellite Speeds to observe them as they orbit using Planisphere
8	Estimation of the Size of the Solar System using Light Years
9	Daily Tracking of Celestial Objects using a map
10	Measuring Constellations of the Sun using Night Viewings or Planetariums

SYLLABUS FOR OPEN ELECTIVES

FOURTH SEMESTER

Climate Science

Time: 1 hr. min. – 01 hr. minute Max Marks:

Module 1	**Atmosphere** Atmospheric Science, Meteorology, and Climatology; Layers of the atmosphere and their characteristics; Composition of the atmosphere; Energy balance; Temperature variations in the atmosphere; Heat budget of the Earth; Greenhouse gases; Aerosols; Ozone layer of the atmosphere; Temperature variations in the atmosphere; Lapse rate; Inversion; Air masses in the atmosphere; Atmospheric circulation; Coriolis force; Pressure gradient force; Geostrophic wind; Cyclones and anticyclones; Hydrological cycle.	(12 hours)
Module 2	**Climate Science** Overview of Intergovernmental Panel on Climate Change (IPCC); Global and regional scale climate variations; Paleoclimate; Ice core records; Climate sensitivity; Climate feedbacks; Climate models; Global Climate Models (GCM); Earth system models; Applications of GCM models Regional climate models; Downscaling techniques; Statistical downscaling; Dynamical downscaling; Limitations of climate models Climate change impacts; Observed changes in climate variables; Temperature, precipitation, sea level rise; Impacts on ecosystems, agriculture, water resources, and human health; Vulnerability and adaptation assessments; Climate change mitigation strategies; Renewable energy technologies; Carbon sequestration; Geoengineering approaches; International agreements and policies; Kyoto Protocol; Paris Agreement; Nationally Determined Contributions (NDCs); Carbon trading and carbon markets; Challenges and opportunities in climate change mitigation	(12 hours)
Module 3	**Global Climate Change** Causes of global warming; Greenhouse gases and their sources; Carbon dioxide and other greenhouse gases; Anthropogenic activities contributing to global warming; Deforestation and land use changes; Industrialization and fossil fuel combustion; Consequences of global warming; Rise in sea level; Melting of glaciers; Changes in weather patterns; Impacts on biodiversity and ecosystems; Extinction of species; Ecosystem disruptions Understanding of "Can we mitigate global warming?" Solutions for mitigating global warming; Renewable energy sources; Energy efficiency measures; Carbon capture and storage; Reforestation and afforestation; Sustainable agriculture practices; Policy and regulatory measures; International cooperation and agreements; Public awareness and education; Challenges and barriers to implementation	(12 hours)
	Activities to be carried out by Course Coordinator: i. Ask a few questions in the following manner: (a) Imagine that you are living in a country where there is no electricity. How do you think your daily routine would be affected? Can you describe your typical day without electricity? (b) How would your life change if you had access to electricity? What are some of the benefits you would enjoy? ii. Watch a short video clip about life in a village without electricity. iii. Group the students into groups of 4 and ask them to discuss the following questions:	

	4. Learn to determine atmospheric humidity using wet bulb and dry bulb thermometers. 5. Visit the website of Indian Institute of Tropical Meteorology (IITM) and keep track of occurrence and land fall of cyclone prediction. 6. Learn about ozone layer and its depletion and ozone hole. 7. Keep track of melting of glaciers in the arctic and antarctic region through data base available over several decades. 8. Watch documentary films on global warming and climate change (produced by reputed film makers and prepared by British Council and BBC).	
	Reference: 1. Basics of Atmospheric Science – A. Chandrasekar, PHI Learning Private Ltd. New Delhi, 2010. 2. Fundamentals of Atmospheric Modelling, Mark Z. Jacobson, Cambridge University Press, 2005.	

SYLLABUS FOR OPEN ELECTIVE

ENERGY SOURCES

Time: 2 hrs./week : 02 Hr. session)

		No. of periods
Unit I	Non-Renewable energy sources	
	Chapter-1: Introduction	
	Energy: concept, sources of power, its significance & scenario Classification of energy sources: Primary and Secondary energy, Commercial and Non-commercial energy, Renewable and Non-renewable energy, Conventional and Non-conventional energy, Brief on Origin, Examples and Importance, Importance of Non-commercial energy resources.	04
	Chapter-2: Conventional energy sources	
	Fossil fuels & Nuclear energy: production & extraction, origin, role and significance, Impact on environment, Air pollution & challenges, Overview of Indian & world energy scenario with latest statistics, case studies & summary, Brief idea, Details & green aspects in their utilization/usage	08
	Total	12
Unit II	Renewable energy sources	
	Chapter-1: Introduction	
	Need of renewable energy, non-conventional energy sources, An overview of developments in Offshore Wind Energy, Tidal Energy, Wave energy systems, Ocean Thermal Energy Conversion, solar energy, biomass, biochemical conversion, biogas generation, geothermal energy, tidal energy, Hydroelectricity	08
	Chapter 2 : Solar energy :	
	Solar Energy, Key features, its importance, Merits & demerits of solar energy Applications of solar energy: Solar water heater, flat plate collector, solar distillation, solar cookers, solar green houses, solar cell, brief discussion of each, Need and characteristics of photovoltaic (PV) systems, PV module and supply systems, net metering and battery backup systems.	08
	Total	16
Unit III	Chapter-1: Wind and Tidal Energy harnessing	
	Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind technology, Power electronic interfaces and grid connection requirements Ocean Energy Potential against Wind and Solar, Wave Characteristics and Resource, Wave Energy Devices, Tide characteristics and features, Tide Energy Technologies, Ocean Thermal Energy	08
	Chapter-2 : Geothermal and fuel cell energy	
	Geothermal Resources, Geothermal Technologies	02
	Hydrogen resources, hydrogen technologies, environmental aspects of hydrogen power sources	05
	Carbon capture technologies, fuel cell types, power electronics	01
	Total	16

KEVEMPT UNIVERSITY
NEP-2020

Pattern of continuous Evaluation and Semester End Examination

Assessment should be a combination of continuous formative evaluation and an end-point summative evaluation as per the Guidelines provided by Karnataka state Higher education Council.

Total marks for each course shall be based on continuous assessment and semester end examinations as per the various patterns of 40: 60 for UG and Semester End theory examinations respectively and 50: 50 for UG and Semester End practical examinations respectively, in all the Universities, their Affiliated and Autonomous Colleges.

Total Marks for each course = 100

Continuous assessment (C1) = 20 marks
Continuous assessment (C2) = 20 marks
Semester End Examinations (C3) = 60 marks

i. Formative evaluation process (Internal Assessment):

a. The first component (C1) of assessment is for 20 marks. This shall be based on test, assignments, seminars, case studies, field work, project work etc. This assessment and award process should be completed after completing 50% of the syllabus of the courses and within 45 working days of the semester program.

b. The second component (C2) of assessment is for 20 marks. This shall be based on the test, assignment, seminar, case study, fieldwork, internship / industrial production/project work etc. This assessment and award process should be based on the completion of the remaining 50 per cent of the syllabus of the courses of the semester.

Activities	C1	C2	Total Marks
Skill(s) Test	10 marks	10 marks	20 marks
Seminar Presentation/ Activity	10 marks	-	20 marks
Case study/ Assignment/ Fieldwork/ Project work etc.	-	10 marks	20 Marks
	20 marks	20 marks	40 Marks

ii. Summative evaluation process (Semester End Theory Examinations):

During the 17th – 18th week of the semester, examinations shall be conducted by the University for each course. The exam for the first and final component of assessment (C3) and the maximum marks for the final component will be 60 marks.

iii. Practical Examinations: For the practical courses of full credit, marks shall be for **50 marks** as applied as follows.

Internal Assessment for 25 Marks: 15 Marks for continuous Practical record and 10 Marks for practical test. Test shall be conducted after the completion of Practical course.

End Semester Practical Examination: End Semester Practical examination shall be conducted for **25 marks.**

QUESTION PAPER PATTERN FOR DEGREE COURSES
(DSC, OE and Languages)

First Semester ..... Degree Examination, April/May 2022

(CBCS/NEP Scheme)

Paper: DSC -

Time: 02 Hours **Max. Marks: 60**

I. Select the most appropriate answer from the options provided. 10 x 1 = 10

1).
(a) (b) (c) (d)

2).
(a) (b) (c) (d)

10).
(a) (b) (c) (d)

II. Answer/Write short notes on any **FIVE** of the following 5 x 6 = 15

1)
2)
3)
4)
5)
6)
7)
8)

III. Answer any **THREE** questions from the following: 3 x 10 = 15

1)
2)
3)
4)
5)

IV. Answer the following: 2 x 10 = 20

1)

(or)

2)

(or)

*Key for A, B, C, D questions (if required)

KUVEMPU UNIVERSITY

BOARD OF STUDIES (BOS) IN PHYSICS
(UNDER GRADUATE PROGRAMME)

APPROVED SYLLABUS

(To be effective from the academic year 2021-22)

For

I AND II SEMESTER PHYSICS PAPERS

of

B.SC./B.SC.(HONS.) DEGREE PROGRAMME

(Framed in according with the National Education policy (NEP 2020)
Based on *Model Physics Syllabus* prepared by physics expert committee,
Karnataka State Higher Education Council, Bangalore)

Syllabus approved in the Board of Studies (BOS) meeting held on : 23-09-2022 at the
Department of Post Graduate Studies in Physics and Research, Jnana Sahyadri, Shankaraghatta

Curriculum Structure-Physics
(Core and Electives)
Semesters- I and II

SEM	DSC	Core Papers
Sem-1	1A1	[illegible]
Sem -2	2A2	[illegible]

Open Electives for 1st and 2nd Semesters

Sl.No:	1st and 2nd Semesters
1.	[illegible]
2.	[illegible]
3.	[illegible]
4.	[illegible]

Course Content Semester – I

Mechanics and Properties of Matter

Course Title: Mechanics and Properties of Matter	Course Credits: 4
Total Contact Hours: 52	Duration of ESA: 3 hours
Formative Assessment Marks: 30	Summative Assessment Marks: 70

Mechanics & Properties of Matter

Credit: 4+2		**Theory: 4 hours /Week**

Unit – 1

Topics to be covered teaching hours		Teaching Hours
Chapter No. 1	**Units and measurements:** Systems of units (CGS and SI), measurement of length, mass and time, dimensions of physical quantities, dimensional formulae. Limitations of units, errors and significant figures.	3
Chapter No. 2	**Frames of reference:** Inertial frame – Galilean principle of relativity statement and proof – Non-inertial frame – To show that uniformly accelerated frame is non-inertial – Pseudo force – examples – Rotating frames of reference – derivation of expression for force. Types of forces existing frame. Discussion of the earth as an inertial frame.	4
Chapter No. 3	**Momentum and Energy:** – Conservation of linear momentum –examples. Rocket motion – expression for maximum and final velocities – effect of earth's gravity. Work done by a variable force. Work – energy theorem for variable – conservative force fields, potential energy – conservation of energy, examples – Atwood machine, calculation of acceleration using conservation of energy.	4
Topic for self study	Foucault Pendulum	
	Suggested Activities	
Activity No. 1	1. i). Students can measure diameters of small balls of different size and estimate their volumes. 2. ii). Students can measure lengths of rods of different size. iii). Students can measure volume of a liquid. iv). Students can measure distances and put the result both in CGS and SI units in 2, 3 and 4 significant figures. Ask them to mention the precision of the measurement. v). students can estimate standard deviations where ever possible.	
Activity No. 2	Students survey and understand conservation of energy in every day examples. Two examples i) What happens in solar energy panels ii) Pushing an object on the table it moves iii) Moving car like a pulled car means pulled car to move. In these cases, energy is conserved. How? Understand and verify if possible.	

Unit – 2

Chapter No. 4	**Laws of Motion:** Newton's Laws of motion. Dynamics of single and a system of particles. Centre of mass. Equations of motion – Linear & angular momentum of a system of particles – Conservation of angular momentum – examples.	3

Chapter No. 5	**Dynamics of Rigid bodies:** Rotational motion about an axis, moment of inertia (MI) - General Theorem on moment of inertia – MI of a uniform rod, MI of a rectangular Lamina and solid cylinder – Derivation of expressions. Relation between torque and angular acceleration, Rotational energy, Flywheel – (qualitative discussion) - Theory of compound pendulum and determination of g.	4
Chapter No. 6	**Gravitation:** Central force – characteristics & examples – Motion of a particle in a central force field (motion is in a plane, angular momentum is conserved, areal velocity is constant) – Law of Gravitation (Cavendish's experiment), Kepler's laws (statements, orbital equation for elliptical orbit) – significance of different orbits. Satellite in a circular orbit – derivation of expressions for orbital velocity, time period and escape velocity.	3
Topics for self-study:	Geosynchronous orbits. Basic idea of global positioning system (GPS).	
	Suggested Activities	
Activity No.3	Moment of inertia is an abstract concept. It simply gives a measure of rotational inertia of a rigid body and it is proportional to the product of the square of radius of the body and its mass, m. Students by referring to websites, can construct and perform simple experiments to verify that $MI \propto mr^2$. **References:** www.standardsdirect.org, www.pathnet.com, www.sec.gsfc.nasa.edu	
Activity No. 4	Prepare suitable charts and give seminar talks in the class.	
	Unit – 3	
Chapter No. 7	**Elasticity:** Hooke's law – Stress-strain diagram, elastic moduli relation between elastic constants (Derivation), Poisson's ratio, expression for Poisson's ratio in terms of elastic constants. Work done in stretching (Derivation) and work done in twisting a wire. Twisting couple on a cylinder (Derivation). Torsional pendulum—Expression for Time period (Derivation) - Determination of rigidity modulus and moment of inertia – Determination of η, σ and k by Searle's method with necessary theory. Bending of beams – Expression for Bending moment (derivation). Theory of Single cantilever.	13
	Suggested Activities	
Activity No. 5	Arrange a steel spring with its top fixed with a rigid support on a wall and a meter scale alongside. Add 100 g load at a time on the bottom of the hanger in steps. This means that while putting each 100g load, we are increasing the stretching force by 1N. Measure the extension for loads up to 700g. Plot a graph of extension versus load. Shape of the graph should be a straight line indicating that the rate of load to extension is constant. Go for higher loads and find out elastic limit of the material.	
Activity No. 6	Repeat the above experiment with rubber and other materials and find out what happens after exceeding elastic limit. Plot and compare	

Unit – 4		
Chapter No. 8	Surface tension: Definition of surface tension, Surface energy, relation between surface tension and surface energy, pressure difference across curved surface (derivation) –examples, excess pressure inside spherical liquid drop & bubble, angle of contact – Determination of surface tension by drop weight method with necessary theory, Factors affecting surface tension of a liquid	8
Chapter No. 9	Viscosity: Streamline flow, turbulent flow, equation of continuity, determination of coefficient of viscosity by Poiseuille's method (derivation), Stokes law (derivation from dimensional branch), terminal velocity, factors affecting viscosity of a liquid	7
Topics for Self-study	Capillarity and its applications	
Suggested Activities		
Activity No. 7	1. Measure surface tension of water and other common liquids and compare and learn i) Why water has high ST? think of reasons ii) Check whether ST is a function of temperature? You can do it by heating the water to different temperatures and measure ST. iii) Plot ST versus T and learn how it behaves. Mix some quantity of kerosene to any oil to water and measure ST. Check whether ST for the mixture is more or less than pure water. List the reasons.	
Activity No. 8	2. Collect a set of different liquids and measure their viscosity i) Find out whether sticky or non-sticky liquids are more viscous. List the reasons. ii) Mix non sticky liquid to the sticky liquid in defined quantities and measure viscosity. Find out viscosity is increasing or decreasing with increase of non-sticky liquid concentration. iii) Do the above experiment by mixing sticky liquid to the non-sticky liquid. Find out change in viscosity with increase of concentration of sticky liquid. List the applications where concept of viscosity plays a dominant role.	

NOTE: *Sufficient number of numerical problems must be worked out in each chapter.*

Text Books:

Sl.No.	Title of the Book	Author's Name	Publisher	Year of Publication
1	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]

Reference Books:

Sl.No.	Title of the Book	Author's Name	Publisher	Year of Publication
1	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]

List of Experiments to be performed in the Laboratory:

1.	Determination of g using bar pendulum (L versus T and L versus T^2 graphs)
2.	Determination of moment of inertia of a fly wheel
3.	Determination of rigidity modulus using torsional pendulum
4.	Modulus of rigidity of wire – Static torsion method
5.	Determination of different constants of a wire by Searle's method
6.	Young's modulus by Koenig's method
7.	Viscosity by Stoke's method
8.	Verification of Hook's law
9.	Determination of surface tension of a liquid and the interfacial tension between two liquids using drop weight method
10.	Study of motion of a spring and to calculate Spring constant, g and effective mass
11.	Determination of Young's modulus of a bar by the single cantilever method
12.	Determination of Young's modulus of a bar by uniform bending method
13.	Radius of capillary tube by reading public method
14.	Verification of parallel and perpendicular axis theorems

(Minimum EIGHT experiments have to be conducted)

Reference Book for Laboratory Experiments

Sl. No.	Title of the Book	Author's Name	Publisher	Year of Publication
1	Practical physics	S.Gupta	Unknown	2015
2	A textbook of practical physics		Unknown	
3	B.Sc. Practical Physics	C.L. Arora	S. Chand & Co.	2007
4	A text book of practical physics	S. Chattopadhyay, M. Mukherjee & M. Saha	New Central Book Agency Pvt Ltd	2011

Semester – II

Electricity & Magnetism

Course Title: Electricity and Magnetism	Course Credit: 4
Total Contact Hours: 52	Duration of ESA: 2 hours
Formative Assessment Marks: 30	Summative Assessment Marks: 70
Model Syllabus Authors:	Physics Expert Committee

Electricity & Magnetism

Credit: 4+2		Theory: 4 hours/Week
Unit – 1		
	Topics to be covered taught hours	**Teaching Hours**
Chapter No. 1	**Electric charge and field:** Coulomb's law, electric field strength, electric field lines, point charge in an electric field and electric dipole, work done by a charge (derivation of the expression for potential energy).	2
Chapter No. 2	**Gauss's law and its applications:** electric fields of a (i) spherical charge distribution, (ii) line charge and (iii) an infinite flat sheet of charge.	3
Chapter No. 3	**Electric potential:** line integral, gradient of a scalar function, relation between field and potential. Potential due to point charge and distribution of charges (Examples: potential associated with a spherical charge distribution, infinite line charge distribution, infinite plane sheet of charge). Potential (and field) due to a dipole (derivation) and electric quadrupole.	8
Topic for self-study	Constant potential surfaces.	
Suggested Activities		
Activity No. 1	1. Learn the difference between and DC and AC electricity and their characteristics. Voltage and the frequency standards in different countries. 2. A small project report on production of electricity as a source of energy: Different methods.	
Activity No. 2	1. Learn to use a multimeter (analog and digital) to measure voltage, current and resistance. Continuity testing of a wire. 2. Learn about household electrical connections terminals: Live, neutral and ground and voltage between the terminals. Role of earthing and safety measures.	
Unit – 2		
Chapter No. 4	**Conductors in electrostatic field:** Conductors and insulators, conductors in electric field. Capacitance and capacitors, calculating capacitance in a parallel plate capacitor, parallel plate capacitor with dielectric, dielectrics: an atomic view, Energy stored in a capacitor, Gauss's law for a dielectric medium.	8
Chapter No. 5	**Electric currents and current density:** Electrical conductivity and Ohm's law. Physics of electrical conduction – conduction in metals and semiconductors. Circuits and circuit elements. Variable (Transient) current in capacitive circuits. Resistor, inductor and capacitor and their combinations. RL & RC – expressions for voltage and current (derivations) – Time constant in each case.	8
Topic for self-study	Current and voltage behaviour in series combination of R, L and C circuits	

Suggested Activities		
Activity No. 3	1. Learn about electrical appliances which work with AC and DC electricity. 2. Learn about types of resistors and their colour codes and types of capacitors (electrolytic and non-electrolytic).	
Activity No. 4	1. Learn about power transmission, 3-phase electricity, voltage and power. 2. Visit a nearby electrical power station. Interact with line men, Electrical engineers and managers. Discuss about power loss in transmission. How to reduce it? 3. Prepare a small project report on street lighting and types of electrical bulbs.	

Unit – 3		
Chapter No. 6	Magnetism: Definition of magnetic field, Ampere's law and Biot-Savart law (magnetic force and magnetic flux) – Application of Ampere's law to calculate magnetic fields due to (a) a straight long conductor (b) a long solenoid. Magnetic force on a moving charge. Magnetic force on a current carrying conductor. Electromagnetic induction, conducting rod moving in a magnetic field – expression for induced emf, law of induction. Relation between self and mutual inductance for a pair of co-axial coils. Energy stored in a magnetic field	7
Chapter No. 7	Alternating current circuits: Types of AC (sinusoidal and non-sinusoidal) – Complex representation (j operator) of AC- RL, RC, LCR series circuits – derivation of expressions for current and impedance –Condition for Resonance, Bandwidth, quality factor and voltage magnification,Parallel LCR Resonant circuit – Bandwidth, quality factor and Current magnification.Power and energy in AC circuits -power factor.	6
Topic for self-study	Rail diver	
Suggested Activities		
Activity No. 5	Activity: 1. Prepare a small project report on street lighting and types of electrical bulbs. 2. Learn the measurement of electric current using digital multimeter.	
Activity No. 6	Build a small coil with insulated copper wire. Connect to sensitive moving coil ammeter. Verify magnetic induction using a powerful bar magnet.	
Unit – 4		
Chapter No. 8	Electromagnetic waves: Equation of continuity, Maxwell's equations - Deduction of equations from empirical laws of Gauss, Faraday and Ampere, displacement current concept and significance, electromagnetic wave-Derivation of wave equations for E and B - light as an EM wave. Characteristics of EM waves,energy transported by electromagnetic waves-Poynting vector, significance of Poynting vector - Poynting theorem. Electromagnetic wave in different forms of media (Qualitative)	8
Chapter No. 9	Field of a current loop, magnetic moment, Electric current in atoms, electron spin and magnetic moment, magnetization and magnetic susceptibility. Types of magnetic materials -diamagnetic, paramagnetic and ferromagnetic materials - Origin of dia, para and ferromagnetism on the basis of electronic structure of atom.Variation of susceptibility with temperature.	4
Topic for Self-study	B-H hysteresis curves and its characteristics - Ferrites	

Suggested Activities		
Activity No. 7	1. Prepare a small project report on production of magnetic field. Permanent magnets, electromagnets and superconducting magnets. 2. Learn the principle of working of a Gauss meter to measure magnetic field.	
Activity No. 8	1. Model the earth's magnetic field with a diagram. Explain the effect of tilt of the earth's axis and reasons for the change in the tilt of the earth's axis over thousands of years.	

NOTE: *Sufficient number of numerical problems must be worked out in each chapter.*

References Books:

Sl. No	Title of the Book	Author's Name	Publisher	Year of Publication
1	Physics Fields	David Halliday and Robert Resnick	Wiley Eastern Limited	2007
2	Berkeley Physics Course Vol.2 Electricity and Magnetism Special Edition	Edward M Purcell	Tata Mc Graw Hill Publishing Company Ltd. New Delhi	2008

List of Experiments to be performed in the Laboratory

1	Experiments on forces of electric and magnetic fields between charged configurations
2	Determination of components of earth's magnetic field using a Helmholtz galvanometer
3	Determination of capacitance of a condenser using B.G.
4	Determination of high resistance by leakage using B.G.
5	Determination of mutual inductance using B.G.
6	Charging and discharging of a capacitor/inductor coupled device (charging and time constant measurements)
7	Series and parallel resonance circuits (LCR circuits)
8	Impedance of series RC circuit- determination of frequency of AC
9	Study the characteristics of a diode (PC and PZ Curves)
10	Determination of self inductance of a coil
11	Verification of laws of combination of capacitances and determination of unknown capacitance using De - Sauty bridge
12	Determination of Hysteresis loss in a given transformer core (Lissajous figures)

(Minimum EIGHT experiments have to be carried out)

Activity Based Pedagogy:

(Design, Activity and Assessment)

Conducting activity based teaching-learning experience for students empowers students with several graduate attributes by addressing several Outcomes at different levels of the Cognitive Bloom Taxonomy of Learning like Clarity of Concept, ability to apply knowledge, evaluate and analyze the results, while they are also learning through the Affective and Psychomotor domains of Learning through self-learning, group dynamics and team work, communication and presentation skills, ethics, life long learning, etc. These experiences must be more than the set of specific experimental activities and should be able to be performed outside laboratories.

Example 1: Elastic Properties of Solids:

The most important concept of studying elastic properties of solids is the Hooke's Law, which defines the stress-strain relationship.

Class 1: Defining problems, forming groups and giving instructions

- The students should be made into desired groups of 4 to 5 members, depending on the class strength, consisting of diverse kinds of students in academic calendar, behaviour, etc.
- Different materials of varying elastic properties should be given to each group, and should be asked to plot a graph of stress vs. strain for these materials in 3-4 days.
- Give clear instructions and clarify doubts, but not giving the procedure for the experiments. Students should discuss among themselves and consult books and seniors to identify the procedure to obtain the stress-strain graph. They should use only those tools or other commonly available tools to perform all the experiments.

Class 2: Presentations and discussions for finalizing views in 3-4 more weeks

- Each group will be asked to make a presentation of 2 power point slides, where the first one explains the procedure they have thought to execute the results and the second one shows their measured graph, and on what they have plotted. This slide should also contain two to three explanations of why both the plots differ.
- The student who will make the presentation on behalf of the group will be randomly selected that before the presentation. This will ensure that all group members will be mentally ready to answer after the presentation.
- The teacher should give equal marks to each member of a group depending on the confidence, attention and clarity of concepts and results obtained and ability to analyze.

The following Program Outcomes will be attained by the students as well as Lifelong Learning:

PO 1: Disciplinary Knowledge: Knowledge of science and ability to apply to relevant areas.
PO 2: Problem solving: Use knowledge, scientific reasoning skills, tools or techniques for solving problems in the areas of their discipline.
PO 9: Individual and teamwork: Work effectively as an individual or in team members or a multidisciplinary team.
PO 10: Communication: Communicate effectively with the wider technical community and society at large.

Example 2: Periodic and Non-Periodic Motions

Most important aspect of understanding this topic is to distinguish between the amplitude versus distance and amplitude versus time plots.

Class 1: Defining problem and arousing curiosity

- Each student will be asked to list as many observations as possible, under the two types of motion as they observe in the external world (home, market, college, etc.) in 10 days.
- The student will be asked to identify any two motions in each of the lists and plot graphs of amplitude versus distance and amplitude versus time for each of these motions for 10 days.

Class 2: Data collection by students and debriefing talk

- Each student is asked to submit the list of periodic and non-periodic motions observed in everyday life.
- Each student in the school to submit the amplitude versus distance and amplitude versus time graphs of any two periodic motions and any two non-periodic motions for 10 days.
- The submissions are randomly distributed among other students. Teacher also discusses the two types of motions in the lists of students with them, how the graphs will look like.
- Now students are asked to evaluate and mark the submissions of other students that they will have not done the marked papers are returned to the respective students.
- Each student is given an opportunity to convince the marks he/she got and each student who has given the marks should be able to defend his choice of marks.
- While discussing the key, mark obtained and the plots made, the teacher intervenes wherever in each student.

The following Program Outcomes will be ensured by the students on successful completion of the

PO1: Basic knowledge of science and ability to apply in relevant areas.
PO2: Apply the professional ethics in various engineering situations.
PO5: Communication skills: Communicate effectively with the engineering community and with society at large such as, being able to comprehend and write effective reports and design documentation.

Student seminars

Student (4 to 5 students as a group) groups may be assigned to give a seminar on a topic. They need to make a detailed study on the topic and prepare power point slides for the presentation. One student out of the group may be called randomly to present the various portions of the topic. Similarly, other students may be called randomly to present remaining portions of the topic, so that each student must study whole topic. In other words, the group must present their topic.

Model Seminar Topics:

1. Calorimetry
2. Thermometry
3. Kinetic theory of matter
4. Behavior of real gases
5. Transmission of heat
6. Transport phenomena in gases
7. Radiation laws
8. Laws of thermodynamics
9. Thermodynamical relationships
10. Heat engines
11. Production of low temperatures
12. Air conditioning systems
13. Entropy
14. Global warming
15. Classical and quantum statistics

B.Sc. DEGREE FORMATIVE AND SUMMATIVE ASSESSMENTS

(Under New syllabus of NEP-2020 Scheme, Effective from Academic Year 2021-22)

SEMESTER: I/II

CORE COURSE and PAPER: PHYSICS – I/II

1. FORMATIVE ASSESSMENT (Max. Marks = 30)		
ASSESSMENT TYPE	DETAILS/METHOD	MARKS
Test	Theory paper in tests	20 (Av. of Two tests)
Activity 1 (Experiment Based)	Experimental Set Up + Measurements + Results	10
Activity 2 (Seminar Based)	Chart/Slide preparation and presentation	10

2. SUMMATIVEASSESSMENT (End Semester Examination)

A. TheoryExamination (Max. Marks = 60; Duration – 3 Hrs)

Question Paper Pattern

There are THREE sections A, B and C.

Answer SEVEN questions in section A, FOUR questions in section B and FIVE questions in section C.

Section – A (Short Answer questions)

Answer any SEVEN questions out of NINE

- Each question carries 2 marks
- Max Marks = 7 × 2 = 14 Marks
- ONE question must be of conceptual /reasoning type
- TWO questions must be of simple numerical problem type

Section –B (Medium Length Answer questions/Problems)

Answer any FOUR questions out of SIX

- Each question carries 4 marks
- Max Marks = 4 × 4 = 16 Marks
- TWO more questions (or 2 parts) must be of numerical problem type

Section –C(Long Answer questions)

Answer any FIVE questions out of SEVEN

- Each question carries 6 marks
- Max Marks = 5 × 6 = 30 Marks
- Questions requiring detailed explanation, proofs, derivation etc. are to be given.
- Numerical problems are to be given in moderation

B. Practical Examination (Max. Marks = 50; Duration – 3 Hrs)

Practical internal 25 marks and practical Exam 25 marks

Basis for Awarding Practical Internal Assessment Marks:

SL	Particulars	Max. Marks
1	Practical Test	30
2	Report on data sheet of Physics experiments/Seminar on Physics experiments, etc	10
3	Active participation in practical classes	10
	TOTAL Practical IA Marks	50

SYLLABUS FOR OPEN ELECTIVES

FIRST SEMESTER

PHYSICS FOR ALL

Time: 2 hrs /week = 01 Hr tutorial Max Marks

Unit I	**Energy and Power** Explosions and energy, Energy, how and in units, Energy units and discussions, Discussions of cost of energy, Measuring energy, Power, Different power sources, Kinetic energy.	(10 Hours)
Unit II	**Gravity, Force and Space** The force of Gravity, Newton's third law, Weightlessness, Low earth orbit, Deep Inclinations, satellites, Tiny satellites, Medium Earth Orbit satellite, Circular Acceleration, momentum, Rockets, Airplanes, helicopters and time, Hot air and balloon balloons, angular momentum and torque.	(7 Hours)
Unit III	**Nuclei and radioactivity** Radioactivity, Elements and isotopes, Radiation and rays, Seeing radiation, The XR11 – The radiation positioning, Radiation and exercise, The linear hypothesis, Different types of radiation, The half-life rule, Smoke detectors, measuring age from radioactivity, Environmental radioactivity, Glow of radioactivity, Nuclear fusion.	(7 Hours)
Unit IV	**Climate change** Global warming, IPCC, A brief history of climate science debate, The greenhouse effect, Enhancement of Greenhouse effect, Historical and paleoclimate, Antarctica, Thermometer, Paleoclimate, Global warming vs Human caused global warming, Can we stop global warming?, Fossil Fuel Resources, Energy security, Energy efficiency and conservation, Bio-fuels, Nuclear, Wind and Solar power.	(13 Hours)
	References This course is extracted from the book titled "Physics and Technology for Future Presidents: An Introduction to the Essential Physics Every World Leader Needs to Know" by Richard A Muller, MK Marcia and Compton, 2017 (Unit) to 4 are from chapters 1, 3, 4 and 10 respectively.	

Sports Science

Time: 2 hrs./week + 01 Hr tutorial

Max Marks:

Content (Use marks of W.E.F. last sub – Only academic Session)		Hrs.
Unit - 1		
Chapter No. 1	Measurement: Physical quantity, Standard and Unit, Classification of Unit, Standards of time, length and mass, Precision and significant figures.	04
Chapter No. 2	Newton's laws of motion: Newton's first law, Force, Mass, Momentum, Newton's second law, Mass and weight, Applications of Newton's laws.	02
Chapter No. 3	Projectile motion: Throwing a ball straight Physics behind Shooting, Definitions and Basic rules	02
Topics for self study (If any)	http://www.real-world-physics-problems.com/physics-of-sports.html	
Unit - 2		
Chapter No. 4	Conservation laws: Conservation of linear momentum, collision – elastic and inelastic, Angular momentum, Physics behind Curve, Billiards, Racing	04
Chapter No. 5	Centre of mass: Physics behind Cycling, rock climbing, Skiing	02
Chapter No. 6	Gravitation: Origin, Newton's law of gravitation, Archimedes' principle, Buoyancy, Physics behind swimming	04
Topics for self study (If any)	Archimedes' Principle Made EASY	Physics in Your Life	
Unit - 3		
Chapter No.7	Food and Nutrition: Introduction, Vitamins, Fat, Blood pressure, Problems due to the deficiency of vitamin	04
Chapter No. 8	Energy: Different forms of Energy, Conservation of mass-energy	02
Chapter No. 9	Physical exercise: Walking, Jogging, and Running, Weight management	02
Topics for self study (If any)	10 Best Exercises for Exercise - Healthline	
	Suggested Activities	
Activity No. 1	Identify the methods of measurement of time, length and mass from ancient time and build models for them	02
	Pathway's - History of measurement - Wikipedia Hints - en.wikipedia.org > wiki > History_of_measurement	

Activity No. 2	Identify Physics principles behind various Sports activities	42
	https://www.realfreestyle.com/physics-of-sports.html	
Activity No. 3	List the difficulties experienced in Swimming, Cycling and weight lifting	42
Activity No. 4	List the difficulties experienced in swimming	42
Activity No. 3	List the difficulties experienced in Swimming, Cycling and weight lifting	42
Activity No. 4	List the difficulties experienced in swimming	42
Activity No. 5	Exam Marking criterion Reference : 1) Google Scholar, Exercise for Beginners, Fitness Planner 2) https://www.bbgsportsmed.com	42
Activity No.6	Write an essay on Physical health v/s Mental health or conduct a Debate on Physical health v/s Mental health	42

Text Books

Sl No	Title of the Book	Authors Name	Publisher	Year of Publication
1	Physics for Entertainment	Yakov Perelman	Createspace Independent Pub	
2	Physics Everywhere	Yakov Perelman	Bookbaby	2014
3	Mechanics for Entertainment	Yakov Perelman	Prabhasvara	2014
4	Handbook of Food and Nutrition	M.Swaminathan	Bangalore Print 2010	2012
5	Food Science	B. Srilakshmi	New Age International Pvt	2015

References Books

Sl No	Title of the Book	Authors Name	Publisher	Year of Publication
1	Physics	Resnick, Halliday and Krane Vol 1	Wiley student Edition	
2	For the love of Physics	Walter Lewin	Simon Schuster Paperbacks	2012
3	An Introduction to the Physics of Sports	Vladimir Mikhailovich Zatsiorsky	Createspace Independent Publishing Platform	2010

Internet resources

https://www.topendsports.com/science/physics.htm

https://www.realfreestyle.com/physics-of-sports.html

https://www.livestrong.com

https://www.mathcrime.org
https://www.who.int/news-room/

SYLLABUS FOR OPEN ELECTIVES

SECOND SEMESTER

ELECTRICAL INSTRUMENTS

Time: 3 hrs./Week + SLM/Interval | Max Marks:

Content	
Unit - I	
Chapter No. 1	Voltage and current sources, Kirchoff's current and voltage laws, loop and nodal methods of simple circuits with dc excitation. Ammeter, voltmeter, DC/AC
Chapter No. 2	Representation of sinusoidal waveforms, peak and rms values, power factor. Analysis of single-phase series and parallel R-L-C ac circuits. Three-phase balanced circuits, voltage and current relations in star and delta connections. Wattmeter, Induction type, single phase and three phase wattmeter. Energy meter, AC Induction type single phase and three phase energy meter
Chapter No. 3	Instrument Transformers. Potential and current transformers, ratio and phase angle errors, phasor diagram, methods of minimizing errors, testing and applications.
Topics for self study (If any)	Types of switches and Circuits. Safety precautions and rules in handling electrical appliances. Electric shock, first aid for electrical shocks. Fuse, MCB, ELCB and Relays. Filament lamp, Tube light, CFL and LED
	Suggested Activities
Activity No. 1	Identify various of electrical switches and note down their applications with
	Reference: Website/Youtube/Book
Activity No. 2	Identify the fuse is involved in a leading electrical circuits and instruments, make a list of safety precautions as well as first aid for electrical shocks.
	Reference: Website/Youtube/Book
Unit - 2	
Chapter No. 4	DC Measurements: General principle and performance equations of D'Arsonval/Galvanometers, Ammeter, Shunts, voltmeter and Multiplier, Ohmmeters
Chapter No. 5	Potentiometers: DC Potentiometer, Crompton potentiometer, construction, measurement, application. AC Potentiometer, Drysdale polar potentiometer, measurement, application

Chapter No. 6	DC/AC Bridges: General equation for bridge balance, measurement of self inductance by Maxwell's bridge (with variable inductance & variable capacitance), Hay's bridge, Owen's bridge, measurement of capacitance by Schearing bridge, error, Wagner's earthing device, Kelvin's double bridge.	07
Topics for self study: (If any)	Importance of grounding and Earthing, Methods for Earthing	
	Suggested Activities	
Activity No. 3	Make a study of importance of grounding in electrical circuits.	
	Reference: Wadhwa Youtube Book	
Activity No. 4	Prepare a detailed account of various methods of earthing and their utility/ applications	
	Reference: Wadhwa Youtube Book	
	Unit – 3	
Chapter No. 7	Transducer, Strain Gauges, Thermistors, Thermocouples, Linear Variable Differential Transformer (LVDT), Capacitive Transducers, Piezo-Electric transducers, Optical Transducers, Hall Effect Transducers	08
Chapter No. 8	CRO: Block diagram, Sweep generator, vertical amplifier, use of CRO in measurement of Lissajous' plots, Amplitude and time base of a pulse, Digital Multimeter: Block diagram, principle of operation	08
Chapter No. 9	Basics of Wind and Solar cell, Definition of Energy, Energy storage capacity, Conversion efficiency, Dimensions of light and low charging rate, Battery rating	04
Topics for self study: (If any)	Fuses, MCB, ELCB and Relays, Filament lamp, Tube light, CFL and LED	
	Suggested Activities	
Activity No. 5	Prepare a document in a shape of assignment/ hobby on the present day LED lights	
	Reference: Wadhwa Youtube Book	
Activity No. 6	Make a comparative study of Fuse, MCB, ELCB and Relays highlighting their use and applications	
	Reference: Wadhwa Youtube Book	

Text Books

1. A.K. Sawhney, A Course in Electrical & Electronic Measurements & Instrumentation, Dhanpat Rai & Co. (P) Ltd.
2. A.D. Helfrick, W.D. Cooper, Modern Electronic Instrumentation and Measurement Techniques, PHI, 2014

Reference Books

1. B. L. Theraja, A.K. Theraja, Electrical Engineering, S. Chand & Co. Ltd., 2014
2. David A. Bell, Electronic Instrumentation and Measurements, 3rd Edition, Oxford University Press, 2013
3. Vincent Del Toro, Electrical Engineering Fundamentals, Prentice Hall India, 1989

List of Experiments to be performed in the Laboratory

Sl.No	Experiment
1	Introduction to Lab Equipments
2	Voltmeter Design
3	Ammeter Design
4	Ohmmeter Design
5	Multimeter Design
6	Measurement of Resistance using Wheatstone Bridge
7	Measurement of Capacitance using Schering Bridge
8	Measurement of Inductance using Maxwell Bridge
9	Measurement of Light Intensity
10	Measurement of Temperature
	Reference Book for Laboratory Experiments
	AK Sawhney, A Course in Electronic Measurements & Instrumentation
	Helfrick& Cooper, Modern Electronic Instrumentation and Measurement Techniques

SPACE MISSIONS

Time: 2 hrs /week + 01 Hr tutorial | Max Marks:

Unit 1:	Introduction to Space Missions Rockets, types and their applications. Different types of orbits. Artificial satellites – basic idea and their applications. Introduction to Space Missions. Beginning of Space Missions – World war II, Application of Space Research, Space crafts, Launching Vehicles.	10 Hours
Unit 2:	National Aeronautics and Space Administration (NASA) About NASA and its Goals, History of Missions. Foundational human spaceflight: X-15 program (1959–1968), Project Mercury (1958–1963), Project Gemini (1961–1966), Project Apollo (1961–1972), Skylab (1965–1973), Apollo–Soyuz (1972–1975) Modern human spaceflight programs: Space Shuttle program (1972–2011), International Space Station (1993–present), Constellation program (2005–2010), Commercial Crew Program (2011–present), Journey to Mars (2033–2037), Artemis program (2017–present).	12 Hours
Unit 3:	Indian Space Research Organisation, (ISRO) About ISRO and its Goals, History of Missions. Overall Satellite Programmes: The IRS series, The INSAT series, Indian Satellite Navigation System, Navigation with Indian Constellation (NavIC), Other missions. Launch vehicles: Satellite Launch Vehicle (SLV), Augmented Satellite Launch Vehicle (ASLV), Polar Satellite Launch Vehicle (PSLV), Geosynchronous Satellite Launch Vehicle (GSLV). Experimental Satellites: Details and applications (Any Five). Earth Observation Satellites: Details and applications (Any Five). Communication satellites: Details and applications (Any Five).	12 Hours
	Self Study: Digital Space Centres in the World (at least 10) – brief idea about their locations, establishment, legislations and achievements. People behind space programs – at least 5 from India. Successful Missions (Any Five). **Activities*:** • Design of working model of Rocket launching • Preparation of report and presentation on applications of satellites in agriculture, communication, weather forecasting, exploration of natural resources and Global positioning system (GPS). *Faculty may suggest any other relevant activity as well. Preparation of report and presentation on Angaraka 01 A Success story. **Activities:** • Preparation of report and presentation on the recent space missions of NASA. • Preparation of report on any one proposed space programme of NASA. *Faculty may suggest any other relevant activity as well. Chandrayaan 3 : Details and applications. Mars Orbiter Mission: Details	

	and applications **Activities:** • Preparation of report and presentation on the current space activities of ISRO • Preparation of report and presentation on any one proposed space programmes of ISRO • Preparation of report and presentation on the contribution of Scientists from Karnataka to Indian Space Program and role of space technology in the broad sectors *Faculty may suggest any other relevant activity as well.	

B.Sc. DEGREE EXAMINATIONS

(Under New syllabus of NEP-2020 Scheme, Effective from Academic Year 2021-22)

SEMESTER: I/II

ELECTIVE COURSE and PAPER: PHYSICS – I/II

1. FORMATIVE ASSESSMENT (Max. Marks = 10)		
ASSESSMENT TYPE	DETAILS/METHOD	MARKS
Test	Theory paper IA tests	10
2. SUMMATIVE ASSESSMENT (End Semester Examination)		
Theory Examination (Max. Marks = 40; Duration -2 Hrs)		
Question Paper Pattern		
Section – A (Medium Length Answer questions)		
• Total Questions = 5 Questions to be answered = 4 • Each question carries 5 marks • Max. Marks = 4 x 5 = 20 Marks		
Section – B (Long Answer questions)		
• Total Questions = 3 Questions to be answered = 2 • Each question carries 10 marks • Max. Marks = 2 x 10 = 20 Marks		

KUVEMPU UNIVERSITY

JNANASAHYADRI,
SHANKARAGHATTA

Under Graduate (BA) Syllabus

for

Political Science Discipline

Under NEP-2020

(3rd and 4th Semester)

Table of Contents

Structure for Political Science Discipline

Semester III				
Course	Paper	Credits	No. of Teaching Hours/Week	Total Marks/ Assessment
DSC-5	Indian Government and Politics	3	3	100 (60+40)
DSC-6	Parliamentary Procedures in India	3	3	100 (60+40)
OE-3	3.1 Gender and Politics	3	3	100 (60+40)
	3.2 Understanding Gandhi	3	3	100 (60+40)
	3.3 Citizen, Citizenship and the Indian Constitution	3	3	100 (60+40)
Semester IV				
DSC-7	Ancient Indian Political Ideas and Institutions	3	3	100 (60+40)
DSC-8	Modern Political Analysis	3	3	100 (60+40)
OE-4	4.1 Good Governance in India	3	3	100 (60+40)
	4.2 Understanding Dr. B. R. Ambedkar	3	3	100 (60+40)
	4.3 Political Journalism	3	3	100 (60+40)
Ability Enhancement Compulsory Courses (AECC)	Constitution of India*	2	2	50(30+20)

*This paper is in 3rd Semester for U.G Commerce Faculty Courses

Political Science Model Curriculum (III & IV Semester)

Name of the Degree Program: B.A./B.Sc.(Hons.)/B.A.(Pol.)

Discipline Core: Political Science

Total Credits for the Programme:

Starting year of implementation: 2021-22

Program Outcomes:

By the end of the program the students will be able to:

- Not only upgrade the learning of Political Science as a contemporary discipline but also to inculcate the Indian political ethos and the moral mandate of functioning of political institutions in India. There is fact, brought forth in our accounts in politics and Kautilya's Arthashastra stands as a proof of this.
- Understand wholesomely about the dimensions of Indian Government, its Parliamentary Procedures, the concepts of Gender in Politics, Gandhian Philosophy and an understanding of the citizens duties and responsibilities in the 3rd semester.
- Understand the papers such as Ancient Indian Political Ideas and Institutions thrown light on the evolution of Indian Political Thought bringing along its role the Nation-Political Analysis which is skill based paper.
- Understand the papers which are introduced like Political Journalism and Beyond papers like Good Governance and Understanding Dr B R Ambedkar which will bring to the fore facts and normative ways of running governments.

Thus, these semesters represent both knowledge and skill components and making it contemporary in its context. Learning among the students will thus make it interesting and lively.

Assessment:

Weightage for assessment (in percentage)

Type of Course	Formative Assessment / FA	Summative Assessment
Theory	40	[illegible]
Practical	–	–
Projects	–	–
Experiential Learning (Internships etc)	–	–
ABCC	10	[illegible]

Semester III

INDIAN GOVERNMENT AND POLITICS

DSC-1

Course Title: INDIAN GOVERNMENT AND POLITICS	
Total Contact Hours: 45	Course Credits: 3
No. of Teaching Hours/Week: 3	Duration of ESA Exam: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60 Min 100

Course Objectives:

The course will explain the functioning of the Indian government and the performance of both the union and the state governments. It discusses the philosophy of our constitution and the commitments of the Indian state to its citizens. It will help the students to develop interest in politics and grasp the dynamic nuances of the politics, dynamics of leadership and the role of socio-economic, religious and lingual issues.

Learning Outcomes:

At the end of the course the students shall :-

- Learn how the governments both at the union as well state level operates and what are its challenges
- Understand the characteristics of party structure in India and the regimes of the political parties in the socio-political dynamics.
- Examine and understand the effects of judicial decisions on policy making and social development in India.

Unit	Contents of Course-I	of Hours
Unit-I	Chapter-1: Indian Politics: Approaches to study of State and politics in India (Liberal, Marxist, and Gandhian) Chapter-2: Constituent Assembly- Composition and Major Debates regarding the Structure of Indian State Chapter-3: Preamble and Salient Features of Indian Constitution	15 Hours

Unit-II	Chapter-4: The Union Executive: The President, Vice-President, Prime Minister and the Council of Ministers. Chapter-5 Parliament: Powers and Functions of Lok Sabha and Rajya Sabha, Relationship between the two Chambers, Ordinance Making Process and Major Amendments (42nd, 73rd, 74th, 86th, 101st). Chapter-6: Judiciary and Judicial Review, Appointment of Judges, Basic Structure of the Indian Constitution and debates	15 Hours
Unit-III	Chapter-7: Nature of Indian Political System, Union-State Relations (Commissions and Committees), President's Rule Provisions and politics. Chapter-8: Ideology of National Political Parties, Regional Political Parties, Coalition Politics and Elections in Indian Politics. Chapter-9: Issues in Indian Democracy: Caste, Religion, Communalism, Regionalism, Criminalization, Terrorism, Social and Distributive Justice.	15 Hours

Exercises:

- Debate on the basic structure of Indian Constitution and the need for changes in the constitution, functioning of the Constituent-Case regard to Governor and President's Rule
- List out the major amendments to the constitution, Commissions and committees to review power sharing
- Explain the functioning of various political parties, its inclusive approaches, influence of dynasties on their performance

Suggested Readings

1. Iqbal Narain, State Politics in India, Meenakshi Prakashan, New Delhi, 1967
2. Rajani Kothari, Politics in India, Orient Longman, 1970
3. D. Basu, An Introduction to the Constitution of India, New Delhi, Prentice Hall, 1982
4. Granville Austin, The Indian Constitution: Cornerstone of a Nation, Oxford University Press, India, 1966
5. C. P. Bhambhari, The Indian State, Fifty Years, New Delhi, Shipra, 1997
6. V. Pylee, Constitutional Government in India, Bombay: Asia Publishing House, 1977
7. J. C. Johari, Indian Government and Politics, Vol. 1, Sterlan Lal and Company, India, 2012.
8. Weiner, Party Politics in India, Princeton University Press, 1957
9. A. G. Noorani, Constitutional Questions in India: The President, Parliament and the States, Delhi, Oxford University Press, 2000.
10. A.S. Narang, Indian Government and Politics, Gitanjali Publishing House, New Delhi, 1994.
11. Bidyut Chakrabarty & Rajendra Kumar Pandey, Indian Government and Politics, SAGE, New Delhi, 2009
12. D.D. Basu, An Introduction to the Constitution of India, 25th Edition, LexisNexis, India, 2021
13. M.P. Singh & Rekha Saxena, Indian Politics: Contemporary Issues and Concerns, Prentice Hall of India, Delhi, 2008
14. M. V. Pylee, An Introduction to the Constitution of India, New Delhi, Vikas, 1998
15. Nirja Gopal Jayal & Pratap Bhanu Mehta, The Oxford Companion to Politics in India, Oxford University Press, New Delhi, 2010
16. Bhinder Kumar, Indian Government and Politics, Allied Publishers, New Delhi, 1998
17. C. P. Bhambhari, The Indian State Since Independence: 75 Years, New Delhi, Shipra, 2017

Pedagogy:

The course shall be taught through the Lecture, Tutorial, Interactive Session, Self-guided Learning Materials, Open Educational Resources (OER) as reference material, Practical Exercises, Assignments, Seminars, Group Discussions and Web-aid Counseling Classes.

Formative	
Assessment Test-1	10
Seminar Presentation/Group Discussion	10
Assessment Test-2	10
Assignment	10
Total	40

PARLIAMENTARY PROCEDURES IN INDIA

DSC-4

Course Title: PARLIAMENTARY PROCEDURES IN INDIA	
Total Contact Hours: 45	Course Credits: 3
No. of Teaching Hours/Week:3	Duration of SEA Exam: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objectives

The course attempts to make the students familiar with legislative practices in India with an orientation to equip them with the adequate skills of participation in deliberative processes and democratic decision making. The aims at providing the basic understanding of the constitutional provisions relating to parliamentary procedures and the conventions of the same. This will help the students to understand the working of democracy through an institutional mechanism.

Learning Outcomes:

At the end of the course the students shall -

- Aim at understanding the procedural aspects of parliamentary system of government
- Learn about the privileges of people's representatives and match it with their performance
- Understand the working of committees, budgetary aspects and deliberative mechanism within the parliament

Unit	Contents of Course-4	45 Hours
Unit-I	Chapter-1: Elections to the Legislatures: Parliament and State Legislatures. Chapter-2: Powers, Functions and Privileges of People's Representatives : Members of Parliament and State Legislatures	15 Hours

	Chapter-3: Legislative Procedure of the Parliament in India (Articles 107-122)	
Unit-II	**Chapter-4:** Kinds of Bills: Ordinary Bills, Money Bills, Finance Bills, Private Member Bills **Chapter-5:** Drafting of the Bill, First Reading and Departmental Standing Committee, Second Reading, Third Reading, Passage of the Bill, Consent to the President, Gazette Notifications **Chapter-6:** Parliamentary Committees, Composition and Functioning: Departmental Standing Committees, Select Committees, Joint Parliamentary Committees, Public Accounts Committee on Privilege Business, Advisory Committee, Ethics Committee	**15 Hours**
Unit-III	**Chapter-7:** Motions and Resolutions in the House : Question Hour, Zero Hour, Half an Hour Discussion, Calling Attention Motion, Adjournment Motion, Privilege motion, Censure motion, No-confidence motion, Cut motion **Chapter-8:** Parliamentary Questions: Types, Starred and Unstarred Questions, Questions Addressed to Private Members and Short Notice Questions **Chapter-9:** Parliamentary Privileges: Constitutional Provisions, Codification of Privileges, Privileges of Parliamentarians and Legislators, Breach of Privileges	**15 Hours**

Exercise

- The college can organise mock parliaments and teach students the etiquettes of parliamentary behaviour.
- Can organise debates on the codification of privileges and match it with the performance of people's representatives.
- Can organise special lectures by inviting officials/bureaucrats to deliberate on the procedural aspects of democracy.

Suggested Readings

1. M.N. Kaul and S.L. Shakdher, Practice and Procedure of Parliament, Metropolitan, New Delhi, 1968.
2. Subhash C. Kashyap, Our Parliament, National Book Trust, New Delhi, 2011.
3. S.M. Behrami, Theory and Practice of Parliamentary Procedure in India, 1981.
4. Study Material on Parliamentary Practices and Procedure, Lok Sabha Secretariat Parliamentary Research and Training Institute for Democracies (Formerly BPST), New Delhi.
5. Aparna Shankar and Shreya Singh, Parliamentary Procedure, Prime Ruya Lekha, PRS Legislative Research, 2021.
7. Dr. K.S. Chauhan, Parliament Power, Function and Privileges, Lucknow, India, 2013.
8. Ajit Ranjan Mukharjee, Parliamentary Procedure in India, Oxford University Press, 1958.
9. M.N. Kaul, Parliamentary Institutions and Procedure, National Publishing House, 1978.
10. Jalan, India's Politics, Penguin, New Delhi, 1997.
11. Abbas, H., Kumar, R. & Alam M. A., Indian Government and Politics, Pearson, New Delhi, 2011.
12. Chakrabarty, B. & Pandey, R. P, Indian Government and Politics, Sage, New Delhi, 2004.
13. K. Rajpal, Strengthening Parliamentary Committees, PRS Centre for Policy Research, New Delhi, 2011.

    Available at:
    http://www.prsindia.org/administrator/uploads/media/Conference%20on%20Strengthening%20Parliamentary%20Committees.pdf

Pedagogy:

The course shall be taught through the Lecture, Tutorial, Interactive Lecture, Integrated Learning Materials, Open Educational Resource (OER), e-reference materials and Multi Parliaments as Practical Exercise, Assignments, Seminar, Group Discussions and Field and Counselling Classes.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	15
Seminar Presentation Group Discussion	10
Assessment Test-2	10
Assignment	15
Total	40

GENDER AND POLITICS

Open Elective- OE- 3.1

Course Title: GENDER AND POLITICS	
Total Contact Hours: 48	Course Credit: 3
No. of Teaching Hours/Week: 3	Duration of CIA Exam: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objective:

The course provides an overview of political participation of women in general and specifically in India. It enables students to understand the issues related to women leadership, participation and governance and how they have progressively become integrated into political science to inform and shape contemporary social sciences. It helps in analysing the patriarchal society to improve the relationship between men and women removing the obstacles of exploitation, violation of human rights, bringing into focus the need for the education and empowerment.

Learning Outcomes:

At the end of the course the students shall -

- Analyse how ideologies have shaped the women in politics.
- Bring awareness of the relevance of gender issues in politics.
- Through discussions on women and governance understand the ground realities about politics in relation to women.

Unit	Contents of Course-OE-3.1	48 Hours
Unit-I	**Chapter-1:** Defining Gender, Significance of Gender Studies, Difference between Gender Studies and Women Studies, Feminist Perspectives (with reference to Social, Opportunities and Constraints, Party Choices of Candidates, Social Taboos and Stereotypes). **Chapter-2:** Gender Imbalance in Political Representation and Electoral Process, Gender Discrimination in Indian Politics – including LGBTQ, Feminist Critique of Politics.	18 Hours

	Chapter-3: Governance and Gender Mainstream, Gender Budgeting and Gender Issues in Governance	
Unit-II	**Chapter-4:** Gender and Empowerment Across Education, Economy, Political and Technology and emerging gender issues **Chapter-5:** Gender Differentiation in Political Parties and Leadership, Challenging Gender Stereotypes in Socio-Political sphere **Chapter-6:** Capacity Building and Role of Women in Panchayati Politics, Women Representation in Local Governments.	12 Hours
Unit- III	**Chapter-7:** Women and Poverty, Women and Health, Women and wealth creation, Violence against Women, Women and Armed Conflict **Chapter-8:** Women and Literature, Women and the Media, Women and the Environment **Chapter-9:** Women and Societal Challenges Dowry, Domestic Violence, Girl Child - Programmes for Empowerment of Women, Educating children and socio-religious taboos including patriarchy	12 Hours

Exercise:

- Conduct one day workshop and make an assessment of role of women in politics.
- College making short films and video coaching can be done by the students and measures can be discussed to minimize the gender gap
- Students can make field visits to understand the prevalent of patriarchal values and traditions.

Suggested Readings

1. P.K.Swain and S.S.Tripathy, "Unequal Treatment to Women and Gender", Rita Jonali Publications, New Delhi, 2009
2. Mahendrakar, Chandra Mohan, Prakash K Sharma, Dr. Jai Bhawa Harsh and Amrik Kaur Bilara, "Gender and Diversity", Rawat Publications, Jaipur, 2015
3. Andrew Heywood, "Global Politics", Palgrave Macmillan Publications, New York, 2014
4. Kishor Rana, "Middle Working Women and the Development Debate", Kanishka Publishers, New Delhi, 1995
5. Dr Tanuja Tewedi, "Encyclopedia of Women's Empowerment", Anupama Publication, New Delhi, 2012
6. Bharati Das and Vimal Sharma, "Gender Issues in Development -Concerns for the 21st century", Rawat Publications, New Delhi, 2009
7. U. Kalpagam, "Gender and Development in India: Current Issues", Rawat Publication, 2011.
8. B.B.Singh, "Rural Women and Education," Isha International Publishing House, Delhi, 2014.
9. Meeta Kaushik, "Women Writing Gender", Permanent Black Publication, New Delhi, 2012.
10. Wendt, Lisa D., Gender and Governance, Rawat Publications, New Delhi, 2007.
11. Sangeeta Bhatnagar, "Gender, Social Structure and Empowerment Status Report of Women in India", Rawat Publications, 2009
12. Dr. Tapan Biswal, "Human Rights Gender and Environment", Viva Books Private Ltd, New Delhi, 2006
13. Dr. S. S.Nary, "Women and Employment", RBSA Publishers, Jaipur, 2001
14. Singh, Nagpal, "Changing Status of Women," Isha International Publishing House, Delhi, 2009
15. Annamalaimuthu, "Gender and Development in India", Kalpaz Publication, Delhi, 2004
16. M.Bahare Mamtha, "Gender and Social Movements", Rawat Publications, New Delhi, 2003
17. Sunanda Alka, "Women and Political Leadership," Alka Publishing House, New Delhi, 2014.

Pedagogy:

The course shall be taught through the Lecture, Tutorial, Interactive Session, Self-guided Learning Materials, Open Educational Resource (OER) as relevant content, Practical Exercises, Assignments, Seminars, Group Discussions and Web-enhanced Classes.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	10
Seminar Presentation/ Group Discussion	10
Assessment Test-2	10
Assignment	10
Total	40

UNDERSTANDING GANDHI

Open Elective – OE-II

Course Title: UNDERSTANDING GANDHI	
Total Contact Hours: 48	Course Credit: 3
No. of Teaching Hours/Week: 3	Duration of SEA Exam: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objective:

The course objective is to bring to the attention of the younger generation the core elements of Gandhian thought and Gandhi's approach to the key issues of contemporary India. The paper covers a wide range of issues including politics, economics, social reconstruction, religion and issues of sustainable development which provides insight into the idea of what Gandhi propagated as a political thinker. The idea of Hindu-Muslim relations as critique of modern society, Swadeshi etc., makes Gandhi relevant to the current political discourses.

Learning Outcomes:

At the end of the course the students shall -

- Be able to explain the idea of truth and non-violence which is the foundation of Gandhian Philosophy
- Know the position of Gandhi on issues like Hindu-Muslim relations, caste question, cow protection, caste and untouchability questions
- Acquire his views on his choice of Swadeshi and his critique of modern Civilization

Unit	Contents of Course- GE-3.2	45 Hours
Unit-I	Chapter-1: Background Influences: Historical, Social, Ethical, Intellectual: Thoreau, Ruskin and Tolstoy Chapter-2: Gandhian Experiments: Satyagraha, Non-Violence, Truth, Movements led by Gandhi- Champaran, Kheda, Khilafat, Non- Cooperation, Civil Disobedience Chapter-3: Social Movements- Abolition of Untouchability, Vaikom Satyagraha, Fasts, Hindu and Communal Unity, Sustainable Development	15 Hours
Unit-II	Chapter-4: Gandhi as a Leader: Gandhi as a critic, Gandhian Methodology: Prayer, Constructive Building and Fasting Chapter-5: Gandhian Views on Politics: Rule of Ethics, Morality, Religion and Service Chapter-6: Gandhi's critique on English Parliament, Gandhi on Women and Education	15 Hours
Unit-III	Chapter-7: Gandhi as Journalist and Thinker: Critique on Modern Civilization, Modern Education and Machines Chapter-8: Gandhi on Vernacular Decision of the Jewish Question and Son, Gandhi's views on Tribes and Sustainable Development Chapter-9: Gandhi in Political Struggle, Gandhi's Views on Hindu-Muslim Relations, Civil Resistance, Communalism and Caste Question	15 Hours

Exercise

- Students shall have a group reading of Gandhian texts like Hindswaraj, My Experiments with Truth, Sarvodaya, etc.
- Shall conduct the group discussion on the significance of Satyagraha, Sustainable Development, Swadeshi, etc.
- By reviewing literature on Gandhian campaign methods can discuss the strengths and weaknesses of Gandhian Philosophy and its relevance in 21st century.

Suggested Readings:

1. Lal, V., The Gandhi Syncopated: Lives to Ride, Economic and Political Weekly, 45(4), 2010, pp. 53–64.

2. Bowar, P., Towards a Re-Evaluation of Gandhi's Political Thought, The Western Political Quarterly, 18(1), 1965, pp. 98–108.

3. Gandhi, M. K., Hind Swaraj, Navajivan Publishing House, Ahmedabad, 1938, pp. 46–47.

4. Indian Council for Historical Research, The Legacy of Gandhiji: Movements and Developments and the Quit-India Year, 1930–47, Indian Historical Review, 1978.

5. Dey, A., Islam and Gandhi: A Historical Perspective, Social Scientist, 41(3–4), 2013, pp. 31–34.

6. Chandra, B., Gandhiji, Secularism and Communalism, Social Scientist, 32(1/2), 2004, pp. 3–28.

7. Parekh, B., The Critique of Modernity in Gandhi: A Brief Insight, Sterling Publishing Company, Delhi, 1997, pp. 47–74.

8. Narula, P., Interpreting Gandhi's Hind Swaraj, Economic and Political Weekly, 34(24), 1999, pp. 1497–1502.

9. Parel, A. J. (Ed.), Introduction to Gandhi, Freedom and Self-Rule, Vistaar Publications, Delhi, 2002.

10. Parel, A. J. (Ed.), Introduction to Gandhi, Freedom and Self-Rule, Vistaar Publications, Delhi, 2002.

11. Ajmani, R., Class, Community or Nation? Gandhi's Quest for a popular consensus in India, Modern Asian Studies, 3(4), 1969, 357–375.

12. Parel, A. J. (Ed.), Introduction to Gandhi, Freedom and Self-Rule, Vistaar Publications, Delhi, 2002.

13. Sarah Claerhout, Gandhi, Conversion, and the Equality of Religions, some experiments with truth, Nirmala International Review for the Studies of Religions, 4–11, 2014, p.23-32.

14. Collected Works of Mahatma Gandhi, Study Guide, Tension, In Cause and Cure, Young India, 1924, pp. 35–36.

15. Collected Works of Mahatma Gandhi, Law the Cure, Young India, 1921.

16. http://www.mahatmagandhi.org/gandhi/gandhiquotes.htm#.UzmLvPldWSo

17. பாரதியார் கவிதைகள், புதிய சகாப்தம் பிரைவேட் லிமிடெட், சென்னை, 1988.

18. பாரதியார் கவிதைகள், சென்னை பல்கலைக்கழகம், சென்னை, 1968.

21. UÀAqUÀ ªÉÆzÀ¯Éð, ¸ÀA¥ÀÆtð ¸ÀªÀÄAiÀÄ ¥ÀæPÁgÀ ¸ÀégÀÆ¥ÀzÀ ªÀiÁ»w, ªÉÄÃ¯É ¸ÀA¸ÉÜ, 1956

22. UÀAqUÀ ªÉÆzÀ¯Éð, ¸ÀASÉåUÀÄ¥ÀÄgÀ UÀæºÀ¸ÀégÀÆ¥ÀzÀ ªÀiÁ»w, ªÉÄÃ¯É ¸ÀA¸ÉÜ, 1958

23. UÀAqUÀ ªÉÆzÀ¯Éð, ¸ÀªÀÄ¸ÀÄgÀ UÀæºÀ¸ÀégÀÆ¥ÀzÀ ªÀiÁ»w, ªÉÄÃ¯É ¸ÀA¸ÉÜ, 1958

24. UÀAqUÀ ªÉÆzÀ¯Éð, ¸ÀASÉåUÀÄ¥ÀÄgÀ UÀæºÀ¸ÀégÀÆ¥ÀzÀ ªÀiÁ»w, ªÉÄÃ¯É ¸ÀA¸ÉÜ, 1958

25. UÀAqUÀ ªÉÆzÀ¯Éð, gÁdå¥ÀÄgÀ UÀæºÀ¸ÀégÀÆ¥ÀzÀ ªÀiÁ»w, ªÉÄÃ¯É ¸ÀA¸ÉÜ, 1961

26. UÀAqÀ, UÁAiÀÄ ªÉÄÃ¯É ¸ÀzÀ¸ÉÃPÀëPÀgÀ ¸ÀégÀÆ¥ÀzÀ (CAA ¸ÀA. 58 gÀAzÀÄ 1958) ¸ÀA¸ÉÜAiÀÄ ¸ÀAPÁðgÀzÀ°è ¸ÀPÁðgÀ ªÀiÁ»w, 1958

27. UÀAqU ¸ÀAUÀ ªÉÄÃ¯É ªÀÄÄAzÉ ¸ÀÄgÀÄ¥ÀÄgÀ ¸ÀégÀÆ¥ÀzÀ ¸ÀA¸ÉÜAiÀÄ ¥ÀæPÁgÀ ¸ÀégÀÆ¥ÀzÀ DzÀ PÀæ¸ÀÄ (¸ÀA¸ÉÜAiÀÄ ¸ÀAPÁðgÀzÀ°è ¸ÀPÁðgÀ ¸ÀAUÀ¯Á 1) ¸ÀA¸ÉÜAiÀÄ ¸ÀAPÁðgÀzÀ C¥ÁAiÀÄPÀ ¸ÀégÀÆ¥ÀzÀ C¥ÁAiÀÄPÀ Æ¸ï, 2001

28. UÀAqU ¸ÀAUÀ ªÉÄÃ¯É ªÀÄÄAzÉ ¸ÀÄgÀÄ¥ÀÄgÀ ¸ÀégÀÆ¥ÀzÀ ¸ÀA¸ÉÜAiÀÄ ¥ÀæPÁgÀ ¸ÀégÀÆ¥ÀzÀ ¸ÀÄ¸ÀÄ¥ÀÄgÀ ¸ÀA¸ÉÜAiÀÄ ¸ÀAPÁðgÀzÀ°è ¸ÀPÁðgÀ ¸ÀAUÀ¯Á (¸ÀA¸ÉÜAiÀÄ ¸ÀAPÁðgÀzÀ°è ¸ÀPÁðgÀ ¸ÀAUÀ¯Á 1) ¸ÀA¸ÉÜAiÀÄ ¸ÀAPÁðgÀzÀ C¥ÁAiÀÄPÀ ¸ÀégÀÆ¥ÀzÀ C¥ÁAiÀÄPÀ Æ¸ï, 2001

29. UÀAqU ¸ÀAUÀ ªÉÄÃ¯É ªÀÄÄAzÉ ¸ÀÄgÀÄ¥ÀÄgÀ ¸ÀégÀÆ¥ÀzÀ ¸ÀA¸ÉÜAiÀÄ ¥ÀæPÁgÀ ¸ÀégÀÆ¥ÀzÀ ¸ÀÄ¸ÀÄ¥ÀÄgÀ ¸ÀA¸ÉÜAiÀÄ ¸ÀAPÁðgÀzÀ°è ¸ÀPÁðgÀ ¸ÀAUÀ¯Á (¸ÀA¸ÉÜAiÀÄ ¸ÀAPÁðgÀzÀ°è ¸ÀPÁðgÀ ¸ÀAUÀ¯Á 2) ¸ÀA¸ÉÜAiÀÄ ¸ÀAPÁðgÀzÀ C¥ÁAiÀÄPÀ ¸ÀégÀÆ¥ÀzÀ C¥ÁAiÀÄPÀ Æ¸ï, 2001

30. UÀAqU ¸ÀAUÀ ªÉÄÃ¯É ¸ÀAZÀ¨ÁgÀ ¸ÀÄ¸ÀÄ¥ÀÄgÀ UÀæºÀ¸ÀégÀÆ¥ÀzÀ ªÀiÁ»w ¸ÀA¸ÉÜ ¸ÀAUÀ¯Á¬ÄgÀ 2008

Pedagogy

The course shall be taught through the Lecture, Tutorial, Interactive Sessions, Self-guided Learning Materials, Digital Educational Resources (DER) as relevant content, Practical Exercises, Assignments, Seminars, Group Discussions and Field-visit/Study Tours.

Formative Assessment	
Assessment Occasion/ type	**Weightage in Marks**
Assessment Test-1	10
Seminar Presentation/ Group Discussion	10
Assessment Test-2	10
Assignment	10
Total	40

CITIZEN, CITIZENSHIP AND THE INDIAN CONSTITUTION

Open Elective OE- 3.1

Course Title: CITIZEN, CITIZENSHIP AND THE INDIAN CONSTITUTION	
Total Course Hours: 45	Course Credit: 3
No. of Teaching Hours/Week: 3	Duration of ESE: 2 Hours 3 Marks
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objectives:

This course aims at understanding the concept of citizenship. The course expects to develop an understanding of problems, aspects and dimensions and use these as tools to enhance one's emotional well-being and social relationships within a society. It further helps in building in inculcating responsible citizenship among the students.

Learning Outcomes:

At the end of the course the student shall –

- Take part in social interactions as responsible individuals and will learn to develop core identities
- Demonstrate pro-social behaviour towards others, including those belonging to a different race, ethnicity, culture, class, gender or nationality
- Understand and appreciate rights and privacy of other fellow citizens

Unit	Contents of Course- OE- 3.1	45 Hours
Unit-I	**Chapter-1**: Concept of Citizen: Subject, Civic Citizen & Citizenship, Legal and Political Citizenship **Chapter-2**: Citizenship in India: Historical Citizenship and Partition of India: Nehru and Ambedkar on Khan Rule: The Citizenship Act, 1955, The Citizenship (Amendment) Act, 1986, The Citizenship (Amendment) Act, 2003 and 2005, National Register of Citizens (NRC) **Chapter-3**: Citizens and Constitutional Provisions: Fundamental Rights and Duties, Socio-Economic and Cultural	15 Hours

	Rights.	
Unit-II	**Chapter-4:** Citizenship: Issues of Inclusion: Laws on Immigration, Laws for Migrants and Active citizen, Forms of acquiring Citizenship. **Chapter-5:** Dual Citizenship: Theory and Practice: Impact of Globalization, Advantages of Dual Citizenship. **Chapter-6:** UHC and Human Rights: Four Substantive Pillars: Arrest, Detention, Bail Provisions, Petition Act, Census and Civic Culture.	**14 Hours**
Unit- III	**Chapter-7:** Citizen and His Responsibility: Constitutional Provisions: Local Acts: Right to Privacy: Role of CSO's. **Chapter-8:** Citizen and Discrimination: Caste, Gender (LGBTIQ), language, Race, Color, Place of Origin. **Chapter-9:** Protection of Citizen: Women and Property Rights, Rights of Police Services, and Displaced People (The National Commission and Rehabilitation) and Universal Declaration of Human Rights.	**14 Hours**

Exercise:

- Students and teachers collectively write records holding communication network asking vulnerable citizens who lack of knowledge about their civic rights.
- The organization they work from, organizing groups and support committees, migrants resolve their legal issues with authorities like police and government.
- Make your visit camp, police station, regional passport office and collect the laws relating to migrants, immigrants regarding their rights.

Suggested Readings :

1. Mahajan Gurpreet, 'Identity Politics and Citizenship: Studies in a Time of Change', Oxford University Press, New Delhi, 2002.
2. Kothari Rajni, 'Politics in India', Orient Longman, New Delhi, 1970.
3. Kothari Rajni, 'Rethinking Democracy', Orient Longman, New Delhi, 1988.
4. Kothari Rajni, 'State and Nation Building', Allied Publishers, New Delhi, 1976.
5. Kothari Rajni, 'Caste in Indian Politics', Orient Longman, New Delhi, 1970.
6. Kothari Rajni, 'Politics and the People: In Search of Humane India', Vol. I & II, Ajanta Publications, New Delhi, 1989.
7. Kothari Rajni, 'Politics in India', Orient Longman, New Delhi, 1970.
8. Kothari Rajni, 'Rethinking Democracy', Orient Longman, New Delhi, 1988.
9. Kothari Rajni, 'State and Nation Building', Allied Publishers, New Delhi, 1976.
10. Kothari Rajni, 'Caste in Indian Politics', Orient Longman, New Delhi, 1970.

Pedagogy:

The course shall be taught through the Lecture Method, Interactive Sessions, Self-paced Learning Materials, Open Educational Resources (OER) in relevant courses, Practical Exercises, Assignments, Student Group Discussions and Web-based Learning Tools.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	15
Seminar Presentation/ Group Discussion	15
Assessment Test-2	15
Assignment	15
Total	60


Semester IV

ANCIENT INDIAN POLITICAL IDEAS AND INSTITUTIONS

BSC -1

Course Title: ANCIENT INDIAN POLITICAL IDEAS AND INSTITUTIONS	
Total Contact Hours: 45	Course Credit: 3
No. of Teaching Hours/Week: 3	Duration of ESA Exam: 2Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objectives:

The paper aims at developing an understanding of the social and political philosophy of ancient India to assess the modern notions about socio-political arrangements. Further it helps to analyze the process of distinguishing Indian minds related to India's glorious past. The objective also being to throw light on the indigenous political heritage and their relevance in shaping views.

Learning Outcome:

At the end of the course the students shall: -

- Reflect on the native concepts like Dharma, Rajadharma, Danda, Vinaya etc. in the light of their modern counterparts.
- Understand the role of king and council in the Indian context by reflecting upon the pre-requisites.
- Revisit the civic socio-political structure through the textual and non-textual sources from the early Indian period in order to posit the European representations of Indian Society and Heritage.

Unit	Content of Course: DSC 7	48 Hours
Unit-I	Chapter-1: Sources of Early Indian Thought: Shruti and Upanishads: Rta and Rita Concept Chapter-2: Perspective Orientation: Purushartha: Varna (Ashtic Role of Profession) and Dasha in Varnashrama Dharma: Its Individualistic perspective Chapter-3: Indian Culture: Cultural Pluralism: (Unity in Diversity) vs Post Colonial Challenges and Ethnic and S.C. Religionalism	12 Hours
Unit-II	Chapter-4:Socio-Political Ideas in the Early Indian Thought: Dharma, Rajadharma, Dandaniti, Sapta Vyasanikha, Shadja, Rajya Circle, Mandalsiddhanta and Arthashastra values in Statehood. Chapter-5: Kingship: Origin, Nature, Organ of Kingship, Powers and Functions Chapter-6: Functions of Government: Sabha, Samiti, Vidhata, Para-Judgeship	12 Hours
Unit- III	Chapter-7: Gramasabha: Power, Structure, Functions Role of Women in Indian Tradition Chapter-8: Kautilya (Chanakya): Saptanga Theory and Arthamandala perspective Chapter-9:Dandaniti (Virtue) Rajadharma in Shantiparva, Use of Force and Peace	12 Hours

Teaching

- Class reading sessions to be organized to understand the ancient text in its original context by way of discussions.
- Students shall visit the nearby historical places and collect artifacts, stones, soil samples with the help of the senior people.
- Students shall organize a documentation on important structures of Panchayat and Municipalities in its limits and report findings and concerns.

Suggested Readings :

1. Altekar A.S. State and Government in Ancient India, Motilal Banarsidass, Chowk Banaras, 1949.
2. R.S. Sharma, Early Indian Social and Political Thought and Institutions (Aspects of the Political Ideas and Institutions in Ancient India), Motilal Banarsidass, Delhi, 1991.
3. Jayaswal K.P. Hindu Polity, Bangalore Printing and Publishing Co. LTD Bangalore, 1943.
4. Godbal V.D. History of Hindu Political Theory, Oxford University Press, Calcutta, 1928.
5. Kaugle R.P. Kautilya's Arthasastra, Motilal Banarsidas Publishers Pvt Ltd. New Delhi, 1986.
6. Dikshitar D.D. Some Aspects of Ancient Indian Culture, Madras, University of Madras, 1940.
7. Romila Thapar, From Lineage to State, Oxford University Press, United Kingdom, 1984.
8. R.S.Sharma, Sudras in Ancient India, Motilal Banarsidass, Delhi, 1987.
9. Sharma,R. S Indian Ancient Past, Oxford University Press, New Delhi, 2004.
10. Sharma,R. S. Rethinking Indian Past, Oxford University Press, New Delhi, 2010.
11. Khader Lawrence, "Formation of the state", Prentice Hall, United State, 1968.
12. Kosambi, D.D. "Introduction to the Study of Indian History", Popular Prakashan, Mumbai, 1956.
13. Said Edward, Orientalism, Penguin Books, USA, 1978.
14. Uma Vibhuti Bhushan, From the Vedas to the Upanishads, City Country, Bell Academic, United State, 1981.
15. Yadav D.C. Studies in the Religious life of Ancient and Medieval India, Motilal Banarsidass, Delhi, 1971.
16. Ayyangar K.R., Ancient Indian Polity, Oriental Book Agency, Poona, 1941.
17. Burgess R., Ancient Indian Historical Traditions, Oxford University Press, London, 1922.
18. Levin O.S.I. Sinopsis: A Complete Study of Ancient India – Methodological Approach, American Oriental Society, U.S.A. 1988.
19. Kumar S., 'Role of Caste in Ancient India Economy', Reviewed Vidya Bhawan, Delhi, 1986.
20. Yadav D.C. Political and Administrative System of Ancient and Medieval India, Motilal Banarsidass, Delhi, 1971.
21. Mishr S. K and Upendra Thakur, Bibliographical Indices, Abhinav Publications, New Delhi, 1981.
22. Mukherjee Bishop, The Republican roots in Ancient India, Munshiram Manoharlal Publishers Private Limited, New Delhi, 1968.
23. Bandyopadhya P.C. Development of Hindu Polity and Political Theories, Munshiram Manoharlal Publishers, New Delhi, 1990.
24. Chattopadhyaya D. Lokayata, Peoples Publishing House, New Delhi, 1959.

35. Kosambi D.D, The Culture and Civilization of Ancient India and Historical Outline, Vikas Publishing House Pvt. Ltd, Noida, 1965
36. Majumdar R. C, History and Culture of Ancient Bengal, Vol. I, Asiatic Society, Bangladesh, 1971
37. Kulke Hermann, ed, State in India, 1000 to 1700, Oxford University Press, Delhi, 1995
38. Kane P. V, History of Dharmashastras, Vol. I-V, Bhandarkar Oriental Research Institute, Poona, 1973
39. Balagangadhara S.N, Force, Ethics, Freedom and Ethos - Human Rights and S. Hamsa, Vasanta Balantara, Bangalore, 2014. (2016)

Pedagogy:

The course shall be taught through the lecture method, interactive sessions, self-guided learning materials, Open Educational Resources (OER), e-reference materials, Class Reading, Review of texts, Assignments, Internet, group discussions and web-based seminars.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	10
Seminar Presentation, Group Discussion	10
Assessment Test-2	20
Assignment	10
Total	40

MODERN POLITICAL ANALYSIS DSC-8

Course Title: MODERN POLITICAL ANALYSIS	
Total Contact Hours: 45	Course Credits: 3
No. of Teaching Hours/Week: 3	Duration of ESA: 3 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60

Course Objectives:

The objective is to equip students to develop insights into political institutional functioning keeping in insight both the normative and empirical ways of understanding. The paper also throws light on Value based functioning and other central aspects of system output that will help students to understand and evaluate Governments. It aims at scientifically assessing the functioning of the government at various structural institutions.

Learning Outcome:

At the end of the course the students will -

- Understand the key concepts of Political Institutional framework and various value bias
- Be familiar with the Phenomenon of politics and various explanations relating to the influences that uphold the decision making process
- Help the students to visualize the working of political institutions and the process of decision-making through Representative governments

Unit	Contents of Course: DSC-8	45 Hours
Unit-I	Chapter-1 Origin and Emergence of Modern Political Analysis: Modern Political Analysis- Meaning, Origin, Logic and Goals Chapter-2 Political System-Types, similarities and differences (Institutions- Structure and Roles) Chapter-3 Approaches – Traditional- Philosophical, Historical, Institutional, Modern- Behavioural, Systems, Game	15 Hours

Unit-II	Chapter-4 Talcott Parsons General Systems Theory- Nature of Inter-Relationship, Hierarchical order, Exigencies. Chapter-5 David Easton's Input-Output model of Political System, Features, Functions and Critical Evaluation. Chapter-6 Gabriel Almond- significance and assumptions, Structure-Functional Roles, Attributes, Legitimacy and Criticism. Harold Lasswell's contribution.	19 Hours
Unit- III	Chapter-7 Alexander Wendt - Relational - Relational Analysis Karl Deutsch's Communications Theory Chapter-8 Richard C Snyder's Decision Making Theory Arthur F. Bentley and David Truman Group Theory of Politics Chapter-9 Political Development - Concept of Political Development - its Variables. Development Crises and Theory of Lucian Pye	19 Hours

Exercise:

- The Department should take the students to a nearby political institution and explain to them the process of administrative decision making
- The department may invite functionaries of these institutions to deliberate upon issues of redundancy and complexity in administration.
- Assignments may be given to the students to examine the nature of complications of administrative procedures in offices of Government and other consultancy.

Suggested Readings:

1. Almond, G. and Coleman, J.S. "The politics of the Developing Areas" Princeton University Press, Princeton NJ. 1960.
2. Almond, G.A. and Verba, S. "The Civic Culture: political Attitudes and Democracy in Five Nations", Princeton NJ, Princeton University Press, 1963.
3. Amin, S. "Accumulation on an All Scale: A Critique of the Theory of Comparative Advantage", Monthly Review Press, New York, 1974.
4. Apter, D.E. "The Politics of Modernization", University of Chicago Press, Chicago, 1965.
5. Gabriel Almond, "Comparative Politics: A Developmental approach" Little Brown, Toronto, 1966.
6. Hannah Arendt, "The Origins of Totalitarianism", Harcourt Brace, New York, 1951.
7. Johari, J.C. "Comparative Government and Politics", Lucknow Publishers Private Limited, New Delhi, 1982.
8. Russell, C.E. Russell J.D. and Kasse Irene, "Comparative Political Today: A World View", London Press, New York, 1971.
9. Ball Magna, Martin Marrip, Shaun Breslin, "Comparative Government and Politics", Palgrave Macmillan press, UK, 1982.
10. Verba S and Almond, "The Civic Culture Revisited", little Brown, Boston, 1980.
11. Dahl, Robert A, Modern Political Analysis, Prentice Hall of India, New Delhi, 1991.

Pedagogy:

The course shall be taught through the Lecture Cum Discussion Method, Self-paced Learning Material, Open Educational Resource (OER) in relevant subjects, Practical Exercises, Assignments, Student Group Discussion and Web-aid Teaching Cum.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	15
Seminar Presentation Group Discussion	10
Assessment Test-2	10
Assignment	10
Total	45

GOOD GOVERNANCE IN INDIA

Open Elective OE - 4.1

Course Title: GOOD GOVERNANCE IN INDIA	
Total Contact Hours: 48	Course Credits: 3
No. of Teaching Hours/Week: 3	Duration of ESA Exam: 3 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60

Course Objective:

The course designed to familiarize the student to understand the elements of Good Governance which has the effect on day to day life. The purpose is to show to them the roles are changing from approach to Administration giving importance to stakeholders. Some of the programs mentioned in the syllabi exemplifies the same. The aim is to help students to link the theory in the class room with realities in the outside world.

Learning Outcome:

At the end of the course the students shall –

- Understand the difference between traditional form of Administration and the concept of Governance
- Get a perspective of changing modes of Governance with the examples drawn from central and state Governments
- Appreciate the participation of citizens & civil society organizations through e-Governance and other programmes like Janata Darshan etc.,

Unit	Contents of Course OE-4.1	48 Hours
Unit-I	Chapter-1 Meaning, Characteristics, Elements, Criteria and need for Good Governance Chapter-2 Theories and Concepts of Governance- Public Choice and Public Value Theory, Good Governance and Globalization	16 Hours

	Chapter – 3 Corporate Governance, Networking and collaborative Governance	
Unit-II	**Chapter-4** Public Service Guarantee Act 2011: Features, Provisions and Impact, Right to Information Act: Meaning, Characteristics and Importance **Chapter-5** E-Governance : Meaning, Characteristics, Importance and E Governance Policy, ICT and Governance **Chapter-6** Citizen Charter, Digital India Centre and Governance.	**14 Hours**
Unit- III	**Chapter-7** Lokvani Project, Bhoomi Project, SWAGAT and e-Kiosk, e-Seva **Chapter-8** People's Participation and Role of Civil Society, Ethics and Accountability in Governance **Chapter-9** Challenges before good governance in India	**14 Hours**

Exercise

- Teachers and the department can undertake survey regarding reasons and consequences of failure administrations.
- Through activities like role play letter regarding the working of organizations like Taluka, Block etc.
- The department may invite officers connected to Governance projects and have discussions with the students.

Suggested Readings

1. Kamla Kant Baghel, Good Governance and Development, Adhyan Publications, New Delhi, 2008.

2. G.P Bhatnagar, Good Governance in India, Rajat and Rajat, New Delhi, 2004

3. Dhiraja Alka Jha, Contemporary Debates in Public Administration, Prentice Hall of India, New Delhi, 2008

4. World Bank, Governance and Development, Washington, DC, 1992

5. Vibha Gupta, Kavita Sharma, Democratic Governance in India, Sage, New Delhi, 2004

Pedagogy:

The course shall be taught through the Lecture, Tutorial, Discussion, Survey, Self-guided Learning Material, Open Educational Resource (OER) as reference material, Practical Exercise, Assignments, Seminar, Group Discussion and Project and Community Work.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	15
Seminar/ Presentation/ Group Discussion	10
Assessment Test-2	15
Assignment	10
Total	40

UNDERSTANDING Dr. B.R. AMBEDKAR

Open Elective OE -4.2

Course Title: UNDERSTANDING Dr. B.R.AMBEDKAR	
Total Contact Hours: 45	Course Credits: 3
No. of Teaching Hours/Week: 3	Duration of ESA Exam: 3 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objective:

This course is designed to familiarize the students with significance and practice of Dr. B.R. Ambedkar on key social, political, constitutional and democratic issues in India and enable them to critically examine his perceptions. Besides the constitutional provisions and fight for the oppressed communities which are largely popular as academic and political discourses, has been designed to enable students to understand his ideas. On the question of the citizen and the Indian Nationalism his views have been valuable and this paper intends to bring to the reach of the students.

Learning Outcome:

At the end of the course the students shall –

- Be able to understand his life, activities, views and his key role in the making of the Indian Constitution.
- Be able to appreciate and examine his views on democracy, citizenship, freedom, equality, social treatment and justice.
- Understand his views on the issues of the important debates like Aryan Invasion Theory, Uniform Civil Code, future and position of India.

Unit	Contents of Course OE 4.2	45 Hours
Unit-I	Chapter 1 Dr. B. R. Ambedkar: Context of Life and Experience Chapter 2 Dr. B. R. Ambedkar's perception on Hindu Social Order, Caste and Untouchability under Annihilation of Caste	15 Hours

	Chapter-3 Dr. B. R. Ambedkar's Federal Solution: Critical Examination, Federal Provisions, Administrative Relations	
Unit-II	Chapter-4 Dr. B. R Ambedkar and Round Table Conference: An Introduction, Communal Award and Poona Pact Chapter-5 Dr. B. R. Ambedkar on Partition of India: Dr. B. R. Ambedkar's contribution as the Chairman of the Drafting Committee Chapter-6 Dr. B. R Ambedkar's Deliberations on key areas in the Constituent Assembly (Article 40, Article 370, Uniform Civil Code, Shariat Law, Hindu Code Bill and Affirmative Action)	14 Hours
Unit-III	Chapter-7 Dr. B. R Ambedkar's Political Ideas: Democracy, Citizenship, Equality, Freedom and Nation Chapter- 8 Dr. B. R. Ambedkar's Views on Islam, Buddhism and Religious Conversion as Ante-Terrorism Theory Chapter-9 Dr. B. R Ambedkar and Language Question, Dr. B. R.Ambedkar on Education and Women Empowerment and Nationalism	14 Hours

Exercise

- Students and teachers collectively debate on the issues of Reservation, Constitutional provisions of reservation, reservation versus merit issue, creamy layer theory etc.
- Give assignments to students on true versions of Scheduled Caste and Scheduled Tribe and fiction in the group about the perception that they have created.
- Debate on the need for social reform, social issues, changing the cultural and religious outlook among the Indian citizens keeping the new advanced practice like science/technology, exploitations. And further how courts, police services, etc. to understand conflict resolution mechanisms.

Suggested Readings :

1. Ambedkar, B.R. "What Congress and Gandhi have Done to the Untouchables" http://www.ambedkar.org/ambcd/14.What.Congress.And.Gandhi.Have.Done.To.The.Untouchables.htm
2. Ambedkar, Annihilation of Caste, Navayana, Link Ebook, 2014.
3. Dhanjaya Keer, Dr.Ambedkar-Life and Mission, Popular Prakashana, Bombay, 1954
4. Valerian Rodrigues, Essential Writings of Ambedkar, OUP, New Delhi, 2002
5. Marcus Banks, "Caste Building and Contesting: Studies of the Category under Ecologies India, New Delhi, 1996.
6. Atul Kolhi, "Democracy and Discontent: India's growing crisis of Governability, Cambridge University Press, 1990.
7. Atul Kolhi, The Success of India Democracy, Cambridge University Press, 2001
8. Jayshree Rao, India's Diverse Cultural Building: A Great Cultural Diversity at a Time, Wings Publishing, Bangalore, 2020
9. Niraj Gopal Jayal, "Citizenship and its Discontents", Harvard University Press, 2013.
10. Neeraj Jain, "Cultural Citizenship in India: politics, power and media", Oxford University Press, New Delhi, 2019.
11. Rukmini M. Mitra, "Citizenship in Cultural Rule: structure, agency and Rule", e-Book, Springer Link, 2017.
12. Sharma, A. Dr. B.R. Ambedkar on the Aryan Invasion and the Emergence of the Caste System in India, Journal of the American Academy of Religion, Vol. 82(2), 2014, pp. 541-575
13. Ambedkar, B. R. (1946). Pakistan or The Partition of India. In Volume III. (2nd ed.). 2014.
14. Dr. B. R. Ambedkar Writing and Speeches, Vol. 8. Delhi: Dr. Ambedkar Foundation, Ministry of Social Justice & Empowerment, Govt. of India.
Available at http://www.mea.gov.in/images/attach/amb/Volume_08.pdf
15. Misra, J., & Mishra, J. Dr. B.R. Ambedkar and The Constitution - Making in India. Proceedings of the Indian History Congress, 1990, 51, pp. 794-541
16. Constituent Assembly Debates, Ambedkar's speech on Draft Constitution on 4th November 1948, CAD Vol. VII, Lok Sabha Secretariat, Government of India, 3rd Print, pp 33-41
17. Ambedkar, B.R. Thoughts on Linguistic States, Bombay: Ramakrishna Press, 1955
18. Dr. Babasaheb Ambedkar Writings & Speeches - Vol. 1 to Vol. 17 - Published by: Social Justice and Empowerment, Govt. of India and Ambedkar Foundation, New Delhi, 2013

Pedagogy:

The course shall be taught through the Lecture, Tutorial, Seminar, Group, Self-guided Learning, Material, Open Educational Resource (OER) & Website search, Practical Exercise, Assignments, Seminar, Group Discussion and Project and Creative Work.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	15
Seminar Presentation/ Group Discussion	10
Assessment Test-2	15
Assignment	10
Total	40

POLITICAL JOURNALISM

Open Elective OE- 4.3

Course Title: POLITICAL JOURNALISM	
Total Contact Hours: 45	Credits: 3
No. of Teaching Hours/Week: 3	Duration of ESA/Exam: 3 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objectives:

The objective is to apply students to develop insights into political reporting with an understanding of writing skills supported by conceptual concepts and elements of media. Further to provide a broad overview of the nuances of interpreting the political phenomena that takes place in political institutions starting from the grassroots to the parliament.

Learning Outcome:

At the end of the course the students will: -

- Understand the skills of reporting and research insights about the events and its contextual contours focusing on Politics.
- Carry out political reporting covering Government and Governance, campaigns and candidates, issues and strategies and policy issues in the public arena.
- Develop writing and interpretative skills

Unit	Contents of Course- OE-4.3	45 Hours
Unit-I	Chapter-1 Defining Political Journalism, Traditional and Modern views about State and Politics. Chapter-2 Understanding of Political Development Caste, Religion, Linguistic and Party Perspectives. Chapter-3 Defining the Role of Mass Media- Print, Electronic	15 Hours

	and Web (Social Media)	
Unit-II	Chapter-4 Political Culture, Shared Beliefs, Values, Ideologies and Norms, Process of Socialization Chapter-5 Political Participation – Modes of participation, Political Apathy Chapter- 6 Methods of Political Socialization- Interviews, Political Debates, Conventions vs Legislatures	12 Hours
Unit- III	Chapter-7 Communication-Exchange of communications, Shaping Public Opinion, Encoding and Decoding Chapter-8 Skills of Writing – Vocabulary, Editorializing, Punctuation. Chapter-9 Report Writing- Journalistic Writing – Skills, Values, Journalism, Use of Facts and Figures and Interpretation.	14 Hours

Activities

- Conducting discussion Classes/seminars on Media and Politics
- Making students to read and write newspaper headlines focusing on politics
- Visit to media houses and talks with senior political news desk heads.

Suggested Readings

1. Stein, Sharon Rubin, Qualitative Research in Journalism, Erlbaum Associates, London, 2004
2. Merrill, Davis, Public Journalism And Public Life, Erlbaum Associates, London, 2004
3. Kohn, Raymond, Political Journalism New Challenges, New Practices, Routledge, New York, 2003.
4. Sedelow, Gail, & Morgenau, Judy, Interviewing – A Guide For Journalist And Writers, Crows West, Allen and Unwin, N.S.W., 2002.
5. Schmitt, Brian, Journalism And Democracy, Routledge, London, 2001.
6. Bevin, Wanna G, Discovering Journalism, Greenwood Press, West Port CT., 1999.
7. Wheeler, Samuel P, Mapping The Cultural Space Of Journalism, Praeger, West Port CT., 1997.
8. Palmer, B.T. (et al), Political Analysis, Oxford and IBH Publishers, New Delhi, 1997.
9. Johari, J.C, Comparative Politics, Sterling Publishers, New Delhi, 1992.

10. Dahl, Robert A, Modern Political Analysis, Prentice Hall of India, New Delhi, 1991

Pedagogy:

The course shall be taught through the Lecture, Tutorial, Interactive Sessions, Self-guided Learning Materials, Open Educational Resources (OER) as relevant subjects, Practical Exercises, Assignments, Seminars, Group Discussions and Term and Concept Cards.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	15
Seminar Presentation/ Group Discussion	10
Assessment Test-2	15
Assignment	15
Total	40

CONSTITUTION OF INDIA (Common Syllabus for all the UG Courses)

Ability Enhancement Compulsory Courses (AECC)	
Course Title: CONSTITUTION OF INDIA	
Total Contact Hours: 24	Course Credit: 2
No. of Teaching Hours/Week: 2	Duration of ESE/Exam: 1 Hours
Formative Assessment Marks: 20	Summative Assessment Marks: 50+30=80

Course Objective:

The purpose of the course is to familiarize the students with the key elements of Indian constitution. The course has been designed to cover the journey of the India from its emergence as a Republic. This will enable the students to understand various political institutions that are operationalized under the Indian Constitution.

Learning Outcomes:

After completing the course students will be able to-

- Understand the philosophy of the Constitution and its structure
- Identify the powers and functions of various offices under the Constitution
- Appreciate the role of Constitution in a Democracy

Unit	Contents of Course	24 Hours
Unit-I	Chapter- 1 Making of Indian Constitution: Constituent Assembly- Composition, Objectives, Preamble and Salient features of the Indian Constitution. Chapter- 2 Fundamental Rights, Duties and Directive Principles	8 Hours
Unit-II	Chapter- 3 Union Government: Executive, Prime Minister and Cabinet. Chapter- 4 State Government: Governor, Chief Minister and Cabinet.	8 Hours

Unit-III	Chapter-5 Judiciary: Supreme Court and High Court: Composition, Powers and Functions Chapter-6 Central Govt: Centre-State Relations: Composition, Powers and Functions; Election Commission	8 Hours

Exercise:

- Department can debate on the role of Constitution in the country's development.
- Students can appreciate/ evidence the effectiveness of concepts like –Freedom, Equality, Justice, Rights and Duties by conducting surveys.
- Can hold special lectures on various provisions of Constitution like working of Election Commission, Art 246, 356 etc.

Suggested Readings:

1. Durga Das Basu, Introduction to the Constitution of India, Gurgaon: LexisNexis, (21st edn.) 2018.

2. A.G.V. Pylee, India's Constitution, New Delhi: S. Chand Pvt. Ltd., (16th edn.), 2017.

3. J.N. Pandey, The Constitutional Law of India, Allahabad: Central Law Agency, (57th edn.) 2018.

4. Constitution of India (Full Text), Bilingual, National Portal of India, https://www.india.gov.in/sites/upload_files/npi/files/coi_part_full.pdf

5. K.B Muralidhara, Bharatada Samvidhana Oodu Parichaya, Bangalore: Udaya Publications, 2015.

6. K. Sharma, Introduction to the Constitution of India, Prentice Hall of India, New Delhi, 2005.

7. P.M. Bakshi, Constitution of India, Universal Law Publishing House, New Delhi, 1998.

8. D. C. Gupta, Indian Government and Politics, New publishing House, New Delhi, 1977.

9. U.N. Jha, Indian Political System: Historical Development, Ganga Kaveri Publishing House, Gaziabad, 2005.

10. A.N. Mukherji, Federalism in India, Origin and Development, Vani Publishing House, New Delhi, 1982.

Pedagogy:

The course shall be taught through the Lecture Method, Seminars, Self-guided Learning Materials, Open Educational Resources (OER) in various aspects, Practical Exercises, Assignments, Student Group Discussions and Web-aid Teaching Class.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	8
Tutorial/ Presentation/ Group Discussion	4
Assessment Test-2	8
Assignment	6
Total	26

General Pattern of Political Science Question Paper (NEP- 2020)

1. Term End Examination for Discipline Specific Core (DSC) and Discipline Specific Elective (DSE) Papers

Each paper will be for maximum of 80 mark. The minimum mark to pass for examination is 40% (24 mark) in each theory paper.

Note: Duration of Examination for Discipline Specific Core (DSC) and Discipline Specific Elective (DSE) Papers is 3 hours.

Question paper pattern for Discipline Specific Core (DSC) and Discipline Specific Elective (DSE) Papers –

Section A: Multiple Choice Questions
Section B: Short Answer Questions
Section C: Long Answer Questions

Section A: Multiple Choice Questions

All Questions are Compulsory (10x1=10)

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Section B: Short Answer Questions (2x10=20)

Answer any TWO questions. Answer the following questions in not more than 300 words.

11.
12.
13.

Section C: Long Answer Questions (2x15=30)

Answer any Two questions. Answer each of these questions in not more than 500 words

12.

13.

14.

15.

II. Term End Examination for Open Elective Papers (OE)

Each paper will be for maximum of 75 mark. The minimum mark to pass the examination is 45% (34 marks) in each theory paper.

Note: Duration of Examination for Open Elective Papers (OE) is 2 hrs.

Question paper pattern for Open Elective Papers –

Section A: Multiple Choice Questions
Section B: Short Answer Questions
Section C: Long Answer Questions
Section D: Essay type Answer Questions

Section A: Multiple Choice Questions

All Questions are Compulsory (10x1=10)

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Section B: Short Answer Questions (3x5=15)

Answer any Three questions. Answer the following questions in not more than 3 - 5 sentences.

11.
12.
13.
14.

Section C: Long Answer Questions (2x10=20)

Answer any Two questions. Answer the following questions in not more than 500 words

14.

15.

16.

Section D: Essay type Answer Questions (1x15=15)

Answer any One question. Answer the following question in not more than 1000 words

17.

18.

III. Term End Examination for Constitution of India (IC)

Paper will be for maximum of 50 mark. The minimum mark to pass the examination is 40% (20 marks)

Note: Duration of Examination for Indian Constitution (IC) is 1 hour

Question paper pattern for Indian Constitution –

Section A: Multiple Choice Question
Section B: Short Answer Question
Section C: Long Answer Question

Section A: Multiple Choice Questions

All Questions are Compulsory (10x1=10)

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Section B: Short Answer Questions (2x5=10)

Answer any Two questions. Answer the following questions in not more than 2-3 sentences.

11.
12.
13.

Section C: Long Answer Questions (1x10=10)

Answer any One question. Answer the following question in not more than 250 words.

14.

15.

KUVEMPU UNIVERSITY

JNANASAHYADRI, SHANKARAGHATTA

Under Graduate (BA) Syllabus

for

Political Science Discipline

Under NEP-2020

(1st and 2nd Semester Revised syllabus)

Table of Contents

Program Objectives in Political Science

- To understand the importance of concepts in Political Science
- To familiarize the students with the basic ideas, ideologies and theories in Political Science.
- To help them to understand and make distinction among Political Theory, Political Philosophy and Political Science and help them to understand the importance of these in the national and global contexts.
- To help them to understand the emergence and growth of modern States and give them an idea of their functioning and relate them to the political realities.
- To equip them to critically relate the theoretical aspects of Political Science to the socio economic and political realities of our times.

Program Learning Outcomes in Political Science:

At the end of the successful completion of the course, the students will be able to:

- Acquire domain knowledge.
- Study and analyse political systems from critical and alternative perspectives.
- Have a better understanding of the working of various political institutions including decentralized institutions, state legislatures and parliament and relate this functioning to the greater cause of nation building as a responsible citizen.
- Assess how global, national and regional developments affect polity and society.
- To gain critical thinking and develop the ability to make logical inferences about socio-economic and political issues, on the basis of comparative and contemporary political discourses in India.
- Contemplate about national and international issues involving States having different political ideologies and historical contexts.
- Pursue higher education such as Post Graduate Studies and Research in Political Science and in other interdisciplinary areas to provide qualitative insights to create a better world.

Revised Structure for Political Science Discipline

Semester I				
Course	Paper	Credits	No. of Teaching Hours/Week	Total Marks/ Assessment
DSC-1	Basic Concepts in Political Science	3	3	100 (60+40)
DSC-2	Political Theory	3	3	100 (60+40)
OE	1.1 Human Rights	3	3	100 (60+40)
	1.2 Elements of Indian Democracy	3	3	100 (60+40)
	1.3 Understanding Politics	3	3	100 (60+40)
Semester II				
DSC-3	Western Political Thought	3	3	100 (60+40)
DSC-4	Indian National Movement and Constitutional Development	3	3	100 (60+40)
OE	2.1 Indian Policy: Issues and Concerns	3	3	100 (60+40)
	2.2 Political Parties and Party Politics in India	3	3	100 (60+40)
	2.3 Colonialism and Nationalism in India	3	3	100 (60+40)

Revised Model Curriculum Design

Name of the Degree Program: [redacted]

Practical Course

Discipline Core: Political Science

Total Credits for the Program:

Starting year of implementation: 2021-22

Program Outcomes:

By the end of the program the students will be able to:

- Acquire domain knowledge.
- Study and analyze political matters from critical and constructive perspective.
- Have a better understanding of the working of various political institutions including decentralized institutions, state legislatures and parliament and relate this functioning to the greater cause of nation building as a responsible citizen.
- Assess how global national and regional developments affect polity and society.
- To gain critical thinking and develop the ability to make logical inferences about socio-economic and political issues on the basis of comparative and contemporary political discourses in India.
- Critically analyze about national and international issues involving States having different political ideologies and historical contexts.
- Pursue higher education such as Post Graduate Studies and Research in Political Science and in other interdisciplinary areas to provide qualitative insights to create a better world.

Assessment:

Weightage for assessments (in percentage)

Type of Course	Formative Assessment - 1	Summative Assessment
Theory	40	(60+40) =100
Practical	-	-
Projects	-	-
Experiential Learning (Internships etc.)	-	-

Revised Curriculum Structure for the Undergraduate Degree Program

BA/ BSc/ BCom/ BBA/ BCA

Total Credits for the Program:

Starting year of implementation: 2021-22

Name of the Degree Program: BA/ BSc/ BCom/ BBA/ BCA (Without Practical Course)

Discipline/Subject: Political Science

Program Articulation Matrix: Core Course

This matrix lists only the core courses. Core courses are essential to earn the degree in that discipline/subject. They include courses such as theory, laboratory, project, internships etc. Elective courses may be listed separately

Semester	Title /Name Of the course	Program outcomes that the course addresses (not more than 5 per course)	Pre requisite course(s)	Pedagogy	Assessments
I	Basic Concepts in Political Science	•Political Science conceptually and will give knowledge to Explain and analyze important political issues in day to day life •The dynamics of politics and appreciate its importance in a life of citizen		The course shall be taught through the Bridge Courses, Lecture, Tutorial, Interactive	40+40=100

		• The democratic spirit and the democratic functioning of a state.		Seminar, Self-guided Learning, Observation, Open Educational Resources (OER) as reference material, Practical Exercises, Assignments, Seminars, Group Discussions and Field and Community Visits.	
I	Political Theory	• The nature, relevance of Political Theory and its approaches. • And analyses the concepts like Liberty, Equality, Justice and Rights • And to reflect upon the current		The course shall be taught through the Lecture, Tutorial, Interactive Sessions.	60+4=64 (X)

		Ideas in Political Theory		Self-guided Learning Strands: Open Educational Resources (OER) and Critical reflection including Practical Exercises, Assignments, Seminars, Group Discussions and Field and Community Cases.	
2	Western Political Thought	• And get an introduction to the Schools of Political Thought and Theory building in the West. • And articulate the richness and variations in the political perspectives of		-do-	45 hrs (3 hrs/w)

		Western Thinkers • And Significance Contribution to the Thought and Times of Western Philosophy			
2.	Indian National Movements And Constitutional Development	• Understand how the colonial rule was strengthened by the Indian nationalists • Appreciate the ideals and values of Gandhi and other freedom fighters that resulted in freedom. • Examine the problems of Independent India and the role played by leaders in solving them			

Revised Program Articulation Matrix: Elective Course

This matrix lists only the core courses. Core courses are essential to earn the degree in that discipline/subject. They include courses such as theory, laboratory, project, workshops etc. Elective courses may be listed separately

Semester	Title/ Name Of the course	Program outcomes that the course addresses (not more than 3 per course)	Pre-requisite course(s)	Pedagogy	Assessments
I	Human Rights	• Explain the basic concept of Human Rights and its various formulations • Have necessary knowledge and skills for analysing, interpreting and applying the Human Rights standards and relevant laws to the cases • Develop ability to critically analyse Human Rights situations around them.		The course shall be taught through the Lecture, Tutorial, Interactive Sessions, Self-paced Learning Materials, Open Educational Resources (OER) as relevant materials, Practical Exercises, Assignments, Seminars	

				Group Discussion and Quiz and Concluding Classes	
	Elements of Indian Democracy	• Understand the ideals of Indian democracy and its working. • The functioning of legislature, executive and judiciary • Nature & dynamics between Centre, State and Decentralized Institutions		The course shall be taught through the Lecture, Tutorial, Interactive Sessions, Self-guided Learning Materials, Open Educational Resources (OER) as reference materials, Practical Exercises, Assignments, Seminars, Group	

				Discussion and Web and Counselling Classes	
	Understanding Politics	• Explain the difference between State and Nation • Understand the role of State in Nation building • Understand the relation of Politics and Power		The course shall be taught through the Lecture, Tutorial, Interactive Sessions, Self guided Learning Materials, Open Educational Resources (OER) as reference materials, Practical Exercises, Assignments, Seminars, Group Discussions	

				and Class and Conducting Tests	
5	Indian Polity: Issues and Concerns	• Understand the reasons behind the causes of these issues and also the constitutional provisions that existed. • Familiarize with the debates that emerged. • Be able to suggest the measures to control such issues.			
	Political Parties and Party Politics in India	• Understand the need for political parties in a democracy, their structure and functions, types etc. • Relate their everyday life with regard to the elements of democracy and their contribution to the development of a nation. • Familiarize how		The course shall be taught through the Lecture, Tutorial, Interactive Session, Self-guided Learning Materials, Open Educational Resources	

		to the various political-social institutions in a democracy.		(CBS) in reference to Political Economy, Assignments, Seminars, Group Discussions and Field work, Counseling Classes.	
	Colonialism and Nationalism in India	• Explain the colonial experience of Indian people. • Analyse the various trends, non-violent, culture, society and politics including Indian response • Evaluate the discussions on the concept of Nationalism and its (various) origin.		The course shall be taught through the Lecture, Tutorial, Interactive Sessions, Self guided Learning Materials, Open Educational Resources (OER) in	


Semester I

BASIC CONCEPTS IN POLITICAL SCIENCE

DSC-1

Course Title: BASIC CONCEPTS IN POLITICAL SCIENCE	
Total Contact Hours- 48	Course Credits: 3
No. of Teaching Hours/Week:3	Duration of ESA/Exam: 3Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objectives:

Develop a conceptual understanding regarding the nature and philosophy of Political Science and its interface with society. The course enables students to develop qualities of responsible and proactive citizenship in a democracy.

Learning Outcome:

At the end of the course the students shall understand -

- Political Science conceptually and will gain knowledge to explore and analyse pragmatic politics in day to day life.
- The dynamics of politics and appreciate its importance as a life of citizen.
- The democratic spirit and the democratic functioning of a state.

Unit	Contents of Course:]	48 Hours
Unit-I	Chapter- 1 Meaning of Political Science, Scope and Importance of Political Science. Approaches to the study of Political Science. Chapter- 2 Meaning, Definitions and Elements of State. Differences between State and Government, State and Society, State and Association. Chapter-3 Civil Society - Meaning and Importance.	16 Hours
Unit-II	Chapter-4 Emergence, Meaning and Characteristics of Sovereignty and Law.	16 Hours

	Chapter-5 Kinds of Sovereignty: Austin – Monistic, Hobbes- Pluralism Chapter-6 Challenges to Sovereignty in the era of Globalization	
Unit- III	Chapter-7 Liberty: Meaning and Kinds (Positive and Negative) Chapter-8 Equality: Meaning and Kinds (Social, Economic and Political) Chapter-9 Power and Justice: Meaning and kinds Political Obligation: Meaning and Nature	15 Hours

Exercise:

1. List out the modern elements of State
2. List out the countries and identify the issues related to equality
3. Identify an issue related to civil society and discuss its role.

Suggested Readings:

1. Political Theory: Ideas & Concepts, S. Ramaswamy, Macmillan, Delhi 2002
2. Modern Political Theory, S. P. Verma, Vikas, New Delhi, 1983
3. Principles of Modern Political Science, PC Jain, Sterling Publishers Pvt Ltd, 1985.
4. Principles of Political Science, AC Kapur, Indian Chand and Sons, New Delhi, 2004
5. Principles of Political Science, KD Agarwal, Vidya Bhushan, Vishnoo Bhavan, R. Chand & Co, New Delhi, 1998
6. Political Science Theory, S C Pant, Prakashan Kendra, Lucknow, 1998
7. Political Science Theory, B. N Dubey, Lakshmi Narain Agarwal, Agra, 2002
8. Principle of Modern Political Science, P C Jain, Sterling Publications, New York, 2008
9. Principles of Political Science, Anup Chand Kapur, S Chand & Co Ltd, 2010

Pedagogy:

The course shall be taught through the Bridge Course, Lecture, Tutorial, Interactive Session, Self-guided Learning Material, Open Educational Resources (OER) as reference material, Practical Exercises, Assignments, Seminars, Group Discussions and Field-visit Oriented Classes.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	10
Seminar Presentation/ Group Discussion	10
Assessment Test-2	10
Assignment	10
Total	40

POLITICAL THEORY

DSC-1

Course Title: POLITICAL THEORY	
Total Contact Hours: 48	Course Credits: 3
No. of Teaching Hours/Week:3	Duration of ESA/Exam: 3Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Outcome:

The course aims at familiarizing the theories of politics and Political Science synthesizing it with the skills required to engage in debates surrounding the application of politics and the Science of Politics.

Learning Outcomes:

At the end of the course the students shall understand -

- The nature, relevance of Political Theory and its application.
- And analyse the concepts like Liberty, Equality, Justice and Rights.
- And to reflect upon the current debates in Political Theory.

Unit	Contents of Course- 3	48 Hours
Unit-I	**Chapter-1** Meaning, Nature and Importance of Political Theory **Chapter-2** Traditional and Modern Approaches (Normative, Philosophical, Institutional, Behavioral, Post-Behavioral, Systems (David Easton) and Marxian **Chapter-3** Relevance of Political Theory, Decline and Resurgence of Political Theory	15 Hours
Unit-II	**Chapter-4** Liberalism: Early and **Chapter-5** Neo- Liberalism: Nozick **Chapter-6** Libertarianism: Nozick	15 Hours

Unit- III	Chapter-7 Communitarianism and Multiculturalism: Indian perspective (Bhikhu Parekh); Colonialism and Post Colonialism: its Limitations Chapter-8 Proponents: Nandy, Varma, Gandhi, Rajiv Bhargav Chapter-9 Critiques of Secularism: Ashish Nandy, T.N. Madan, S.N. Balagangadhara	24 Hours

Exercise:

- Assess the Myths and Realities of Communitarianism
- Compare the concept of Liberty, Equality and Justice in the Western and Eastern world
- Critique the understanding of secularism and pseudo secularism in India

Suggested Readings:

1. Ahmad, V. Theory: Classes, Nations Literatures. Verso: London, 1992.
2. Arendt, H., On Revolution. Viking: New York, 1965
3. Ashcroft, B. The Post-Colonial Studies Reader. Routledge: London, 1995
4. Balagangadhara, S.N., and Jakob De Roover. "The Secular State and Religious Conflict: Liberal neutrality and the Indian Case of Pluralism". The Journal of Political Philosophy 15 no. 1: 67-82, 2007.
5. Bhargava, Rajeev, Ed. Secularism and Its Critics. Oxford University Press: New Delhi 1998.
6. Bryson, V. Feminist political Theory. Macmillan: London, 1992.
7. Christopher Butler, Postmodernism: A very Short Introduction, OUP Oxford, 2002
8. Christopher Norris, the Truth about Postmodernism, Wiley- Blackwell, New Jersey, 1995
9. Connolly, W. Identity/Difference: Democratic Negotiations, Cornell University Press, NY, 1991
10. Edward Said, Orientalism, Pantheon Books, New York, 1978.
11. Markham, J. B. Public Man, Private Men: women in Social and Political Thought. Princeton University Press, Princeton NJ, 1982.
12. Pateman, P. Sharla ding, white Masks, translated by C. L. Markham, Grove Press, New York, 1967.

13. Jean Francois Lyotard, The Postmodern Condition: A report on Knowledge, Paris: Minuit, 1979.
14. Nehru, Jawaharlal. 1946. The Discovery of India. Jawaharlal Nehru Memorial Fund, Oxford University Press, New Delhi, 1989.
15. Parekh, Bikhu. *Rethinking Multiculturalism*. Palgrave MacMillan Ltd. 2000
16. Rochana Bajpai, The conceptual vocabularies of secularism and minority rights in India, Journal of Political Ideologies, 2002
17. Veena Das, Dipankar Gupta and Patricia Uberoi (Ed.), Tradition, Pluralism and Identity, Sage, New Delhi, 1999
18. [illegible] 2016
19. [illegible] 2002

Pedagogy:

The course shall be taught through the Bridge Courses, Lecture, Tutorial, Interactive Sessions, Self-guided Learning Materials, Open Educational Resources (OER) and Critical reflection including Practical Exercises, Assignments, Seminars, Group Discussions and Week-end Counseling Classes.

Formative Assessment	
Assessment Occasion/ type	**Weightage in Marks**
Assessment Test-1	10
Seminar Presentation/Group Discussion	10
Assessment Test-2	10
Assignment	10
Total	**40**

HUMAN RIGHTS

Open Elective OE-11

Course Title: HUMAN RIGHTS	
Total Contact Hours: 48	Course Credits: 3
No. of Teaching Hours/Week: 3	Duration of ESA/Exam: 2Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objective:

This course aims to introduce the students to basic concepts and practices of Human Rights in the global and local domain. This course also exposes them to certain recent issues confronting the Human Rights debates.

Learning Outcomes:

After completing this course students will be able to:

- Explain the basic concept of Human Rights and its various formulations.
- Have necessary knowledge and skills for analysing, interpreting, and applying the Human Rights standards and sensitize them to the issues.
- Develop ability to critically analyze Human Rights situations around them.

Unit	Contents of Course- OE-11	48 Hours
Unit-I	**Chapter-1** Meaning, nature, scope and Classification of Human Rights **Chapter-2** The Human Rights of Two generation (Civil and Political Rights), Second generation (Economic, Social and Cultural Rights), Third generation (Collective Rights) and Fourth generation (Objective Rights) **Chapter-3** Universal Declaration of Human Rights	24 Hours
Unit-II	**Chapter-4** Human Rights and Fundamental Rights, Fundamental Rights and Fundamental Duties in India **Chapter- 5** National Human Rights Commission (NHRC) - Composition and its function	24 Hours

	Chapter-6 Karnataka State Human Rights Commission (KSHRC) – Composition and its functions	
Unit-III	Chapter -7 National Commission and Committees for SC's ST's, Minorities, Commission, Women Commission Chapter-8 Main issue and violation of Human Rights- Discrimination and violence against women, children, Dalits and Minorities, Trafficking, Child Labour and Bonded Labour Chapter-9 Challenges to Human Rights	12 Hours

Exercise:

- Group Discussion on Human Rights and its types (comparison of Western and Eastern concept of Human Rights)
- Students can be asked to do collage making and present the same.
- In order to make it more participatory learning, the students are required to visit the website of NHRC (www.nhrc.nic.in), wherein at the left hand side a link is provided to the 'instructions'. After going through the guidelines issued by NHRC's, briefly explain the guidelines viz.– Custodial death case, Encounter death, and Guidelines on arrest

Suggested Readings:

1. Acharya, B.C. A Handbook of Women's Human Rights, Wisdom Press, New Delhi, 2011.
2. Rao, Upendra (ed.), The Rights to be Human, Lancer International, Gurgaon, New Delhi, 1987.
3. Craston, M. What are Human Rights, Bodley Head, London, 1973.
4. Donelly, Jack and Rhoda Howard (ed.), International Handbook of Human Rights, Westport, Connecticut: Greenwood Press, 1987.
5. Donelly, Jack, Universal Human Rights in Theory and Practice, New Delhi, Manas, 2005.
6. Dr.S.K. Gupta, "Statewise Comprehensive Information on Human Rights Violation", Published by ASP Books, Delhi, 2009
7. Dr Tapan Biswal "Human Rights, Gender and Environment" Viva Books Private Limited Publishers, New Delhi, 2006
8. Gerwith, Human Rights: Essays on Justification and Application, University of Chicago Press, Chicago, 1982.
9. James (ed.), The Rights of People, Oxford, New York, 1988.
10. Jayan, Syncretism, "Human Rights: Concept and Standards", Ravat Publications, New Delhi , 2010.
11. Khan, Mumtaz Ali, Human Rights and the Dalits, Uppal Publishing House, New Delhi, 1995.
12. Lillich, R. International Human Rights: Law Policy and Practice, Boston: Little Brown and Co., 1991, 2nd Edn.
13. Rhonda K. Callaway & Julie Harrelson- Stephens, "International Human Rights", Published by [illegible] private limited, New Delhi, 2010.
14. Satya P. Kumar, "Human Rights Evolution and Development", Wisdom Press, New Delhi 2012.
15. South Asia Human Rights Documentation Centre, Introducing Human Rights, Oxford, New Delhi, 2006.
16. Sunil Dahiya and Kiran Dahiya "Fundamental Human Rights", Deep and Deep Publications, New Delhi, 2011.
17. V.T.Paul, "Human Rights Development in South Asia", Authors Press Publishers, Delhi 2009.
18. Wasi, Nita, Dalits of India, Harnet Chawla Press, Lucknow, (P) (2011).
19. [illegible]
20. [illegible]

[illegible]

2015

Pedagogy:

The course shall be taught through the Bridge Course, Lecture, Tutorial, Interactive Session, Self-guided Learning Material, Open Educational Resources (OER) as reference material, Practical: Exercises, Assignments, Seminars, Group Discussions and Web-aid Learning Classes.

Formative Assessment	
Assessment Occasion/ type	**Weightage in Marks**
Assessment Test-1	10
Seminar Presentation/Group Discussion	10
Assessment Test-2	10
Assignment	10
Total	**40**

ELEMENTS OF INDIAN DEMOCRACY

Open Elective-1.2

Course Title: ELEMENTS OF INDIAN DEMOCRACY	
Total Contact Hours: 45	Course Credits: 3
No. of Teaching Hours/Week:3	Duration of ESA Exam: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objectives:

This course is designed to develop a sound understanding of Indian Democracy and its working. It will allow the students to comprehend the nuances of Democracy including its institutions.

Learning Outcomes:

After completing this course students will be able to:

- Understand the ideals of Indian Democracy and its working.
- The functioning of Legislature, Executive and Judiciary.
- Make a distinction between Central, State and Decentralised Institutions.

Unit	Contents of Course- OE-1.2	45 Hours
Unit I	**Chapter-1 Democracy:** Meaning, Nature and History **Chapter-2** Principles and Types of Democracy **Chapter-3** Concept of Decentralization and its types: Decentralization, De-concentration, Delegation, Devolution and Democratic Centralism	15 Hours
Unit II	**Chapter-4 Procedural and Substantive Democracy:** Elections, Representation, and Party System in India **Chapter- 5 Deliberative Democracy:** Decision Making, Law making through debates **Chapter-6 Institutional Structure:** Legislature, Executive and Judiciary	15 Hours

Unit- III	Chapter-7 Federalism: Cooperative and Competitive Federalism Chapter-8 Quasi- Federalism ; Nature and Significance Chapter-9 Decentralised Institutions: Panchayati Raj and Municipalities	15 Hours

Exercise:

- Group Discussion on the topic Democracy and its types.
- A survey can be conducted on voting behavior.
- Students can visit/watch the live sessions of legislature to have the practical practice experiences.
- Students can conduct a brain storming session on necessity of Federal structure in multicultural society.

Readings:

1. Arblaster, A. Democracy (3rd ed.) Open University Press, Buckingham, 1994
2. Kohli, A. (Ed.) The Success of India's Democracy. Cambridge University Press. 2001
3. Brass, Paul J. Democracy. In Bhargava, R. & Acharya, A. (Eds.) Political Theory: An Introduction. Pearson Longman. 2008
4. Goldfield, SL 2008. The Judiciary and Governance in India. Rupa Publications India Delhi. 2008
5. Yogendra Yadav, Making Sense of Indian Democracy: Theory in Practice, Permanent Black, India. 2020
6. Arvind Sivaramakrishnan and Sudarsan Padmanabhan, Indian Democracy: Contradictions and Reconciliations. SAGE Publications Pvt. Ltd. India.2020
7. Maheen and Douglas, India's Democracy. W.W.Norton & Co Inc. New York City. 1972
8. Almond, G.A. and Verba, S. "The Civic Culture: political Attitudes and Democracy in Five Nations". Princeton University Press, Princeton NJ. 1963
9. Maurice Cowling. Mill & Liberalism. Cambridge University Press. New York. 1990
10. SL Aslam, Panchayati Raj in India, National Book Trust, Delhi, 2010
11. Dahl, R. A. Democracy and its Critics. Orient Longman. New Delhi. 1991
12. Arblaster, A. Democracy. (3rd edition). Open University Press, Buckingham, 1994
13. Kohli, A. (Ed.). The Success of India's Democracy. Cambridge University Press. 2001

Pedagogy:

The course shall be taught through the Lecture, Tutorial, Interactive Session, Self-guided Learning Materials, Open Educational Resources (OER) as reference materials, Practical Exercises, Assignments, Seminars, Group Discussions and Field-visit/Counselling Classes.

Formative Assessment	
Assessment Occasions/ type	Weightage in Marks
Assessment Test-1	10
Seminar Presentation/ Group Discussion	10
Assessment Test-2	10
Assignment	10
Total	40

UNDERSTANDING POLITICS
Open Elective L3

Course Title: UNDERSTANDING POLITICS L3	
Total Contact Hours: 48	Course Credits: 3
No. of Teaching Hours/Week:3	Duration of ESA Exam: 3 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objective:

This course is designed to develop a better understanding of Political Science and politics and how it is interpreted differently by people holding different ideological positions. The critical engagements with concept of politics will allow the students to develop their own understanding of politics.

Learning Outcomes:

After completing this course students will be able to:

- Explain the differences between State and Nation.
- Understand the role of State in Nation building.
- Understand the relations of Politics and Power.

Unit	Contents of Course- OE-L3	48 Hours
Unit-I	Chapter-1: Defining Politics, Politics and Governance Chapter-2: Politics and Power: Resource sharing and distribution (Natural Resources, Basic amenities and Public utilities) Chapter-3: Politics and Political Parties	16 Hours
Unit-II	Chapter-4: Evolution, Nature and Elements of State Chapter-5: Ideologies of State: Liberal, Socialist and Marxist Chapter-6: Changing Role of State in the Era of Globalization	16 Hours
Unit- III	Chapter-7: State and Nation: Similarities and Differences Chapter-8: Spiritual Nationalism: Aurobindo, Rabindranath Tagore and Bal Gangadhar Tilak Chapter-9: Muslim Nationalism: Sir Syed Ahmad Khan and Muhammad Iqbal	16 Hours

Exercise:

- Write an essay on Resource Distribution being done by the Local Panchayath.
- Conduct a Group Discussion on the Impact Globalization on the State
- Debate on Nationalism as Essential Concept for the Survival of the State

Readings:

1. O'Connor, W. A Nation is a Nation, is a State, is a Ethnic Group, In Hutchinson, J. & Smith, A. (Eds.), Nationalism, Oxford University Press, Oxford 1994
2. Politics in India Rajni Kothari, Orient Blackswan, Bangalore 2012
3. Balagangadhara S.N. Reconceptualising India Studies, Oxford University Press, New Delhi, 2012
4. The Oxford Companion to Politics in India, Student Edition Nirja Gopal Jayal and Pratap Bhanu Mehta, Oxford, Atlas, India 2010
5. Partha Chatterjee The Nation and Its Fragments Colonial and Postcolonial Histories, Oxford University Press, New Delhi, 1997
6. Balagangadhara S.N. Reconceptualising India Studies, Oxford University Press, New Delhi, 2012
7. Islam, Shamsul, "The Origins of Indian Nationalism" in Religious Dimensions of Indian Nationalism, Media House, Delhi, 2004
8. Chandra, Bipan, Ideology and Politics in Modern India, Har-Anand Publications, New Delhi, 1994
9. Hegde, Rajaram. Ed. Bharatiya Sikhana, Samaja mattu Sanskriti, (in Kannada) Karnataka Sahitya Academy, Bangalore, 2004.
10. Ambedkar, B.R, Pakistan or the Partition Of India, Ed-Vasant Moon, Vol-8, Dr. Ambedkar Foundation, Ministry of Social Justice & Empowerment, Govt. of India, New Delhi, 1990.
11. Balagangadhara, S.N. Bahubhagagalu Nirmisidaru, (in Kannada) I.B. Sathyanveshi, Akshara Prakashana, Hoggeri, 2012
12. Balagangadhara, S.N. Parivartanaru, (in Kannada) Rajaram Hegde & I.B. Sathyanveshi, Akshara Publications, Bangalore, 2012
13. Harrington, L. Nation and Nationalism: The Misuse of Key Concepts in Political Science, PS: Political Science and Politics, 1997, 30(4), pp. 732-738.

Pedagogy:

The course shall be taught through the Lecture, Tutorial, Interactive Session, Self-guided Learning Materials, Open Educational Resources (OER) as reference materials, Practical Exercises, Assignments, Seminars, Group Discussions and Field-aid Counseling Classes.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	10
Seminar Presentation/ Group Discussion	10
Assessment Test-2	10
Assignment	10
Total	40

Semester II

WESTERN POLITICAL THOUGHT

DSC-3

Course Title: WESTERN POLITICAL THOUGHT	
Total Contact Hours: 45	Course Credits: 3
No. of Teaching Hours/Week:3	Duration of ESA/Exam: 3Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 50+60=100

Course Objective: The Syllabus is designed to understand Political Philosophy, traditions that evolved in Europe from Ancient to the beginning of modern era. To examine the contributions of the Greek, Roman, Medieval and early Modern thinker's Philosophical thought.

Learning Outcomes:

At the end of the course the students shall understand -

- And get an introduction to the Schools of Political Thought and Theory building in the West.
- And introduces the richness and variations in the political perceptions of Western Thinkers.
- And familiarizes themselves to the Thought and Theory of Western Philosophy.

Unit	Contents of Course-3	45 Hours
Unit-I	**Chapter -1** Salient Features of the Greek Political Thought, **Plato**: Theory of Justice, Philosopher King, Aristotle: State and Its Classification, Theory of Revolution. **Chapter -2** Salient Features of Roman and Medieval Political Thought. **Chapter -3** St. Thomas Aquinas: Church vs State, St. Augustine: Theory of Two Swords, **Machiavelli**: On Politics and State Craft, Views on ends and means.	15 Hours
Unit-II	**Chapter -1 Hobbes**: Social Contract and Theory of Sovereignty, **Locke**: Social Contract and Tolerance, **Rousseau**: Social Contract and General Will.	15 Hours

	Chapter -2 Bentham- Theory of Utilitarianism Chapter -3 J.S. Mill- Views on Liberty	
Unit- III	Chapter -1 Hegel - Dialectical Materialism Karl Marx - Classless and stateless society Chapter -2 Jurgen Habermas- Communicative action, Public Sphere, Theory of truth and knowledge Chapter -3 Hannah Arendt- Theory of Action, Violence, Conception of Citizenship	14 Hours

Essentials

- Compare Greek State with the Roman state and make points
- Juxtapose the present situation with that of Contemporary Theory
- To read and understand philosophical basis of Political Thought

Suggested Readings:

1. A. Hacker, Political Theory: Philosophy, Ideology, Science Macmillan, New York, 1961.
2. G.H. Sabine, A History of Political Theory, Oxford and IBH, New Delhi, 1967
3. C.L. Wayper, Political Thought, B.I. Publications, Bombay, 1977
4. Ernest Barker, Greek Political Theory: Plato and his Predecessors, Methuen & Co., London, 1970
5. M. Butterfield, The State Craft of Machiavelli, The Macmillan Company, New York, 1956
6. O.P. Bakshi, Politics and Prejudice: Notes on Aristotle's Political Theory, The Delhi University Press, Delhi, 1975
7. M.A. Shepard, "Sovereignty at the Crossroads: A Study of Bodin", Political Science Quarterly, XLV, pp 580-603.
8. L. Collett, From Rousseau to Lenin, Oxford University Press, New Delhi, 1969
9. G.H. Sabine, A History of Political Theory, IX. Thomas, Oxford and IBH, New Delhi, 1967
10. C.E. Vaughan, The Political Writings of Jean Jacques Rousseau, 2 Vols, John Wiley, New York, 1962.

11. C.L. Wayper, Political Thought, B.I Publications, Bombay, 1977.
12. H. Warrender, The Political Philosophy of Hobbes: His Theory of Obligation, Oxford: Clarendon Press, 1957.
13. A. Hacker, Political Theory: Philosophy, Ideology, Science, Macmillan, New York, 1961.
14. D. Boucher and P. Kelly, (eds), Political Thinkers, From Socrates to the Present, Oxford, Oxford University Press, 2009.
15. J. Coleman, 'A History of Political Thought: From Ancient Greece to Early Christianity, Oxford, Blackwell Publishers, 2000.
16. Mukherjee, Subrata and Subesha Ramaswamy, 'History of Political Thought: Plato to Marx', PHI Publishers, New Delhi, 2011.
17. A. Hoople and T. Madsen, 'Political Philosophy: Essential Selections', Pearson Education, New Delhi, 2007.

Pedagogy:

The course shall be taught through Lectures, Tutorial, Interactive Sessions, Self-guided Learning Materials, Open Educational Resources (OER) as reference materials, Practical Exercises, Assignments, Seminars, Group Discussions and Visit and Counseling Clinics.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	20
Seminar Presentation/ Group Discussion	10
Assessment Test-2	20
Assignment	10
Total	40

INDIAN NATIONAL MOVEMENT AND CONSTITUTIONAL DEVELOPMENT

DSC-4

Course Title: INDIAN NATIONAL MOVEMENT AND CONSTITUTIONAL DEVELOPMENT	
Total Contact Hours: 45	Course Credits: 3
No. of Teaching Hours/Week: 3	Duration of ESA Exam: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60

Course Objectives

- To familiarize the students with the class of Colonialism and colonial rule
- To acquaint the students with the problems of Independent India
- To enable the students to understand the role of India in World affairs

Learning Outcomes

At the end of the course the students shall -

- Understand how the colonial rule was overthrown by the Indian nationalists
- Appreciate the ideals and views of Gandhi and other freedom fighters that resulted in freedom
- Examine the problems of Independent India and the role played by leaders in solving them

Unit	Contents of Course-4	45 Hours
Unit-I	Chapter-1 Indian National Movement: Factors, The Liberal, The Extremist and Revolutionary Phase Chapter-2 The Gandhian Phase: Non-Cooperation and related Chapter-3 Civil Disobedience Movement and the Quit India movement	15 Hours

Unit-II	Chapter-4 Morley-Minto Reforms Act of 1909, Montagu Chelmsford Act of 1919: main provisions and Diarchy, The Nehru Report and Jinnah's 14 point Formula Chapter-5 Government of India Act of 1935: main provisions, Round Table, provincial Autonomy and federal scheme Chapter-6 Indian Independence Act of 1947: main provisions, Simla Commission and Cabinet Mission Plan	35 Hours
Unit- III	Chapter-7 Citizenship, State Structure Chapter-8 Minority Rights, Uniform Civil Code and Personal Law, Chapter-9 Language and Union of States (The above three should be discussed in the context of Constituent Assembly Debates)	35 Hours

Exercise:

- Think of the colonial situation and its effects on our political and socio-economic conditions and compare it with the present context to examine how they are different.
- List out in a table giving some democratic rules of a citizen.
- Illustrate the qualities of good Democracy and assess your own Democratic values.

Suggested Readings:

1. Bandyopadhyay, S. From Plassey to Partition: A History of Modern India, Orient Longman, New Delhi, 2004.

2. Chaplot, R. 'Interpretations of Colonial History: Colonial, Nationalist, Post-colonial', in Deshpande, P.K. (ed.) Contemporary India: Transitions, Sage Publications, New Delhi, 2000.

3. Kumar, S. Modern India (1885-1947), Macmillan, New Delhi, 1983.

4. Palat, A. and Bose, S. Modern South Asia: History, Culture, and Political Economy, Oxford University Press, New Delhi, 1997.

5. Smith, A.D. Nationalism, Polity Press, Cambridge, 2001.

6. Islam, S. 'The Origins of Indian Nationalism', in Religious Dimensions of Indian Nationalism, Media House, New Delhi, 1994.

7. Chatterjee, P. 'A Brief History of Subaltern Studies', in Partha Chatterjee: Critical Essential Writings (1985-2005), Permanent Black, New Delhi, 2015.

8. Mani, B.R. Debrahmanising History: Dominance and Resistance in Indian Society, Manohar Publishers, New Delhi, 2005.

Pedagogy:

The course shall be taught through the Lecture, Tutorial, Interactive Sessions, Self-guided Learning Materials, Open Educational Resources (OER) as reference materials, Practical Exercises, Assignments, Seminars, Group Discussions and Field-visit Counseling Classes.

Formative Assessment	
Assessment Occasions/ type	Weightage in Marks
Assessment Test-1	10
Seminar Presentation/ Group Discussion	10
Assessment Test-2	10
Assignment	10
Total	**40**

INDIAN POLITY: ISSUES AND CONCERNS

Open Elective OE-2.1

Course Title: INDIAN POLITY AND CONCERNS	
Total Contact Hours: 48	Course Credits: 3
No. of Teaching Hours/Week:3	Duration of ESA/Exam: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objective: To make the students aware on different issues that exists in Indian polity. Through this paper students need to understand the emerging issues and their causes in the Indian Democracy.

Learning Outcome:

At the end of the course the students shall :

- Understand the reasons behind the causes of these issues and also the constitutional provisions that existed.
- Familiarize with the debates that emerged.
- Be able to suggest the measures to control such issues.

Unit	Contents of Course OE-2.1	48 Hours
Unit-I	**Chapter-1 National Integration and Social Harmony** – Meaning, Definition and Need of National Integration and Social Harmony **Chapter-2 Society and Politics in India**: Caste and its Impact, Problems in understanding caste as a social system and Defining the Role of Caste in Society and its Impact on Indian Polity **Chapter-3 Language**- Role and Constitutional Provisions, Issues.	16 Hours
Unit-II	**Chapter-4 Religion and Local Traditions** – Defining Religion, Role of Religion and Traditions in Society and Constitutional Provisions **Chapter-5 Development and Inclusiveness**: Defining	16 Hours

	Development and Inclusion, Exclusion, Backwardness, Underdevelopment, Caste Exclusion, Discrimination, Provisions under Constitution **Chapter-6 Regionalism** – Reasons for the Growth, Forms and Measures	
Unit- III	**Chapter-7 Corruption**- Types, Causes and Measures **Chapter-8 Terrorism**- Types, Causes and Measures **Chapter-9 Celebrating Diversity** – Opinions and Challenges	**15 Hours**

Exercises:

1) Classify the major factors which are an impediment to National Integration and give your suggestions to remove it.
2) Survey regarding on the impact of corruption and terrorism on society, democracy and social differentiation including stereotypes.
3) Debate on the implications of 2011 Anti-Corruption movement in India and your response.

Suggested Readings:

1) M. Galanter 'The Long Half-Life of Reservations', in Z. Hasan, R. Jenkins and R. Sudarshan (eds.) India's Living Constitution: Ideas, Practices, Controversies, Permanent Black, New Delhi, 2005.

2) C. Jaffrelot, 'The Politics of the OBCs', in Seminar, June 2005

3) Singh, M.P. & Saxena, R. Indian Politics: Contemporary Issues and Concerns, PHI Learning, New Delhi, 2008

4) Vanaik, A. & Bhargava, R. (eds.) Understanding Contemporary India: Critical Perspectives Orient Blackswan, New Delhi, 2010

5) Dipankar Sahai 'Bharatvarsh Terrorism ahead', Mahalakshmi Publications, Allahabad, 2012

Pedagogy:

The course shall be taught through the Lecture, Tutorial, Interactive Session, Self-paced Learning Materials, Open Educational Resource (OER) as reference material, Practical Exercises, Assignments, Seminars, Group Discussions and Field and Counselling Classes.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	10
Seminar Presentation/Group Discussion	10
Assessment Test-2	10
Assignment	10
Total	40

POLITICAL PARTIES AND PARTY POLITICS IN INDIA
Open Elective OE-1.2

Course Title: POLITICAL PARTIES AND PARTY POLITICS IN INDIA	
Total Contact Hours: 48	Course Credits: 3
No. of Teaching Hours/Week:3	Duration of ESA/Exam: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objective:

The students will be able to understand the working of Indian democracy through the functioning of the political parties. They will be able to decipher the difference between various types of political parties. It enables them to appreciate the competitive politics, ideological differences and the public policy alternatives that are thrown up by their manifestos.

Learning Outcomes:

After completing the course students will be able to-

- Understand the need for political parties in a Democracy, their structure, functions and types etc.
- Relate their everyday life with regard to the elements of Democracy and their contributions to the development of a Nation.
- Familiarise them to the various political-social institutions in a Democracy.

Units	Contents of Course- OE-1.2	48 Hours
Unit-I	**Chapter-1:** Defining national political parties. Bharatiya Janata Party, Indian National Congress, Communist Party of India, Communist Party of India (Marxist) **Chapter-2:** Growth, Structure and Organisation of Political Parties **Chapter-3:** Ideologies and Support Base of Political Parties (Interest Articulation and Aggregation)	16 Hours
Unit-II	**Chapter-4:** Reasons for the Growth of Regional Political Parties. Parochialism vs Regional Interest **Chapter-5:** Sub-Nationalism and its Impact on National Integration **Chapter-6:** Success and Failure of Regional Political Parties an Assessment	16 Hours

Unit- III	Chapter-7: Democracy within Political Parties: Democratic Centralism, Dynastic Politics Chapter-8: Party Politics: Issues of Political Participation, significance of manifesto Chapter-9: Political exclusion and exclusion, theory of political representation: Hanna Pitkin, Types of Representation: Constituent, Individual, Party and Class Representation.	15 Hours

Exercise:

- Make a Comparative study of Party manifestos.
- Visit the political party offices at local level and collect the information regarding the structure of the party.
- Make a comparative study of support base of political parties.

Suggested Readings:

1. Khare, R. The Indian National Congress: Problems of Survival and Reorientation. In Hira S. K. et al. (Eds.), Political Parties in South Asia, Praeger, New York, 2004.
2. Zoya, F. et al. (Eds.). Media Nationalism and Indian Politics. An Omnibus, Oxford University Press, New Delhi, 2004.
3. Heath, O. Anatomy of BJP's Rise to Power: Social, Regional and Political Expansion in 1990s. Economic and Political Weekly, 34(34-35), 1999.
4. Kothari, R. The Congress System in India. Asian Survey, 4(12). University of California Press, 1964.
5. Kothari, R. The Congress System Revisited: A Decennial Review. Asian Survey, 14(12). University of California Press, 1974.
6. Hansen, T., & Jaffrelot, C. (Eds.). The BJP and the Compulsions of Politics in India. Oxford University Press, New Delhi, 1998.
7. Hasan, Z. Congress after Indira: Policy, Power and Political Change 1984- 2004. Oxford University Press, 2012.
8. Varshney, A. Is India Becoming More Democratic? The Journal of Asian Studies, 59(1), 2000.
9. Chhibber, P. Democracy without Associations: Transformation of the Party System and Social Cleavages in India. Ann Arbor: University of Michigan Press, 1999.
10. Bó, E., Bó, P., & Snyder, J. Political Dynasties. The Review of Economic Studies, 76(1), 2009.
11. Das, N., & Chanda, A. The politics of Economic Policy in India. In Mahajan, G. (Eds.), Democracy under Threat. Oxford University Press, 2017.

12. Jaffrelot, C., & Varshney, S. Re-consolidation of India's Political Party System: or Continued Prevalence of Regionalism and Diversity? India Review, 7(3), 2008.
13. Pai, S. Regional Parties and The Emerging Pattern of Politics in India. The Indian Journal of Political Science, 51(3), 1990.
14. Vaishnav, M. The Consolidation of Regional Parties. Carnegie endowment for International peace, 2013.
15. Roy, D. From Promises to Performance: Political Incentives and Budget 2004-05. Economic and Political Weekly, 39(31), 2004.
16. Singh, S. Where Do States Live? Electoral Institutions, Party Incentives and the Dimensionality of Politics. Social Science Quarterly, 93(4), 2012.

Pedagogy:

The course shall be taught through the Lecture, Tutorial, Interactive Sessions, Self-guided Learning Materials, Open Educational Resources (OER) as reference materials, Practical Exercises, Assignments, Seminars, Group Discussions and Week-end Counseling Classes.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	10
Tutorial Presentations/ Group Discussion	10
Assessment Test-2	10
Assignment	10
Total	40

COLONIALISM AND NATIONALISM IN INDIA

Open Elective 2.3

Course Title: COLONIALISM AND NATIONALISM IN INDIA	
Total Contact Hours: 48	Course Credits: 3
No. of Teaching Hours/Week:3	Duration of SEA/Exam: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60+40=100

Course Objective:

This course aims to help the students to understand India's colonial past, freedom struggle and nationalist response. This course also exposes them to the contemporary discourse discourses on nationalism, Western nationalism and its limitations. It helps to make sense of the ways in which patriotism and national integrity have to be understood with the pride of celebrating pluralism and diversity in India.

Learning Outcomes:

After completing this course students will be able to:

- Explain the colonial experience of Indian people.
- Analyse the western notion towards non-western culture, society and politics including Indian's response
- Evaluate the discourses on the concept of Nationalism and its (western) origin

Unit	Contents of Course: OE 2.3	of Hours
Unit-I	**Chapter-1** Colonialism and Imperialism: Meaning and Nature **Chapter-2** Phases of Colonialism-1: a. Political (Expansion and Consolidation of Colonial Rule: civilising mission) b. Economic (Transformation in Land, Agriculture, Traditional Industry and Trade) **Chapter-3** Phases of Colonialism-2: a. Socio-Cultural (Reforming the society, culture, traditional practices etc of the colonial subjects) b. Education (Macaulay's Minute and the Introduction of English	12 Hours

	Education)	
Unit-II	Chapter-4 Debates on Indian Renaissance, Social Religious Reform Movement in India Chapter-5 Indian Rebellion of 1857 Chapter-6 Nationalist Movement in India: Moderates, Extremists and Gandhian Era	15 Hours
Unit- III	Chapter-7 Perspectives of Indian Nationalism: Spiritual, Liberal, Hindutva and Socialist Chapter-8 Western Nationalism and its Implications (Indian Context) Chapter-9 Patriotism, Pluralism vis Unity in Diversity and National Integrity	15 Hours

Exercise:

- Compare the colonial accounts of traditional practices with the opinions of local elders or practitioners of traditions.
- Identify the nature of traditional learning patterns and skills in any local industry or traditional jobs.
- Group discussion on what does it means to be an Indian and the like

Suggested Readings:

1. Constituent Assembly Debates, (4th December 1948 to 24th January, 1950).
2. Bandyopadhyay, Sekhar, Eighteen Fifty Seven and its Many Histories in "1857", Essays from Economic and Political Weekly", Orient Longman, Delhi, 2004
3. Balagangadhara, S.N. Reconceptualizing India Studies, Oxford University Press Delhi 2012
4. Balagangadhara, S.N. Multiculturalism, in Encyclo Pedia Of Indian Religions, Brill Academic Publishers, Netherlands, 2008
5. Balagangadhara, S.N. Perspectives in Encyclo Pedia Religion & Society, Adam's Publishers, Bangalore, 2012
6. Balagangadhara, S.N. and Tanika Sen "What does it mean to be 'Indian'?" India Archives, 2012

7. Hegde, Ramesh, Ed. Bharatiya Chintane, Samskrutika Nelegalu, Ed Ramesh, Kannada Sahitya Academy, Bangalore, 1994.

8. Ambedkar, B.R. Pakistan or the Partition of India, Thacker & Co. Ltd. Bombay.

9. Bhambhri, C.P. Ideology and Politics in Modern India, Rawat Publications, New Delhi, 1994.

10. Chandra, Bipan, "Essays on Colonialism", Orient Longman Ltd, Hyderabad, 1999.

11. Chatterjee, Partha, "Secularism and Tolerance" in Secularism and Its Critics, ed. Rajeev Bhargava, Oxford University Press, New Delhi, 1998.

12. Islam, Shamsul, "The Origins of Indian Nationalism" in Religious Dimensions of Indian Nationalism, Media House, Delhi, 2010.

13. Lloyd I. and Susanne H. Rudolph, The Modernity of Tradition: The political Development in India, Orient Longman, Bombay, 1967.

14. Mathew, Mohan, State and Society: A Marxian Approach, Madras, Orient Longman.

15. Islam, Shamsul, (2006) 'The Origins of Indian Nationalism' in Religious Dimensions of Indian Nationalism, Media House, Delhi, 2010

16. Nandy, Ashis, The Intimate Enemy: Loss and Recovery of self under Colonialism, Oxford University Press, Delhi, 1983.

17. Rudolph and Rudolph, In pursuit of Lakshmi: The Political Economy of the India State, Orient Longman, New Delhi, 1987.

18. Savarkar, V.D., Hindutva (Kannada & O Hindu), Sahrudaya Sahitya, Bangalore, 2013.

19. Thapar, Romila, 'Interpretations of Colonial History', Colonial Formation, Post Colonial' in Peter Ronald DeSouza ed. Contemporary India Transitions, Sage Publications, New Delhi, 2006.

Pedagogy:

The course shall be taught through the Lecture, Tutorial, Interactive Sessions, Self-paced Learning Materials, Open Educational Resources (OER) as reference materials, Practical Exercises, Assignments, Seminars, Group Discussions and Field and Counselling Classes.

Formative Assessment	
Assessment Occasion/ type	Weightage in Marks
Assessment Test-1	[illegible]
Seminar/Presentation/Group Discussion	[illegible]
Assessment Test-2	[illegible]
Assignment	[illegible]
Total	[illegible]

General Pattern of Political Science Question Paper (NEP- 2020)

I. Term End Examination for Discipline Specific Core (DSC) and Discipline Specific Elective (DSE) Papers

Each paper will be maximum of 60 marks. The minimum mark to pass the examination is 40% (24 marks) in each theory paper.

Note: Duration of Examination for Discipline Specific Core (DSC) and Discipline Specific Elective (DSE) Papers is 3 hours.

Question paper pattern for Discipline Specific Core (DSC) and Discipline Specific Elective (DSE) Papers –

Section A: Multiple Choice Questions
Section B: Short Answer Questions
Section C: Long Answer Questions

Section A: Multiple Choice Questions

All Questions are Compulsory (10x1=10)

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Section B: Short Answer Questions (2x10=20)

Answer any Two questions. Answer the following questions in not more than 250 words

11.
12.
13.

Section C: Long Answer Questions (2x5=10)

Answer any Two questions. Answer the following questions in not more than 300 words

14.

15.

16.

II. Term End Examination for Open Elective Papers (OE)

Each paper will be maximum of 80 marks. The minimum mark to pass the examination is 40% (24 marks) in each theory paper.

Note: Duration of Examination for Open Elective Papers (OE) is 2 hours.

Question paper pattern for Open Elective Papers –

Section A: Multiple Choice Questions
Section B: Short Answer Questions
Section C: Long Answer Questions
Section D: Essay type Answer Questions

Section A: Multiple Choice Questions

All Questions are Compulsory (10x1=10)

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Section B: Short Answer Questions (2x5=10)

Answer any Three questions. Answer the following questions in not more than 3-4 sentences.

11.
12.
13.
14.

Section C: Long Answer Questions (2x10=20)

Answer any Two questions. Answer the following questions in not more than 800 words

15.

16.

17.

Section D: Essay type Answer Questions (1x15=15)

Answer any One question. Answer the following questions in not more than 1000 words

18.

19.

III. Term End Examination for Indian Constitution (TE)

Each paper will be maximum of 30 mark. The minimum mark to pass the examination is 40% (12 marks)

Note: Duration of Examination for Indian Constitution (TE) is 1 hour.

Question paper pattern for Indian Constitution –

Section A: Multiple Choice Questions
Section B: Short Answer Questions
Section C: Long Answer Questions

Section A: Multiple Choice Questions

All Questions are Compulsory (10x1=10)

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Section B: Short Answer Questions (2x4=10)

Answer any Two questions. Answer the following questions in not more than 3-4 sentences.

11.
12.
13.

Section C: Long Answer Questions (1x10=10)

Answer any One question. Answer the following questions in not more than 200 words

14.
15.

KUVEMPU UNIVERSITY

DEPARTMENT OF SOCIOLOGY

New Education Policy-2020

SYLLABUS FOR THE BACHELOR OF ARTS UNDER GRADUATE

With Effect from the Academic Year 2022-23 Onwards

2022

NEP-2020- B.A. SOCIOLOGY Model Syllabus- List of Papers			
Semester	Paper	Title of paper	Credits
03	DSC -05	Social Stratification and Mobility	3
	DSC -06	Sociology of Urban Life in India	3
	OE -03	01. Sociology of Tourism and Management 02. Sociology of Youth	3
04	DSC -07	Sociology of Marginalized Groups	3
	DSC -08	Population and Society	3
	OE-04	01 : Sociology of Leisure 02. Sociology of Food Culture	3
		TOTAL	18

Model Curriculum

Type of Course	Formative Assessment / IA	Summative Assessment
Theory	40	60

KUVEMPU UNIVERSITY

MODEL CURRICULUM. Discipline Core: SOCIOLOGY

Year of Implementation: Academic year 2022-23 onwards

B.A. Semester – III

Course Title: Social Stratification and Mobility	
Total Contact Hours: 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ISA Exam: 1 hours
Model Syllabus Authors:	Summative Assessment Marks: 60

Content of Course 05: Social Stratification and Mobility	42 Hrs
Unit – I: Stratification : Features and Forms	14
Chapter No. 1: Meaning and Definitions of Stratification, Basic Characteristics of Stratification	4
Chapter No.2: Forms of Social Stratification – Meaning: Caste, Class, Estate	6
Chapter No.3: Dimensions of Social Stratification – Income, Wealth, Power, Occupational Prestige, Schooling	
Unit – 2: Perspectives on Stratification	14
Chapter No. 4: Functional Theory: Kingsley Davis, Tumgerin's Critique by Melvin M Tumin	5
Chapter No.5: Karl Marx's Theory: Class and Social Change	4
Chapter No.6: Weber's Theory: Class, Status and Power	5
Unit – 3: Social Mobility	14
Chapter No.7: Meaning of Social Mobility, Forms of Social Mobility	5

Horizontal and Vertical, Intergenerational and Intragenerational Mobility	4
Chapter No.8: Role of Education and Profession in the Rise of Middle Class	3
Chapter No.9: Mobility in Caste in Contemporary India	

Reference Books

- Dirks, Nicholas B. 2001. Castes of Mind: Colonialism and the Making of Modern India. Princeton University Press, Princeton
- Grusky, Nicholas B. and Jasmine Hill, 2018 Inequality in the 21st Century. Routledge, New York
- Mann, Andreas. 2001. Concepts of Social Stratification. Palgrave, New York
- Jodhka, Surinder S. 2018. Caste in Contemporary India. 2nd Edition. Routledge, London
- Jaffrelot, Gilnie and Tanika Sarkar (Eds) 2014. Caste in Modern India. Vol I. Permanent Black, Ranikhet
- Sharma, R.S. 2001. Caste, Social Inequality and Mobility in Rural India. Sage, New Delhi
- Tumin, Melvin M. Social Stratification. Prentice-Hall India, New Delhi
- Wright, Erik Olin 2000 Class Counts. Cambridge University Press, Cambridge
- [illegible], (ed) (2014) [illegible]
- [illegible], (ed) (2014) [illegible]

Suggested Activities: Please refer to the following books

- Johnstone, Steve and others 2017. Introducing Sociology: Using the Stuff of Everyday Life. Routledge, London
- McGinnis, Kathleen and Barbara S. Nays (Eds) 2009. Sociology: Through Active Learning. 2nd Edition. Pine Forge Press, New Delhi
- Rao, Shankar C. N. (2018) Sociology: Principles of Sociology with an Introduction to Social Thought. S. Chand and Co, Delhi
- White, Shelley K. and others (Eds) 2011. Sociologists in Action on Inequalities. Sage, New Delhi

B.A. Semester – III

Course Title: Sociology of Urban Life in India	
Total Contact Hours: 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 3 hours
Modal Syllabus Authors	Summative Assessment Marks 60

Content of Course 06: Sociology of Urban Life in India	42 Hrs
Unit – 1: Introducing Urban Sociology	17
Chapter No.1: Meaning of Urban Sociology and its Importance a brief history of Urban Sociology in India and World	4
Chapter No.2: Meaning of Urban, Urbanism and the City, Types of City: Metropolitan, Megacity and Global City	6
Chapter No.3: Urbanization and its Challenges: Meaning of Terms Rural-Urban Continuum, Suburbs, Urban Fringe, Urban Sprawl, Edge Cities	7
Unit – 2: Perspectives on Urban Society	9
Chapter No.4: Ecological Theory (Chicago School)	3
Chapter No.5: World and Global Cities (Saskia Sassen)	3
Chapter No.6 Spaces of Flows (Manuel Castells), Cities in the South	3
Unit – 3: Urban Policy	16

Chapter No.7. Inequalities: Caste, Class, Rural Communities and Social Exclusion	3
Chapter No.8. Urban Governance: 74th Amendment to the Indian Constitution, Urban Development and Planning	5
Chapter No.9. Urban Policy: Urbanization and Environmental Concerns, Smart Cities.	3

Reference Books

- Flanagan, William G 2010, Urban Sociology: Images and Structures, 5th Edition, Newman and Littlefield Publishers Inc, New York
- Gottdiener, Mark H & Others, 2013, The Urban Sociology, Routledge, New York
- Hannigan, John and Greg Richards (Ed) 2017 The Sage Handbook of New Urban Studies, Sage London
- Kipp, David A & others, 2015, Being Urban: A Sociology of City Life, 3rd Edition, Praeger, California
- LeGates, R E & Frederic Stout (Eds) 2016 The City Reader, 6th Edition, Routledge, New York
- Lin, Jan & C Mele (Eds) 2013 The Urban Sociology Reader, Routledge, New York
- Miles, Malcolm & Tim Hall 2004 The City Cultures Reader, 2nd Edition, Routledge, New York
- Rao, Shankar (2021) Sociology of Indian Society, S Chand and Co, New Delhi
- [illegible]
- [illegible]
- [illegible]

Supplementary Readings: Please refer to the following books

- Johnston, Jones and others 2017, Introducing Sociology: Using the Stuff of Everyday Life, Routledge, London

- McKinney, Kathleen and Barbara S Heyl (Eds) 1979, Sociology Through Active Learning, 2nd Edition, Pine Forge Press, New Delhi
- White, Shalley K. and others (Eds) 2015, Sociologists in Action on Inequalities, Sage, New Delhi

B.A. Semester – III

Content of OE : Sociology of Tourism and Management	
Total Contact Hours: 30	Course Credits: 2
Formative Assessment Marks: 40	Duration of ESA Exam: 1 hours
Model Syllabus Authors:	Summative Assessment Marks: 60

Content of OE 03: Sociology of Tourism and Management	30 Hrs
Unit – 1. Sociology, Tourism, Tourists	14
Chapter No. 1. Definitions of Sociology, Culture, Tourism, Tourists, Tourist Guide, Relation between Tourism, Leisure and Recreation.	7
Chapter No.2. Types of Tourism: Cultural, Heritage, Religious, Medical, Food,	7

Sports, Yoga and Eco Tourism Chapter No.3: Tourism and Locals, Hosts and Guests: Mutual Impact	4
Unit – 2: Tourism System	**16**
Chapter No. 4: Development and Structure of the Tourist System – Motivation and Role of Tourist	3
Chapter No.5: Impact of Tourism on Host Place: Social, Economic, Climate and Environmental	4
Chapter No.6: Sustainable Tourism: Definitions of Sustainable and Sustainable Tourism; Sustainability of Tourists	3
Unit – 3 Tourism Management	**18**
Chapter No.7: Demand for Tourism at Individual and Market level; Tourism Consumer Behaviour: Rules and Decision-Making Process; Role of Intermediaries	3
Chapter No.8: Marketing for Tourism: Definition, Tourism as a Service Industry: Product, Price, Promotion and Place	5
Chapter No.9: Information Technology and Tourism: ICT as a Business Tool; eTourism	3

Reference Books

- Burns, Peter M (1999) An Introduction to Tourism and Anthropology, Routledge, London
- Fletcher, John & others, 2018, Tourism: Principles and Practice, 6th Edition, Pearson, UK
- Nash, Dennis 2007, The Study of Tourism: Anthropological and Sociological Beginnings, Elsevier, Amsterdam
- Urry, John 1990, The Tourist Gaze: Leisure and Travel in Contemporary Societies, Sage, New Delhi

Suggested Activities: Please refer to the following books

- Johnston, Ann and others 2017, Introducing Sociology: Using the Stuff of Everyday Life, Routledge, London
- McKinney, Kathleen and Barbara S Heyl (Eds) 2008, Sociology Through Active Learning, 2nd Edition, Pine Forge Press, New Delhi

- White, Shelley K. and others (Eds.) 2012 Sociologies in Action, Sage, New Delhi

B.A. Semester – III

Content of OE : Sociology of Youth	
Total Contact Hours: 30	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 3 Hours
Modal Syllabus Authors	Summative Assessment Marks: 60

Content of OE 09: Sociology of Youth	39 Hrs
Unit – 1: Age Groups and Social Structure	**13**
Chapter No. 1: Age Differentiation, Age Groups, Age Sets, Problem of Generation, Cultural Lag (W F Ogburn), Structural Lag (Eisenstadt)	5
Chapter No.2: Youth Cultures, Subcultures, Counter Culture, Contra Culture	4
Chapter No.3: Response of Youth to Caste and Class Inequalities	4
Unit – 2: Youth and Society	**13**
Chapter No. 4: Youth, Leisure and Music	4
Chapter No.5: Globalization of Youth Culture, Marketing Youth Culture	4
Chapter No.6: Managing Youth, Media and Technology	5
Unit – 3: Youth and Social Concerns	**13**
Chapter No.7: Youth, Protest and Violence: Social, Political and Economic Issues	4
Chapter No.8: Youth, Peer Groups and Drug Culture	4
Chapter No.9: Youth, Nationalism and Globalization	5

Reference Books

- Dannie Kjeldgaard, Soren Askegaard, The Glocalization of Youth Culture: The Global Youth Segment as Structures of Common Difference, *Journal of Consumer Research*, Volume 33, Issue 2, September 2006, Pages 231–247, https://doi.org/10.1086/506304

- Edmonds, Jess, Turner, Bryan S. (2005) 'Social Generation, Social Change in the Twentieth Century' *British Journal of Sociology*, 56 (4): 559-577, doi:10.1111/j.1468-4446.2005.00083

- Gangrade, K. D. 1970, Intergenerational Conflict: A Sociological Study of Indian Youth, *Asian Survey*, Vol.10, No.10, pp.924-38

- Jeffrey, Craig 2010, Timepass Youth, class and time among unemployed young men in India, *American Ethnologist*, Vol.37, No.3, pp.465-481

- Karmakaran, Mary S. 1977, Mobilization of Indian Youth in the Shri Sena, *Pacific Affairs*, Vol.50, No.2, pp.231-248

- Lukose, Ritty 2005, Consuming Globalization: Youth and Gender in Kerala, India, *Journal of Social History*, Vol.38, No.4, pp.915-935

- Mannheim, Karl (1952) 'The Problem of Generations' in Kecskemeti, Paul (ed.) Essays on the Sociology of Knowledge, Collected Works, Volume 5, New York, Routledge p. 276-322

- Mathew, Chacko & others 2014, Change in Tobacco Use Over Time in Urban Indian Youth: The Moderating Role of Socioeconomic Status, *Health Education & Behaviour*, Vol.41, No.2, pp.123-129

- Riley, Matilda White 1987, On the Significance of Age in Sociology, *American Sociological Review*, Vol.52, No.1, pp.1-14

Suggested Activities: Please refer to the following books

- Bhusan, Vasu and others 2017, Introducing Sociology: Using the Stuff of Everyday Life, Routledge, London

- McGlinnon, Kathleen and Barbara E Hess (Eds) 2008 Sociology Through Active Learning, 2nd Edition, Pine Forge Press, New Delhi

- White, Shalley K and others (Eds) 2013, Sociologists in Action on Inequalities, Laps, New Delhi

B.A. Semester – IV

Course Title: Sociology of Marginalised Groups	
Total Contact Hours: 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 3 hours
Model Syllabus Authors:	Summative Assessment Marks: 60

Content of Course 07: Sociology of Marginalised Groups	42 Hrs
Unit – 1: Introduction	**10**
Chapter No. 1: Marginalisation: Meaning and Nature; Types of Marginalisation: Social, Political, Economic	3
Chapter No.2: Causes of Marginalisation; Marginalised Groups: Caste, Gender, People with Disabilities, Minorities, Tribes and Elderly	3
Chapter No.3: Socio-economic Indices of Marginalisation: Poverty, Educational Backwardness, Inequality and Untouchability	4
Unit – 2: Marginalisation and Affirmative Action	**14**
Chapter No. 4: Views of Dr B R Ambedkar and Affirmative Principle in the Constitution of India (Constitutional Provisions)	3
Chapter No.5: Scheduled Castes, Scheduled Tribes and Status of Women in these Groups; Status of Transgenders	3
Chapter No.6: Study of Landless Agricultural Labourers, Status of Land Ownership among Scheduled Caste and Scheduled Tribes	4
Unit – 3: Marginalised Groups and Social Change	**18**
Chapter No.7: Social Mobility among Marginalised Groups: Education, Employment, Political Participation, Conversion, Migration	8
Chapter No.8: Challenges of Privatisation and Response by Marginalised Groups	5
Chapter No.9: Social Justice in the context of Globalisation	5

Reference Books:

- Béteille, André 1992, The Backward Classes in Contemporary India, Oxford University Press, Delhi
- Chitkara, S R and G K Karanth 1993 (Eds) Challenging Untouchability, Sage India, Delhi
- Guru, M S 1999 The Social Context of an Ideology: Ambedkar's Political and Social Thought, Sage, New Delhi
- Judge, Paramjit S (Ed) 2017 Towards Sociology of Dalits, Readings in Indian Sociology - Volume I, Sage, New Delhi
- Gupta, Dipankar 1991, Social Stratification, Oxford University Press, Delhi
- Jodhka, Surinder S, 2018, Caste in Contemporary India, 2nd Edition, Routledge, London
- Omvedt, Gail 2013 Dalits and the Democratic Revolution, Sage, New Delhi
- Singh, K S (1994) The Scheduled Tribes, Oxford University Press, New Delhi
- Rao, Shankar (2021) Sociology of Indian Society, S Chand and Co, New Delhi
- Thorat, Sukhadeo 2009 Dalits in India, Sage, New Delhi
- Thorat, Sukhadeo and Katherine Newman 2009 Blocked by Caste: Economic Discrimination in Modern India, Oxford University Press, New Delhi
- [illegible] (2016) [illegible], Orient Black Swan
- [illegible] (2016) [illegible], Orient Black Swan

Suggested Activities: Please refer to the following books

- Nilsson, Anna and others 2017, Introducing Sociology: Using the Tools of Everyday Life, Routledge, London
- McKinney, Kathleen and Barbara S Heyl (Eds) 2008 Sociology Through Active Learning, 2nd Edition, Pine Forge Press, New Delhi
- White, Shalley K and others (Eds) 2017, Sociologists in Action on Inequalities, Sage, New Delhi

B.A. Semester – IV

Course Title: Population and Society	
Total Contact Hours: 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 3 hours
Modul Syllabus Authors:	Summative Assessment Marks: 60

Content of Course 05: Population and Society	42 Hrs
Unit – 1: Introduction	14
Chapter No. 1: Meaning and Definitions of Population, Relationship between Society and Population	4
Chapter No.2: Global Population Trends; Role of Fertility, Mortality and Migration; Power of Doubling	5
Chapter No.3: Age and Sex Composition in India and its Impact; Demographic Dividend	5
Unit – 2: Sources of Demographic Data	14
Chapter No. 4: Population Census: Uses and Limitations; Indian Censuses	5
Chapter No.5: Vital Registration System	4
Chapter No.6: National Sample Survey; Sample Registration System; National Family Health Surveys (NFHS)	5
Unit – 3: Population Theories and Policy	14
Chapter No.7: Population Theories: Malthusian Theory; Optimum Theory of Population and Demographic Transition Theory	6
	4

Chapter No 8: Need of Population Policy, Millennium Development Goals and Sustainable Development Goals Chapter No 9: Population Policy of India: Programmes and their Evaluation	4

Reference Books

- Agarwal, S.N. (1969) Population Studies with Special Reference to India. New Delhi: Lok Sujeet Publication.
- Ahuja, Ram. (1992) Social problems in India. Jaipur: Rawat Publications.
- Bhende, A. A., and Kanitkar, T. (2003) Principles of population studies. Bombay: Himalaya Pub. House.
- Bogue, D. J. (1969) Principles of demography. New York: Wiley.
- Bose, Ashish (1991) Demographic Diversity of India. B.R. Publishing Corporation, Delhi.
- Bose, Ashish. 2003. Population of India, 2001 Census Results and Methodology. B.R. Publishing Corporation, Delhi.
- Census of India Report, GOI, New Delhi.
- Kingsley Davis. (1951) The Population of India and Pakistan. Princeton, N. J.: Princeton Univ. Press.
- Kith, Dudley. 1968. 'The Field of Demography', in Sills, David ed. International Encyclopaedia of the Social Sciences, The Free Press and Macmillan, New York.
- Rao, Shankar (2003) Sociology of Indian Society. 10th Reprint. S. Chand and Co. New Delhi.
- Visaria, Pravin and Visaria, Leela. 2002. 'India's Population: Its Growth and Key Characteristics', in Das, V. ed. The Oxford India Companion to Sociology and Social Anthropology. Oxford University Press, Delhi.
- [illegible]
- [illegible]

Suggested Activities: Please refer to the following books

- Johnson, Boris and others 2017. Introducing Sociology: Using the Stuff of Everyday Life. Routledge, London

- McKinney, Kathleen and Barbara S Heyl (Eds) 2008 Sociology Through Active Learning, 2nd Edition, Pine Forge Press, New Delhi
- White, Shalley K and others (Ed) 2012 Sociologists in Action on Inequalities, Sage New Delhi

B.A. Semester – IV

Course Title of OE : Sociology of Leisure	
Total Contact Hours: 39	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 3 hours
Model Syllabus Authors:	Summative Assessment Marks: 60

Content of OE 04: Sociology of Leisure	39 Hrs
Unit – 1: Introduction	13
Chapter No. 1: Definition of Leisure and its Attributes; Need for the study of Leisure as Social Activity	4
Chapter No.2: Leisure, Recreation, Play, Pleasure and Leisure Identity; Leisure, Work and Free work	4
Chapter No.3: Types of Leisure: Serious, Casual, Professional, Therapeutic	5
Unit – 2: Constraints on Leisure Participation	13

Chapter No.4: Class Inequality and Exclusion from Leisure Participation	4
Chapter No.5: Leisure Participation and Gender Relations – Leisure and Sexual System.	4
Chapter No.6: Leisure Participation, Age and Disability	4
Unit – 3. Commodification of Leisure	**12**
Chapter No.7: Cinema, OTTs and Reality TV	4
Chapter No.8: Leisure and Sports – Adding Leisure Value like branded goods (Sony Wallenda, Red; Nike, Coke etc.); Multi in area of Leisure	4
Chapter No.9: Social Media as Leisure Activity – Role in Identity Building	4

Reference Books

- Barr, Stuart 2010 Leisure Studies: Themes and Perspectives, Sage, New Delhi
- Harris, David 2005 Key Concepts in Leisure Studies, Sage, New Delhi
- Rojek, Chris 2000 Leisure and Culture, Palgrave Macmillan, New York
- Rojek, Chris and others 2006, A Handbook of Leisure Studies, Palgrave Macmillan, New York
- Spracklen, Karl 2015 Digital Leisure, the Internet and Popular Culture, Palgrave Macmillan, New York

Suggested Activities: *Please refer to the following book*

- Johnston, Ross and others 2017, Introducing Sociology: Using the Stuff of Everyday Life, Routledge, London
- McKinney, Kathleen and Barbara S Stay (Eds) 2008, Sociology Through Active Learning, 2nd Edition, Pine Forge Press, New Delhi
- White, Shelley K and others (Eds) 2012, Sociologists in Action on Inequalities, Sage, New Delhi

B.A. Semester – IV

Course Title of OE: Sociology of Food Culture	
Total Contact Hours: 39	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 3 hours
Model Syllabus Authors:	Summative Assessment Marks: 60

Content of OE 04: Sociology of Food Culture	39 Hrs
Unit – I: Introduction	13

Chapter No. 1. Sociological Nature of Food and Eating: Sacred and Taboo Foods; Food, Sociality and Social Change.	5
Chapter No.2. Determinants of Food Consumption – Types of Food: Vegetarian, Non-vegetarian, Vegan and Flexitarian	4
Chapter No.3. Local Food Cultures and Taste for Exotic	4
Unit – 2. Food from Domestic to Industry	**13**
Chapter No. 4. Industrialization of Food Production and Distribution	3
Chapter No.5. Hotels, Restaurants and Catering Sector	4
Chapter No.6. Cooking as duty and cooking for self pleasure	4
Unit – 3. Food and Rich Society	**13**
Chapter No.7. Diet and Body: Social Appearance and Beauty	4
Chapter No.8. Global Overview: Consumption Patterns and Reasons Overeating, Undereating and Hunger	4
Chapter No.9. GM Foods, Organic Foods and Modern Food Practices as Risk Factor	5

Reference Books

- Bauman, Alan and Tessa Kell, 1997, Sociology on the Home: An introduction to the study of food and society, Routledge, London
- Beck, Ulrich 1992, Risk Society: Towards a New Modernity, Sage Publications
- Caralan, Michael, 2012, The Sociology of Food and Agriculture, Routledge, London
- Food Marketing to Children and Youth, 2006, Institute of Medicine, USA.
- Germain, John and Lauren Williams (Eds) 2011, A Sociology of Food and Nutrition: The social appetite, Oxford University Press, Australia
- Mcintosh, Wm Alex, 1996, Sociologies of Food and Nutrition, Springer, New York
- Murcott, Anne (Ed) 1983, The Sociology of Food and Eating, Digitized by Google

- Poulain, Jean-Pierre, 2017, The Sociology of Food: eating and the place of food in society, Tr by Augusta Dorr, Bloomsbury, UK
- Rastogi, Sanjeev (Ed), 2024, Anwesha Science of Food and Nutrition, Springer, New York

Suggested Additional Readings for the following Units

- Johnson, Jesse and others 2017, Introducing Sociology: Using the Stuff of Everyday Life, Routledge, London
- McKinney, Kathleen and Barbara S Heyl (Ed) 2008, Sociology Through Active Learning, 2nd Edition, Pine Forge Press, New Delhi
- White, Shalini K and others (Eds) 2015, Sociologists in Action on Inequalities, Sage, New Delhi

KUVEMPU UNIVERSITY
DEPARTMENT OF P.G.STUDIES AND RESEARCH IN SOCIOLOGY
Jnana Sahyadri Campus, Shankaraghatta – 577 451, Shimoga Dist., Karnataka

Syllabus
Bachelor of Arts Program in Sociology
3rd, 4th, 5th and 6th Semester

(With Effect from 2023-24)

Under
Choice Based Credit System (CBCS)
Continuous Evaluation Pattern System (CEPS)

Prof Chandrashekar K
Chairperson (BOS)
Members :
Prof K.T. Ramesh
Prof.N.Parvathy
Sri. Chandrashekarayya.H.S
Dr. Saheemath C.S

SOCIOLOGY SYLLABUS - LIST OF PAPERS			
SEM	Paper	Title of papers	Credits
III	DSC -5	Social Stratification and Mobility	3
	DSC -6	Sociology of Urban Life in India	3
	GE -3	a) Sociology of Food Culture b) Sociology of Tourism Management c) Social Inequality in India	3
IV	DSC -7	Sociology of Marginalized Groups	3
	DSC -8	Population and Society	3
	GE -4	a) Sociology of Youth b) Sociology of Leisure c) Sociology of Disaster Management	3
V	DSC - 9	Social Entrepreneurship	4
	DSC -10	Society and Tribes	4
	DSC -11	Statistics for Sociological Research	4
	SEC - 4	Cyber Security: Employability skills	3
VI	DSC - 12	Sociological Perspectives	4
	DSC - 13	Sociology of Health	4
	DSC - 14	Society in Karnataka	4
		Internship / Dissertation	6

DSC: Discipline Specific Core

DSE: Discipline Specific Elective

GE: Open Elective

SEC: Skill Enhancement Course

Prof Chandrashekar E
Chairperson DOS

Kuvempu University

SOCIOLOGY CURRICULUM

Name of the Degree Program : Bachelor of Arts in Sociology

Choice Based Credit System (CBCS)

Starting year of implementation: 2021-22

General Objectives of the Programs:

1. Introduce the students to the basic concepts and processes in sociology to understand the social life
2. Provide different perspectives of understanding the social life of people
3. Update the students with different fields of Sociology and latest developments in the field
4. Develop the skills to analyze, interpret and present today's social situations - developments and problems
5. Critically appreciate the social construction of reality
6. Ability to examine, relate and connect theory with research
7. Equip the students to develop communication skills
8. Prepare the students to enter the professional field with ethical responsibility and knowledge as teachers, researchers, administrators, facilitators etc. by exercising intellectual autonomy
9. Prepare students for their dissertation research

Program Outcomes :

1. Think critically by exercising sociological imagination
2. Question common wisdom, raise important questions and examine arguments
3. Collect and analyze data, make conclusions and present arguments
4. Think theoretically and examine the empirical data
5. Skillfully Participate in Research Groups and market Research Firms
6. Serve in Development Agencies, Government Departments and Projects
7. Be a Social Entrepreneur, Community Worker, Survey Designer, Research Analyst, Social Statistician
8. Transfer Skills as a Teacher, Facilitator of Community Development
9. Competent to make a difference in the community

Kuvempu University

Sociology UG Program with Effect from the Academic Year 2023-24

Details of Sociology UG Syllabus, Course Credit Structure, Teaching hours per week and Marks

Sem	Course Category	Course Code	Course Title	Credits	Teaching Hours Per Week	IA Marks	SA Marks	Total
III	DSC	DSC - SOC-3	Social Stratification and Mobility	3	3	40	60	100
		DSC - SOC-4	Geography of Urban Life in India	3	3	40	60	100
	OE	SOC - OE-3	a) Sociology of Food Culture b) Sociology of Tourism Management c) Social Inequality in India	3	3	40	60	100
IV	DSC	DSC - SOC-7	Sociology of Marginalized Groups	3	3	40	60	100
		DSC SOC-8	Regulation and Society	3	3	40	60	100
	OE	SOC -OE-4	a) Sociology of Youth b) Sociology of Leisure c) Sociology of Gender Management	3	3	40	60	100
V	DSC	DSC SOC-9	Social Entrepreneurship	4	4	40	60	100
		DSC SOC-10	Society and Tribes	4	4	40	60	100
		DSC SOC-11	Statistics for Sociological Research	4	4	40	60	100
		SEC-4	Cyber Security/ Employability skills	3	3+0	20	30	50
VI	DSC	DSC SOC-12	Sociological Perspective	4	4	40	60	100
		DSC SOC-13	Sociology of Health	4	4	40	60	100
		DSC SOC-14	Society in Karnataka	4	4	40	60	100
			Internship / Dissertation	2		50		50

Prof. Chandrashekar. T
Chairperson (BOS)

Formative Assessment Pattern

Assessment and evaluation process in each semester of each course (paper) is continuous mode that is C1, C2 and C3 pattern.

a) The first component of C1 assessment is for 20% to be assessed by conducting Test for 10 marks andSeminars / Presentations / Activities for 10 marks

b) The second component of C2 assessment is for 20% to be assessed by conducting Test for 10 marks and Case Study / Assignment / Field work / Project work for 10 marks

c) The final component of C3 assessment is for the 60% to be assessed by conducting examination.

Marks Pattern C1, C2 and C3
(First Semester to Fourth Semester)

Course	C1 = Activities + Test	C2 = Activities + Test	C3 = Final Examination	Total
DSC	10 + 10	10 + 10	60	100
OE	10 + 10	10 + 10	60	100

Marks Pattern C1, C2 and C3
(Fifth Semester to Sixth Semester)

In Fifth and Sixth Semester Courses where Field work is compulsory the first component C1 Assessment is assessed by conducting Test for 10 Marks and The second Component of C2 Assessment is assessed by presentation and submission of Report of Field work for 10 Marks FOR SEC – 4 C1 = 10 Marks, C2 = 10 Marks and C3 = 80 Marks.

Course	C1 = Activities + Test	C2 = Activities + Test	C3 = Final Examination	Total
DSC-DSC-11	10 + 10	10 + 10	60	100
DSC-DSC-12	10 + 10	10 + 10	60	100

Course	C1 = Test	C2 = Field Work	C3 = Final Examination	Total
DSC-DSC-09	10	10	80	100
DSC-DSC-10	10	10	80	100
DSC-DSC-13	10	10	80	100
DSC-DSC-14	10	10	80	100
SEC - 4	10	10	80	100

BA Semester III

DSC-SOC-5 Course Title : Social Stratification and Mobility	
Course Credits : 3	Duration of ESA/Exam : 2 Hours
Total Content Hours: 45	Formative Assessment Marks: 40
Lecture hours per week : 3 Hours	Summative Assessment Marks : 60

Course Objectives :

This course on Social Strahification and Mobility focuses on the nature and consequences of social stratification. It identifies the different sources of stratification society and explains them within the framework of sociological theories. It also focuses on the role of different agents of mobility and how it has affected caste system in India

Course Outcomes :

At the end of the course the student will be able to :

1. Understand the nature and role of social stratification
2. Recognize different types of stratification and mobility
3. Describe different types of social stratification and mobility
4. Critically understand and analyze different theories of social stratification

Pedagogy :

Blended learning, Group discussions, role play, micro project, field visit, written/oral presentation by the students

Articulation Matrix : Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Understand the nature and role of social stratification	X	X	X	X				X	X
Recognise different types of stratification and mobility	X	X	X	X		X	X	X	X
Describe different types of social stratification and mobility	X	X	X	X	X	X	X	X	X
Critically understand and analyse different theories of social stratification	X	X		X			X	X	X

Content of Course : DSC-SOC-5 : Social Stratification and Mobility	45 Hrs
Unit – 1 Stratification - Features and Forms	**15**
Chapter No. 1. Basic characteristics of Stratification: Melvin M Tumin **Chapter No.2.** Forms of Social Stratification - Caste, Class, Estate **Chapter No.3.** Dimensions of Social Stratification - Income, Wealth, Power, Occupational Prestige, Schooling	
Unit – 2 Perspectives on Stratification	**15**
Chapter No. 4. Functional Theory: Kingsley Davis and W E Moore's perspective and critique by Melvin M Tumin **Chapter No.5.** Karl Marx's Theory: Class and Social Change **Chapter No.6.** Weber's Theory: Class, Status and Power	
Unit – 3 Social Mobility	**15**
Chapter No.7. Meaning of social mobility; forms of social mobility: horizontal and vertical, inter-generational and intra-generational mobility **Chapter No.8.** Role of Education and Profession in the Rise of Middle Class **Chapter No.9.** Mobility in Caste in Contemporary India	

TEXT BOOKS :

1. Dirks, Nicholas B 2001. Castes of Mind: Colonialism and the Making of Modern India. Princeton University Press: Princeton
2. Grusky, Nicholas B and Jasmine Hill 2018 Inequality in the 21st Century, Routledge, New York
3. Nau, Andreas, 2001. Concepts of Social Stratification, Palgrave, New York
4. Jodhka, Surinder S. 2012. Caste in Contemporary India, 2nd Edition, Routledge, London
5. Sarkar, Sumit and Tanika Sarkar (Eds) 2014. Caste in Modern India, Vol I, Permanent Black, Ranikhet
6. Sharma, K L. 2001. Caste, Social Inequality and Mobility in Rural India, Sage, New Delhi
7. Tumin, Melvin M Social Stratification, Prentice Hall India, New Delhi
8. Wright, Erik Olin 2000 Class Counts, Cambridge University Press: Cambridge

Suggested Activities: Please refer to the following books

Jodhka, Surinder and others 2017. Introducing Sociology: Using the Stuff of Everyday Life, Routledge, London

Holcomb, Kathleen and Barbara J Nelle (Eds) 2009. Sociology Through Active Learning, 2nd Edition, Pine Forge Press, New Delhi

BA Semester III

DSC-SOC-6 Course Title : Sociology of Urban Life in India	
Course Credits : 3	Duration of ESA/Exam : 2. Hours
Total Content Hours : 45	Formative Assessment Marks : 40
Lecture hours per week : 3 Hours	Summative Assessment Marks : 60

Course Objectives :

This course describes the meaning and importance of Urban Sociology. helps in understanding the processes and types of urbanization. It helps to appreciate different theoretical approaches to understanding urban social life and discuss social issues related to urbanisation and urban social life.

Course Outcomes :

At the end of the course the student will be able to :

1. Define the basic concepts of Urban Sociology
2. Identify and describe different types of city
3. Analytically understand theoretical issues related to urban society
4. Critically evaluate urban policies

Pedagogy :

Blended learning, Group discussions, role play, micro project, field visit, written / oral presentation by the students

Articulation Matrix : Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Define the basic concepts of Urban Sociology	X	X	X					X	X
Identify and describe different types of city	X		X	X				X	X
Analytically understand theoretical issues related to urban society	X	X	X	X	X	X	X	X	X
Critically evaluate urban policies	X	X	X	X	X	X	X	X	X

Content of Course : DSC-SOC-6 : Sociology of Urban Life in India	+5 Hrs
Unit – 1 Introducing Urban Sociology	**15**
Chapter No. 1. Meaning of Urban Sociology and its importance: a brief history of Urban Sociology in India and world **Chapter No.2.** Meaning of Urban, Urbanism and the City; Types of City: Metropolitan, Megacity and Global City **Chapter No.3.** Urbanisation and its Challenges: Rural-Urban Continuum, Suburbs, Urban Fringe, Urban Sprawl, Edge Cities	
Unit – 2 Perspectives on Urban Society	**15**
Chapter No. 4. Ecological Theory (Chicago School) **Chapter No.5.** World and Global Cities (Saskia Sassen) **Chapter No.6** Spaces of Flows (Manuel Castells), Cities in the South	
Unit – 3 Urban Policy	**15**
Chapter No.7. Inequalities: Caste, Class, Gated Communities and Social Exclusion **Chapter No.8.** Urban Governance; 74th Amendment to the Indian Constitution, Urban Development and Planning **Chapter No.9.** Urban Policy: Urbanisation and Environmental Concerns; Smart cities	

TEXT BOOKS:

1. Flanagan, William G 2010, Urban Sociology: Images and Structures, 6th Edition, Rowman and Littlefield Publishers Inc, New York.
2. Gottdiener, Mark & Others, 2018, The Urban Sociology, Routledge, New York.
3. Hannigan, John and Gary Richards (Ed) 2017 The Sage Handbook of New Urban Studies, Sage London.
4. Karp, David A & others, 2018, Being Urban: A Sociology of City Life, 3rd Edition, Praeger Calcutta.
5. LeGates, R & Frederic Stout (Eds) 2016 The City Reader, 6th Edition, Routledge, New York.
6. Lin, Jan & C Mele (Eds) 2013, The Urban Sociology Reader, Routledge, New York.
7. Miles, Malcolm & Tim Hall 2004 The City Cultural Reader, 2nd Edition, Routledge, New York.
8. Rao, Shankar (2021), Sociology of Indian Society, S Chand and Co, New Delhi.

Suggested Activities: Please refer to the following books

Johnson, Hans & Others (2017) Introducing Sociology, Unglish and Ellen Key, Routledge, London.
Kathleen and Barbara J Katz (Eds) 2018, Sociology Through Active Learning, 3rd Edition, Pine Forge Press, India.

B.A Semester III – Open Elective - 3

SOC-OE – 3 Course Title: Sociology of Food Culture	
Course Credits : 3	Duration of ESA/Exam : 2 Hours
Total Content Hours : 45	Formative Assessment Marks : 40
Lecture hours per week: 3 Hours	Summative Assessment Marks : 60

Course Objectives :

Sociology of Food Culture course scrutinizes social behaviour related to food habits. It critically looks at cultural aspects of food like sacrality, taboo, sociality etc. The Course also looks at catering industry, association between food, diet and beauty and emerging food practices like local, GM, organic etc.

Course Outcomes :

At the end of the course the student will be able to:

1. Appreciate the complex relations between food, individual and society
2. Understand the evolution of food production and consumption from household to industry
3. Critically Understand the relationship between food and risk society

Pedagogy :

Blended learning, Group discussions, role play, micro project, field visit, written/oral presentation by the students

Articulation Matrix / Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Appreciate the complex relations between food, individual and society	X	X		X				X	
Understand the evolution of food production and consumption from household to industry	X	X	X	X		X	X	X	
Critically Understand the relationship between food and risk society	X	X	X	X	X	X	X	X	X

Content of SOC-OE-3 : Sociology of Food Culture	45 Hrs
Unit – 1 Introduction	**15**
Chapter No. 1. Sociological Nature of Food and Eating, Sacred and Taboo Foods, Food, Sociality and Social Change **Chapter No.2.** Determinants of Food Consumption - Types of Food Vegetarian, Nonvegetarian, Omnivore and Vegan **Chapter No.3.** Local Food Cultures and Taste for Exotic	
Unit – 2 Food from Domestic to Industry	**15**
Chapter No. 4. Industrialisation of Food Production and Distribution **Chapter No.5.** Hotels, Restaurants and Catering Sector **Chapter No.6.** Cooking for self-pleasure	
Unit – 3 Food and Risk Society	**15**
Chapter No.7. Diet and Body: Social Appearance and Beauty **Chapter No.8.** Global Overview: Consumption Patterns and Reasons: Overeating, Undereating and Hunger **Chapter No.9.** GM Foods, Organic Foods and Modern Food Practices as Risk Factor	

KEY BOOKS :

1. Beardsworth, Alan and Teresa Keil, 1997, Sociology on the Menu: An invitation to the study of food and society, Routledge, London
2. Beck, Ulrich 1992, Risk Society: Towards a New Modernity, Sage Publications
3. Caroline, Michael, 2012, The Sociology of Food and Agriculture, Routledge, London
4. Food Marketing to Children and Youth, 2006, Institute of Medicine, USA
5. Germain, John and Lauren Williams (Eds) 2017, A Sociology of Food and Nutrition: The social appetite, Oxford University Press, Australia
6. McIntosh, Wm Alex, 1996, Sociologies of Food and Nutrition, Springer, New York
7. Murcott, Anne (Ed) 1998, The Sociology of Food and Eating, Digitized by Google
8. Poulain, Jean-Pierre, 2017, The Sociology of Food: eating and the place of food in society, Trby Augusta Dorr, Bloomsbury, UK
9. Rastogi, Sanjeev (Ed) 2014, Ayurvedic Science of Food and Nutrition, Springer, New York

Suggested Activities: Please refer to the following books :

Johnson, Jesse and others 2017, Introducing Sociology: Using the Stuff of Everyday Life, Routledge, London

McKinney, Kathleen and Barbara S Nevs (Eds) 2008, Sociology Through Active Learning, 2nd Edition, Pine Forge Press, New Delhi

Vohra, Neelja K and others (Eds) 2018, Sociologists in Action on Inequalities, Sage, New Delhi

BA Semester III - Open Elective 3

SOE-OE – 3 Course Title : Sociology of Tourism Management	
Course Credits : 3	Duration of ESA/Exam : 2 Hours
Total Content Hours : 45	Formative Assessment Marks : 40
Lecture hours per week : 3 Hours	Summative Assessment Marks : 60

Course Objectives :

This course aims to explain the relationship between tourists and hosts in terms of group interaction and its impact on each other. It draws attention to the potential issues involved in tourism industry like planning, concerns about sustainable development and its effect on environment. The course also focuses on types of tourism.

Course Outcomes :

At the end of the course the student will be able to :

1. Explain the relationship between tourism, culture and cultural heritage.
2. Explain the social, cultural and economic impacts of tourism on local communities.
3. Understand the relationship between tourism and consumption.
4. Understand the principles of tourism management.

Pedagogy :

Blended learning, Group discussions, role play, micro project, field visit, written/oral presentation by the students.

Correlation Matrix - Mapping of Course Outcomes (COs) with Program Outcomes (POs 1 to 12)

Course Outcomes (COs) /Program Outcomes (POs)	1.	2.	3.	4.	5.	6.	7.	8.	9.
Explain the relationship between tourism, culture and cultural heritage	X	X		X				X	
Explain the social, cultural and economic impacts of tourism on local communities	X	X	X	X	X	X			
Understand the relationship between tourism and consumption	X	X	X	X			X	X	X
Understand the principles of tourism management			X	X	X	X	X		X

Content of SOC-OE-3 : Sociology of Tourism Management	45 Hrs
Unit – 1 Sociology, Tourism, Tourists	**15**
Chapter No. 1. Definitions of Sociology, Culture, Tourism, Tourists, Tourist Gaze; Relation between Tourism, Leisure and Recreation; Sociology of Tourism **Chapter No.2.** Types of Tourism: Cultural, Heritage, Medical, Food, Sports and Eco Tourism **Chapter No.3.** Tourism and Locals: Hosts and Guests: Mutual Impact	
Unit – 2 Tourism System	**15**
Chapter No. 4. Development and Structure of the Tourist System - Motivation and Role of Tourist **Chapter No.5.** Impact of Tourism on Host Place: Social, Economic, Climate and Environmental **Chapter No.6.** Sustainable Tourism: Definitions of Sustainable and Sustainable Tourism; Sustainability of Tourism	
Unit – 3 Tourism Management	**15**
Chapter No.7. Demand for Tourism at Individual and Market level; Tourism Consumer Behaviour: Roles and Decision Making Process; Accommodation: Definition and Management of Commercial Accommodation; Transportation as Tourist Product; Role of Intermediaries **Chapter No.8.** Marketing for Tourism: Definition; Difference between Marketing and Selling; Tourism as a Service Industry; Product, Price, Promotion and Place **Chapter No.9.** Information Technology and Tourism; ICT as a Business Tool; eTourism	

TEXT BOOKS :

1. Burns, Peter M. (1999). An Introduction to Tourism and Anthropology. Routledge, London/New York.
2. John S. Allen, 2018. Tourism: Principles and Practice, 6th Edition, Pakeaul, UK.
3. Nash, Dennis, 2007. The Study of Tourism: Anthropological and Sociological Beginnings. Elsevier, Amsterdam.
4. Urry, John (1990). The Tourist Gaze: Leisure and Travel in Contemporary Societies. Sage, New Delhi.

BA Semester III - Open Elective 3

SOC-OE – 3 Course Title : Social Inequality in India	
Course Credits : 3	Duration of ESA/Exam : 2 Hours
Total Content Hours : 45	Formative Assessment Marks : 40
Lecture hours per week : 3 Hours	Summative Assessment Marks : 60

Course Objectives :

This course focuses on understanding the nature and consequences of social inequality. It highlights the role of status and power in bringing about inequality and analyses its impact on social life of India. The course also critiques the measures taken by Indian State to mitigate social inequality

Course Outcomes :

At the end of the course the student will be able to:

1. Understand the meaning and recognise the features of social inequality
2. Recognise the interconnections between different forms of inequality in India
3. Critique the role of affirmative action to mitigate social inequality

Pedagogy :

Blended learning, Group discussions, role play, mini project, field visit, written/oral presentation by the students

Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Understand the meaning and recognise the features of social inequality	X	X		X	X			X	
Recognise the interconnections between different forms of inequality in India	X	X		X		X			
Critique the role of affirmative action to mitigate social inequality	X	X	X					X	X

Content of SOC-OE-3 : Social Inequality in India	45 Hrs
Unit – 1 Introduction	**15**
Chapter No. 1. Meaning and Characteristic Features of Social Inequality: Forms of Social Inequality: Caste, Class and Tribe **Chapter No.2.** Role of Status, Power, Life Chances and Life Styles **Chapter No.3.** Sources of Inequality: Birth, Wealth, Income, Education, Occupational Prestige and Political Position.	
Unit – 2 Impact of Social Inequality	**15**
Chapter No. 4. Health and Wellbeing **Chapter No.5.** Access to Education **Chapter No.6.** Access to Justice	
Unit – 3 Social Inequality and Affirmative Action	**15**
Chapter No. 7: Views of Dr B R Ambedkar and Affirmative Principle in the Constitution of India (Constitutional Provisions) **Chapter No.8:** Scheduled Castes, Scheduled Tribes and Status of Women in these groups; Status of Transgenders **Chapter No.9:** Status of Landless Agricultural Labourers; Status of Land Ownership among Scheduled Caste and Scheduled Tribes	

TEXT BOOKS :

1. Beteille, Andre (1992). The Backward Classes in Contemporary India. Oxford University Press, Delhi.
2. Charles S. Rajan & M. Ravindra (1998) (Eds) Challenging Untouchability. Sage India, Delhi.
3. Ghurye, G S (1969) The Social Content of an Ideology: Ambedkar's Political and Social Thought. Sage, New Delhi.
4. Uday Pareek & (Ed) (2013) Towards Sociology of Dalits: Readings in Indian Sociology - Volume 1. Sage, New Delhi.
5. Gupta, Dipankar (1991). Social Stratification. Oxford University Press, Delhi.
6. Jodhka, Surinder S. (2018). Caste in Contemporary India. 1st Edition. Routledge, London.
7. Omvedt, Gail (2011) Dalits and the Democratic Revolution. Sage, New Delhi.
8. Singh, K S (1994) The Scheduled Tribes. Oxford University Press, New Delhi.
9. Rao, Chanakya (2021) Challenge of Indian Society. S Chand and Co, New Delhi.
10. Thorat, Sukhadeo (2009) Dalits in India. Sage, New Delhi.

DSC-SOC-7 - Course Title : Sociology of Marginalized Groups	
Course Credits : 3	Duration of ESA/Exam : 2 Hours
Total Content Hours : 45	Formative Assessment Marks : 40
Lecture hours per week : 3 Hours	Summative Assessment Marks : 60

Course Objectives :

This Course discusses the process of marginalisation and its types and examines the consequences of marginalisation. It also describes the measures to ameliorate the negative consequences of marginalisation and analyse the impact of forces of social change on marginalised groups.

Course Outcomes :

At the end of the course the student will be able to :

1. Knowledge of marginalization and marginalized groups in India
2. Understand the impact of powerlessness in social life
3. Ability to participate and critically view efforts undertaken to address inequalities

Pedagogy :

Blended learning. Group discussions, role play, micro project, field visit, written/oral presentation by the students

Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Knowledge of marginalisation and marginalised groups in India	X	X	X	X	X			X	X
Understand the impact of powerlessness in social life	X	X	X	X				X	X
Ability to participate and critically view efforts undertaken to address inequalities	X	X	X	X	X	X	X	X	X

Content of Course : DSC-SOC-7- Sociology of Marginalized Groups	45 Hrs
Unit – 1 Introduction	**15**
Chapter No. 1. Marginalisation: Meaning and Nature- Types of Marginalisation: Social, Political, Economic; Relationship between Marginalisation and Social Exclusion **Chapter No.2.** Causes of Marginalisation: Marginalised Groups: Caste, Gender, People with Disabilities, Minorities, Tribes and Elderly **Chapter No.3.** Socio-economic Indices of Marginalisation: Poverty, Relative Deprivation, Exploitation, Discrimination, Educational Backwardness, Inequality and Untouchability	
Unit – 2 Marginalisation and Affirmative Action	**15**
Chapter No. 4. Views of Dr B R Ambedkar and Affirmative Principle in the Constitution of India (Constitutional Provisions) **Chapter No.5.** Scheduled Castes, Scheduled Tribes and Status of Women in these groups; Status of Transgenders **Chapter No.6.** Status of Landless Agricultural Labourers; Status of Land Ownership among Scheduled Caste and Scheduled Tribes	
Unit – 3 Marginalized Groups and Social Change	**15**
Chapter No.7. Social Mobility among Marginalised Groups: Education, Employment, Political Participation, Conversion, Migration **Chapter No8.** Challenges of Privatisation and Response by Marginalised Groups **Chapter No.9.** Social Justice in the context of Globalisation	

TEXT BOOKS :

1. Béteille, André. 1992. The Backward Classes in Contemporary India. Oxford University Press, Delhi.
2. Charsley, S.R. and G.K. Karanth. 1998 (Eds) Challenging Untouchability. Sage India, Delhi
3. Deliè, M.S. 1998 The Social Context and Ideology: Ambedkar's Political and Social Thought. Sage, New Delhi
4. Galanter, Marc. 2018 Towards Sociology of Caste, Readings in Indian Sociology - Volume 1. Sage, New Delhi
5. Gupta, Dipankar. 1991. Social Stratification. Oxford University Press, Delhi
6. Jodhka, Surinder S. 2018. Caste in Contemporary India. 2nd Edition. Routledge, London
7. Ghurye, G.S. 2012 Caste and the Dominant Race. Sage, New Delhi
8. Singh, K.S. (1994) The Scheduled Tribes. Oxford University Press, New Delhi
9. Rao, Gangai (2002) Sociology of Indian Society. S Chand and Co. New Delhi.
10. Thorat, Sukhdeo 2009 Dalits in India. Sage, New Delhi

DSC-SOC-8 Course Title: Population and Society	
Course Credits : 3	Duration of ESA/Exam : 2 Hours
Total Content Hours : 45	Formative Assessment Marks : 40
Lecture hours per week : 3 Hours	Summative Assessment Marks : 60

Course Objectives :

The course on population and society explains the relationship between population and society and demographic trends in the world and their major determinants. Also it discusses the need and basis of India's population policies and programmes

Course Outcomes :

At the end of the course the student will be able to:

1. Define the basic concepts of population studies
2. Understand the dynamics of population from sociological perspectives
3. Understand the problems around India's population
4. Critically analyze the population policies of India

Pedagogy :

Blended learning. Group discussions, role play, micro project, field visit, written/ oral presentation by the students

Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Define the basic concepts of population studies	X	X	X					X	X
Understand the dynamics of population from sociological perspectives	X	X	X	X	X			X	X
Understand the problems around India's population	X		X	X	X	X	X	X	X
Critically analyze the population policies of India	X		X	X	X	X	X	X	X

Content of Course : DSC-SOC- 8 : Population and Society	45 Hrs
Unit – 1 Introduction	**15**
Chapter No. 1. Relationship between society and population **Chapter No.2.** Global Population Trends: role of fertility, mortality and migration: Power of Doubling **Chapter No.3**: Age and Sex Composition in India and its Impact: Demographic Dividend	
Unit - 2 Sources of Demographic Data	**15**
Chapter No. 4. Population Census: Uses and Limitations: Indian Censuses **Chapter No.5.** Vital Registration System **Chapter No.6.** National Sample Survey: Sample Registration System: National Family Health Surveys (NFHS)	
Unit – 3 Population Theories and Policy	**15**
Chapter No.7. Population Theories: Malthusian Theory: Optimum Theory of Population and Demographic Transition Theory **Chapter No.8.** Need of Population Policy: Millennium Development Goals and Sustainable Development Goals **Chapter No.9.** Population Policy of India: Programmes and their Evaluation	

TEXT BOOKS :

1. Agarwal S.N. (1999) Population Studies with Special Reference to India. New Delhi. Lok Dwelet Publication.
2. Alaria Ram. (1992) Social problems in India. Jaipur. Rawat Publications.
3. Bhende, A. A. and Kanitkar T. (2017) Principles of population studies. Bombay: Himalaya Pub. House.
4. Bogue, D. J. (1969) Principles of demography. New York: Wiley.
5. Bose, Ashish (1991) Demographic Diversity in India. B.R. Publishing Corporation Delhi.
6. Bose, Ashish. 2021. Population of India, 2001 Census Results and Methodology. B.R. Publishing Corporation Delhi, Census of India Report 001, New Delhi.
7. Kingsley Davis (1951) The Population of India and Pakistan. Princeton.

N.J.: Princeton Univ. Press.
8. Kirk, Dudley. 1968. "The Field of Demography". In Sills, David ed. International
9. Encyclopaedia of the Social Sciences. The Free Press and Macmillan: New York.
10. Rao, Shankar (2011) Sociology of Indian Society, 16th Reprint, S Chand and Co. New Delhi.
11. Visaria, Pravin and Visaria, Leela. 2003. 'India's Population: Its Growth and Key
Characteristics', in
12. Das, V. ed. The Oxford India Companion to Sociology and Social Anthropology. Oxford
University Press: Delhi

Suggested Activities: Please refer to the following books:

Johnston, Jesse and others 2017. Introducing Sociology: Using the Stuff of Everyday
Life. Routledge: London
McKinney, Kathleen and Barbara S Heyl (Eds) 2009. Sociology Through Active
Learning.
2nd Edition: Pine Forge Press: New Delhi
White, Shelley K and others (Eds) 2018. Sociologists in Action on Inequalities. Sage.
New Delhi

BA Semester IV – Open Elective - 4

SOC-OE - 4 Course Title : Sociology of Youth	
Course Credits : 3	Duration of ESA/Exam : 2 Hours
Total Content Hours : 45	Formative Assessment Marks : 40
Lecture hours per week : 3 Hours	Summative Assessment Marks : 60

Course Objectives :

This course on youth focuses on youth culture, youth subculture and the changes they are experiencing. It draws attention to the role of peer groups, influence of drug culture and media on the self perception of youths in modern world.

Course Outcomes :

At the end of the course the student will be able to:

1. Recognize and explain how sociologists conceptualize and study youth and youth hood
2. Understand how youth evolve in the context of social, economic and cultural settings
3. Understand concerns and problems of youth

Pedagogy :

Blended learning, Group discussions, role play, micro project, field visit, written/oral presentation by the students

Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Recognize and explain how sociologists conceptualize and study youth and youth hood	X	X		X				X	
Understand how youth evolve in the context of social, economic and cultural settings	X	X	X	X	X	X			
Understand concerns and problems of youth	X	X	X	X			X	X	X

Content of SOC-OE-4 : Sociology of Youth	45 Hrs
Unit – 1 Age Groups and Social Structure	**15**
Chapter No. 1. Age Differentiation, Age Groups, Age Sets, Problem of Generations, Cultural Lag (W F Ogburn), Structural Lag (Riley) **Chapter No.2.** Youth Cultures, Subcultures, Counter Culture, Contra Culture **Chapter No.3.** Youth Vs Caste, Youth Vs Class	
Unit – 2 Youth and Society	**15**
Chapter No. 4. Youth, Music and Leisure **Chapter No.5.** Globalisation of Youth Culture, Marketing Youth Culture **Chapter No.6.** Youth, Media and Technology	
Unit – 3 Youth and Social Concerns	**15**
Chapter No.7. Youth, Protest and Violence: Social, Political and Economic **Chapter No.8.** Youth, Peer groups and Drug Culture **Chapter No.9.** Youth, Nationalism and Globalisation	

TEXT BOOKS :

1. Dennis Kristensen, Nanet Kristensen, The Glocalisation of Youth Culture: The Global Youth Segment as Structures of Common Difference, *Journal of Consumer Research*, Volume 32, Issue 2, September 2005, Pages 231–247, https://doi.org/10.1086/426624
2. Edmunds, June, Turner, Bryan S. (2005). "Global Generations: Social Change in the Twentieth Century". *British Journal of Sociology*. 56 (4): 559–577. doi:10.1111/j.1468-4446.2005.00085.
3. Gangrade, K D.1970.Intergenerational Conflict: A Sociological Study of Indian Youth. *Asian Survey*, Vol.10, No.10, pp.924-36
4. Jeffrey, Craig 2010. Timepass: Youth, class and time among unemployed young men in India. *American Ethnologist*, Vol.37, No.3, pp.465-481
5. Kalantzis, Mary F.D.** Modifications of Indian Youth in the Shri Lake. *Pacific Affairs*, Vol.20,No.2, pp.224-248
6. Lukose, Ritty 2005. Consuming Globalization: Youth and Gender in Kerala, India. *Journal of Social History*, Vol.38, No.4, pp.915-935
7. Mannheim, Karl (1952) "The Problem of Generations". In Kecskemeti, Paul (ed.). *Essays on the Sociology of Knowledge: Collected Works, Volume 5*. New York: Routledge. p. 276–322
8. Mishra, Dhiraj & others 2014. Change in Tobacco Use Over Time in Urban Indian Youth: The Moderating Role of Socioeconomic Status. *Health Education & Behaviour*, Vol.41, No.2, pp.123-126
9. Riley, Matilda White 1973. On the Significance of Age in Sociology. *American Sociological*

BA Semester IV – Open Elective - 4

SOC-OE – 4 Course Title : Sociology of Leisure	
Course Credits : 3	Duration of ESA/Exam : 2 Hours
Total Content Hours : 45	Formative Assessment Marks : 40
Lecture hours per week : 3 Hours	Summative Assessment Marks : 60

Course Objectives :

Leisure is both a necessity and luxury depending on the position of a group of people in the social structure. Sociology of Leisure provides analytical tools to understand leisure, recreation and associated concepts. It also offers insights into the class based nature of leisure, and commodification of leisure

Course Outcomes :

At the end of the course the student will be able to:

1. Describe the concept of Leisure, associated terms and types
2. Understand the relationship between Leisure and stratification
3. Analyse the impact of commodification of leisure

Pedagogy :

Blended learning, Group discussions, role play, micro project, field visit, written/oral presentation by the students

Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Describe the concept of Leisure, associated terms and types	X			X				X	
Understand the relationship between Leisure and stratification	X	X	X	X	X	X		X	
Analyse the impact of commodification of leisure	X	X	X	X			X	X	X

Content of SOC-OE -4 : Sociology of Leisure	45 Hrs
Unit – 1 Introduction	**15**
Chapter No. 1. Definition of Leisure and its attributes; need for the study of leisure as social activity **Chapter No.2.** Leisure, Recreation, Play, Pleasure and Leisure Identity; Leisure, Work and Post work **Chapter No.3.** Types of Leisure- Serious, Casual, Postmodern, Therapeutic	
Unit – 2 Constraints on Leisure Participation	**15**
Chapter No. 4. Class Inequality and Exclusion from Leisure Participation **Chapter No.5.** Leisure Participation and Gender Relations - Leisure and Beauty System **Chapter No.6.** Leisure Participation, Age and Disability	
Unit – 3 Commodification of Leisure	**15**
Chapter No.7. Cinemas, OTTs and Reality TV **Chapter No.8.** Leisure and Sports - Adding Leisure Value like branded goods (Sony Walkman, iPod, Nike, Coke etc.); Malls as areas of leisure **Chapter No.9.** Social Media as Leisure Activity - Role in Identity Building	

TEXT BOOKS

1. Rojek Chris 2010 Leisure Studies Theories and Perspectives Sage New Delhi
2. Harris, David 2008 Key Concepts in Leisure Studies Sage New Delhi
3. Rojek Chris 2000 Leisure and Culture Palgrave Macmillan New York
4. Rojek Chris and others 2006 A Handbook of Leisure Studies Palgrave Macmillan Hawfords
5. Spracklen Karl 2015 Digital Leisure the Internet and Popular Culture Palgrave Macmillan New York

Suggested Activities: Please refer to the following books:

Johnson, Irwin and others 2017 Introducing Sociology: Using the Stuff of Everyday Life Routledge London

Mcmillan, Kathleen and Barbara J. Hays (Eds) 2008 Sociology through Active Learning, 2nd Edition Pine Forge Press, New Delhi

Willis, Shelley K and others (Eds) 2012 Sociologists in Action on Inequalities Sage New Delhi

BA Semester IV – Open Elective – 4

SOC-OE – 4 Course Title: Sociology of Disaster Management	
Course Credits : 3	Duration of ESA/Exam : 2 Hours
Total Content Hours : 45	Formative Assessment Marks : 40
Lecture hours per week : 3 Hours	Summative Assessment Marks : 60

Course Objectives:

This course unravels the social dimension of disasters, both natural and manmade. It provides a basic understanding of multi dimensional property of disasters and its impact on community relationships and living. The response of both the government and civil society is introduced through case studies.

Course Outcomes:

At the end of the course the student will be able to:

1. Appreciate the risk taking capability and limitations of human beings
2. Recognise the impact of disasters and consequences
3. Respond sensitively with a sociological eye to disasters and their management

Pedagogy:

Blended learning, Group discussions, role play, micro project, field visit, written/oral presentation by the students

Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Appreciate the risk taking capability and limitations of human beings	X	X		X				X	
Recognise the impact of disasters and consequences	X	X			X	X	X		X
Respond sensitively with a sociological eye to disasters and their management	X						X	X	X

Content of SOC-OE 4 : Sociology of Disaster Management	45Hrs
Unit – 1 Introduction	**15**
Chapter No. 1. Sociology of Disaster: Meaning and Scope: Types of Disaster: Natural, Manmade **Chapter No.2.** Meaning of Hazard, Disaster, Vulnerability, Pandemic and Risk Society **Chapter No.3.** Social Construction of Disaster by Media	
Unit – 2 Consequences and Disaster Management	**15**
Chapter No. 4. Impact on Community: Caste, Class, Gender, Children and Disabled **Chapter No.5.** Relief, Rehabilitation and Reconstruction **Chapter No.6.** National Disaster Management Authority	
Unit – 3 Case Studies: Impact and Response	**15**
Chapter No.7. Bhopal Disaster of 1984, LG Polymers Gas Leak, Visakhapatnam, 2020 **Chapter No.8.** Tsunami of 2004, Uttarakhand Floods of 2013, South India Floods of 2015 **Chapter No.9.** Surat Plague 1994, Covid-19	

TEXT BOOK(S):

1. Dhaval, Thomas E. Human System Response to Disaster: An Inventory of Sociological Findings. Springer, New York.
2. Rodriguez, Havidan and others. 2019 Handbook of Disaster Research 2nd edition.
3. Springer Dahiya, Rashmi 2018 Disasters: A Sociological Approach, Polity Press, London.
4. Zahran, Sl I and Davis F Gillespie 2013 Community Disaster Vulnerability: Theory, Research and Practice, Springer, New York.

BA Semester V

DSE-SOC - 9 Course Title : Social Entrepreneurship	
Course Credits : 4	Duration of ESA/Exam : 2 Hours
Total Content Hours : 60	Formative Assessment Marks : 40
Lecture hours per week : 4 Hours	Summative Assessment Marks : 60

Course Objectives

1. To provide knowledge about social entrepreneurship
2. To help to develop social entrepreneurship imagination
3. To help them to start their own social enterprise or not for profit startup as well as act innovative in the already working organization

Course Outcomes

At the end of the course the student should be able to:

1. Understand the scope and need for social entrepreneurship
2. Plan and implement socially innovative ideas
3. Equipped to start their own social enterprise or non profit organization

Pedagogy :

Blended learning, Group discussions, role play, micro project, field visit, written /oral presentation by the students

Articulation Matrix: Mapping of Course Outcomes (COs) With Program Outcomes (POs 1-9)

Course Outcomes (COs)/Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Understand the scope and need for social entrepreneurship	X		X	X				X	X
Plan and implement socially innovative ideas			X	X	X	X			X
Equipped to start their own social enterprise or non profit organization							X	X	X

Content of Course : DSC-SOC-9 - Social Entrepreneurship	60 Hrs
Unit 1 Fundamentals of Social Entrepreneurship	15
Chapter 1 Social entrepreneurship: Meaning, Features and Relevance; Social Business: Meaning; Difference between Social Entrepreneurship andSocial Business; Relation between Social Change and Social Entrepreneurship **Chapter 2** Typology of Ventures: Social Purpose Ventures, Social Consequence Entrepreneurship, Enterprising Nonprofits, Hybrid Models of Social Entrepreneurship **Chapter 3** Identifying social business opportunities	
Unit 2 Establishment of Non-Profit Organisations	15
Chapter 4 Concept (includes Non-Government Organisations), Objectives and establishment of Non-Profit organisations (NPOs) **Chapter 5** Legal Procedure for establishment of NPOs: Societies RegistrationAct, Indian Companies Act, Charitable Endowments Act, Foreign Contribution (Regulation) Act (FCRA), Available Tax Reliefs **Chapter 6** Social Values of NPOs: Mission and Vision; MoA and Bye-Laws	
Unit 3 Management and Financing	16
Chapter 7 Human Resource Management: Staffing Plan, Social Security of Workers: Provisions and Benefits of Gratuity Act; Rules and Regulations of EPFScheme **Chapter 8** Project Management: Definition of Concept, Identification of Project; Proposal Development: Basic Factors, Project Proposal Guide, Budget, Rationalefor sending Project Proposal to the Donor; Proposal Writing: Do's and Don'ts of a Project Proposal **Chapter 9** Financing: Sources of Finance: Government, Donors, International Agencies; Documents Used in Fund Raising; Due Diligence; Campaigns; Internal Income Generation	
Unit 4 Case Studies	14
Chapter 10 Pratham, RUDSET, Vivekananda Girijana Kalyana Kendra, E Pills **Chapters 11 & 12** Students should study the functioning of a local NPO, present their ideas in a seminar and submit a report (For example Workingin the areas of Sanitation, Rural Development, Women Empowerment)	

TEXT BOOKS:

1. Bornestein, David 2007 How to Change the World: Social Entrepreneurs and the Power of New Ideas, Oxford University Press
2. Caulson, Eric T and James Koch. 2018, Building a Successful Social Venture: A Guide for Social Entrepreneurs, Berrett-Koehler Publishers Inc. California
3. Dees, Gregory and Others 2002 Enterprising Non Profits - A Toolkit for Social Entrepreneurs, John Wiley and Sons
4. Drucker, Peter 1990 Managing the Non Profits Organizations: Practices and Principles, Harper Collins Dunean, Mark B. And P. A Steinhau 2010, Social Entrepreneurship for Dummies, Wiley Publishing Inc New Jersey
5. Haggard, S 2005 The Business Idea, Springer, Berlin
6. Lynch, Kevin and Julius Walls Jr. 2009, Mission Inc : The Practitioner's Guide to Social Enterprise, Berrett-Koehler Publishers Inc. California

BA Semester V

DSC-SOC - 10 Course Title : Society and Tribes	
Course Credits : 4	Duration of ESA/Exam : 2 Hours
Total Content Hours : 60	Formative Assessment Marks : 40
Lecture hours per week : 4 Hours	Summative Assessment Marks : 60

Course Objectives

1. To provide basic knowledge about social organisation among tribals, with specific focus on Karnataka
2. Critically understand the implications of changes occurring
3. Undertake micro research work and communicate effectively

Course Outcomes

At the end of the course the student should be able to

1. Understand and appreciate the social organization among the tribals
2. Assess the impact of social changes on tribal social life
3. Handle micro research Work and communicate effectively

Pedagogy :

Blended learning, Group discussions, role play, micro project, field visit, written /oral presentation by the students

Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcome (POs 1-12)

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Understand and appreciate the social organization among the tribals	X			X				X	
Assess the impact of social changes on tribal social life		X	X	X	X	X	X		X
Handle micro research work and communicate effectively	X		X	X	X	X		X	

Content of Course : DSC- SOC-10 : Society and Tribes	60 Hrs
Unit – 1 Concepts and Categories	**15**
Chapter 1: Tribes and Indigenous People; Scheduled Tribes, Primitive Tribes, De-Notified or ex-criminal Tribes in India; Geographical Distribution of Tribes in India **Chapter 2:** Meaning of Habitat, Rules of Marriage, Clan, Lineage, Consanguinity and Affinity, Male-Female relations **Chapter 3:** Social System, Legal System, Political System, Economic System, Religion and Magic	
Unit – 2 Changes and Development Issues	**15**
Chapter 4: Social Mobility: Types, Tribes and Caste, Tribe-Caste-Peasant Continuum, Sanskritisation **Chapter 5:** Tribalisation, Detribalisation, Retribalisation **Chapter 6:** Tribal Development and Welfare: Approaches - Assimilationist and Isolationist; Problems of Exploitation, Land Alienation, Unemployment, Cultural Transformation, Scheduled Areas, Tribal Justice and Modern Law	
Unit – 3 Studying Tribes	**15**
Chapter 7: Tradition of Field work: History and Significance; Ethics of Fieldwork; Etic and Emic Perspectives **Chapter 8:** Sources of Data: Primary and Secondary **Chapter 9:** Participatory Method, Case Studies, Sample Surveys, Genealogies	
Unit-4 Field Work	**15**
Students have to take up field work in any nearby tribal settlement and present their findings in a Seminar and written report	

TEXT BOOKS

1. Ahuja, R. 2001 Society in India, Rajat Publications, Jaipur
2. Bose, A. K. 1941 Hindu Mode of Tribal Absorption, Science and Culture, Vol VIIIAhuja, Vamal 1941 A New Deal for Tribal India.
3. Fuchs, G. D. 1972, Hamlet, Economy and Society, Mohan and Co London
4. Nath, Kailasnath C. Chiruguli von Tribes of India: The Struggle for Survival, University of California, Berkeley
5. Ghurye, G. S. 1963 The Scheduled Tribes, Popular Prakashan, Bombay
6. Hasnain, Nadeem 2011 Tribal India, Palaka Prakashan, New Delhi Programmes 2019
7. Social Change in India, Kinnark Publishers Pvt Ltd, Delhi
8. Mahapatra, R. C. 1962 The History and Culture of the Bodgo People, Vol III, Bhanuji a Vidya Bhavan Bombay
9. Pamaik, S. 1972, Tribes and Their Development, Hyderabad, Hyderabad Intelligence Consultants Development
10. Srinivas, M.N. Social, 1952, Religion and Society Among the Coorgs of South India, Oxford University Press, Delhi
11. Srinivas, M.N. 1966 Changes in Modern India, Oxford University Press, Delhi
12. Thurston, Edgar C and K. Rangachari Castes and Tribes of Southern India, Cyan Publishing House, New Delhi
13. Vidyarthi, L. P and B. K. Rai 1985, The Tribal Culture of India, Concept Publishing Company, New Delhi

BA Semester V

DSC-SOC - 11 Course Title : Statistics in Sociological Research	
Course Credits : 4	Duration of ESA/Exam : 2 Hours
Total Content Hours: 60	Formative Assessment Marks: 40
Lecture hours per week : 4 Hours	Summative Assessment Marks : 60

Course Objectives

1. Introduction to sociological research and methods
2. To familiarise the students with the process of research
3. General introduction to statistical techniques for analysing social science data

Course Outcomes

At the end of the course the student should be able to:

1. Use appropriate research method
2. Use appropriate statistical techniques
3. Summarise data, examine relationships among variables

Pedagogy :

Blended learning. Group discussions. role play. micro project. field visit. written /oral presentation by the students

Articulation Matrix : Mapping of Course Outcomes (COs) with ProgramOutcomes (POs 1-12)

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Use appropriate research method	X		X	X	X	X			
Use appropriate statistical techniques.			X	X	X	X			
Summarise data, examine relationships among variables			X	X	X	X		X	X

Content of Course : DSC–SOC-11 : Statistics in Sociological Research	60 Hrs
Unit 1 Sociological Research	**15**
Chapter 1 Meaning of Science, Social Science, Research, Research Design **Chapter 2** Steps for Conducting Research: Choosing Research Topic, Literature Review, Sources of Data (Primary, Secondary) **Chapter 3** Meaning of- Concept, Assumption, Hypothesis; Formulating a Hypothesis; Independent Variable, Dependent Variable; Drawing Conclusion	
Unit 2 Methods of Sociological Research	**15**
Chapter 4 Qualitative and Quantitative Methods: Meaning, Differences **Chapter 5** Survey Methods: Sampling, Questionnaire, Interview **Chapter 6** Observation: Participant, Nonparticipant Observation	
Unit 3 Social Statistics	**18**
Chapter 7 What is Social Statistics? Need for Studying Social Statistics **Chapter 8** Definition of - Population, Sample, Count, Fractions, Constant, Variable, Types of Statistics: Descriptive Statistics, Inferential Statistics **Chapter 9** Meaning of Frequency Distribution, Construction of Frequency Tables, Diagrammatic and Graphical Representation of Ungrouped Data, Advantages, Types: Pie Charts, Bar Charts, Histograms, Frequency Curve	
Unit -4 Methods of Statistical Measurement	**12**
Chapter 10 Measures of Central Tendency: Merits, Demerits, Arithmetic Mean: Merits, Demerits, Median and Mode: Merits, Demerits **Chapter 11** Measures of Dispersion: Range, Standard Deviation, Mean Deviation, Quartile Deviation **Chapter 12** Correlation: Pearson's Correlation, Rank Correlation	

TEXT BOOKS :

1. Agarwal, Y.P. (1995) Statistical Methods: Concepts, Applications and Computation, NewDelhi: Sterling Publishers.

2. Altman, Micah, Jeff Gill and Michael McDonald (2003) Numerical Issues in StatisticalComputing for the Social Scientist, New York: John Wiley and Sons.

3. Babbie, Earl 2013 The Practice of Social Research, Cengage, 13th Edition

4. Bailey, K. (1994). The Research Process in Methods of Social Research. Simon and Schuster, 4th Ed. TheFree Press, New York.

5. Bryman, Alan (1988). Quality and Quantity in Social Research. London: Unwin

6. Hyman, Goode, W. E. and P. K. Hatt. 1952. Methods in Social Research. McGraw

7. Hill New YorkGupta, S.C. (1990). Fundamentals of Statistics. New Delhi: Himalaya Publishing House. Gupta, S.C. (1985). Statistical Methods. New Delhi:

8. S.Chand and Sons.Irvine, J. J. Miles and J.Evans eds. (1979). Demystifying Statistics. London:

9. Pluto Press.Norton, Peter (2000). Introduction to Computers. New Delhi: Tata McGraw Hill. Usher, Kerrin 2008 Salsa Dancing into the Social Sciences. Harvard University Press, Harvard Rajaraman, V. (2004). Fundamentals of Computers, New Delhi: Prentice Hall

10. Salganik, Martin (1998). The Limitations of Statistics. London: Longmans

11. Srinivas, M.N. et al 2002 (reprint), The Fieldworker and the Field: Problems and Challenges in Sociological Investigation, Oxford University Press. New Delhi.

SEC 4 - Content of Course : Cyber Security/ Employability skills	
Course Credits : 3	Duration of ESA/Exam : 2 Hours
Total Content Hours : 20	Formative Assessment Marks : 20
Lecture hours per week : 2+0+2	Summative Assessment Marks : 30

BA Semester VI

DSC-SOC - 12 Course Title : Sociological Perspectives	
Course Credits : 4	Duration of ESA/Exam : 2 Hours
Total Content Hours : 60	Formative Assessment Marks : 40
Lecture hours per week : 4 Hours	Summative Assessment Marks : 60

Course Objectives

1. To introduce major Sociological theoretical approaches
2. To introduce and use fundamental categories of theory
3. Compare and contrast the ways different theorists use the same or similar concepts to build or present their ideas.

Course Outcomes

At the end of the course the student should be able to:

1. Appreciate the significance of major Sociological theories
2. Able to use fundamental theoretical categories.
3. Understand the different nuances of concepts and terms

Pedagogy :

Blended learning, Group discussion, role play, micro project, field visit, written /oral presentation by the students

Articulation Matrix : Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Appreciate the significance of major Sociological theories	X	X		X					
Able to use fundamental theoretical categories	X	X		X	X	X			X
Understand the different nuances of concepts and terms	X	X							

Content of Course : DSC-SOC-12 : Sociological Perspectives	60 Hrs
Unit 1 Basics of Theory	**15**
Chapter 1 Theory: Meaning and Features. Meaning of Social Theory. Types of Theory: Macro, Meso, Micro **Chapter 2** Building Blocks: Concept, Assumption, Hypothesis, Model; Need for Theoretical Thinking **Chapter 3** Meaning of - Induction, Deduction, Fact, Causal Relation, Correlation, Constant, Variable, Generalisation	
Unit 2 Structural Functional Perspective	**15**
Chapter 4 Origin of Functionalism and Structuralism; Meaning of Social Structure, Social System, Function, Integration, Social Equilibrium, Social Order, Dysfunction **Chapter 5** Postulates of Functional Analysis **Chapter 6** Neo-functionalism	
Unit 3 Conflict Perspective	**15**
Chapter 7 Origin of Conflict Perspective; Meaning of Conflict, Social Inequality, Power, Dominance, Authority, Class Struggle, Hegemony **Chapter 8** Process of Social Conflict and Social Change; **Chapter 9** Functions of Social Conflict	
Unit 4 Symbolic Interaction Perspective	**15**
Chapter 10 Origin of Symbolic Interaction Perspective; Meaning of Symbol, Interaction, Social Construction of Reality, Interpretation, Reflexivity, Negotiation **Chapter 11** Importance of Meaning, Definition of Situation **Chapter 12** Dramaturgy and Everyday Life	

TEXT BOOKS :

1. Aron, Raymond (1991). Main Currents in Sociological Thought (Vol 1), London.
2. Penguin Barnes H.E. ed. (1948). An Introduction to the History of Sociology, Chicago Chicago University Press.
3. Black, Max ed (1961). The Social Theories of Talcott Parsons. A Critical Examination, Carbondale: Southern Illinois University Press.
4. Coser, Lewis (1977). Masters of Sociological Thought: Ideas in Historical and

BA Semester VI

DSC-SOC - 13 Course Title : Sociology of Health	
Course Credits : 4	Duration of ESA/Exam : 2 Hours
Total Content Hours : 60	Formative Assessment Marks : 40
Lecture hours per week : 4 Hours	Summative Assessment Marks : 60

Course Objectives

1. Understand the concept of health, illness and social conditions
2. Analyse the relationship between social factors and health status
3. Understand the role of medical doctors, paramedics, pharmaceutical industry and socialinstitutions in maintaining and promoting health

Course Outcomes

At the end of the course the student should be able to:

1. Appreciate the significant relationship between society and culture
2. Distinguish between health, well-being, illness and disease
3. Critique the role of medical doctors, paramedics, pharmaceutical industry and socialinstitutions in maintaining and promoting health

Pedagogy:

Blended learning, Group discussions, role play, micro project, field visit, written /oral presentation by the students

Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs): 1 (L)

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Appreciate the significant relationship between society and culture	X	X		X					X
Distinguish between health, well-being, illness and disease	X	X						X	X
Critique the role of medical doctors, paramedics, pharmaceutical industry and social institutions in maintaining and promoting health	X			X				X	X

- Content of Course : DSC-SOC-13: Sociology of Health	60 Hrs
Unit 1 Introduction	**15**
Chapter 1 Sociology of Health: Meaning, Nature and Need, Scope: Sociology in Medicine and Sociology of Medicine **Chapter 2** Emergence and Development of Sociology of Health in World and India **Chapter 3** Actors: Doctors-Nurses and Paramedical Staff-Patients and their relationship	
Unit 2 Determinants of Health	**15**
Chapter 4 Social Determinants: Class, Caste, Power, Gender, Social Cohesion **Chapter 5** Cultural Determinants: Beliefs, Nutrition, Environment **Chapter 6** Economic Determinants: Poverty, Homelessness, Living Conditions, Neighbourhood	
Unit 3 Models of Health	**15**
Chapter 7 Systems of Medicine (Biomedicine and AYUSH): Dominance of Biomedical Model **Chapter 8** Sick Role and Experiencing Illness **Chapter 9** Hospital as Social Organization	
Unit 4 Health Care Reform	**15**
Chapter 10 Medicalization and Pharmaceuticalization of Health **Chapters 11 & 12** Learning from the Field: Report on Health Services or Functioning of Health Organizations or Selected Health Programmes at State Level	

TEXT BOOKS:

1. Albrecht, Gary L. and R. Fitzpatrick (1994) Quality of Life in Health Care. Advances in Medical Sociology, Volume 5. JAI Press.
2. Annandale Ann (2001). The Sociology of Health and Medicine: A Critical Introduction. Cambridge: Polity Press.
3. Bloom, Samuel W. (1963) The Doctor and His Patient. New York: Free Press. Cox, Rodney M. (1979). Sociology of Medicine. New York: McGraw Hill.
4. Chloe Bird, Peter Conrad and Allen Fremont eds. (2000). Handbook of Medical Sociology. New York: Prentice Hall.

5. Cockerham, William C. (1997). Medical Sociology, New Jersey: Prentice Hall
6. Conrad, Peter ed. (2003). Sociology of Health and Illness: Critical Perspectives, New York: Worth Publishing
7. Dutta, P.R. (1955) Rural Health and Medical Care in India, Ambala: Army Education Press.
8. Madan, T.N. (1960). Doctors and Nurses, New Delhi: Vikas
9. Qaunen, T. K. (1978). Doctors and Nurses: A Study in Occupational Role Structures, Bombay: Macmillan
10. Baru, Rama V. (1998). Private Health Care in India, New Delhi: Sage
11. Schwatz, Howard (1994) Dominant Issues in Medical Sociology, New York:
12. McGraw Hill Venkataratnam, R (1979). Medical Sociology in an Indian Setting, Madras: Macmillan
13. Mohanty, S K 2005. Fundamentals of Entrepreneurship, Eastern Economy Edition, Prentice-Hall India, Delhi
14. Nand, Heidi and Others. 2019. Entrepreneurship: Practice and Mindset, Sage Publications, Delhi
15. Nicholls, Alex 2006 Social Entrepreneurship: New Models of Sustainable Change, Oxford University Press
16. Prandelw, Rynaud sdn Andrzej Nowak, 2011. Social Entrepreneurship: Theory and Practice, Cambridge University Press, Delhi
17. Rust, Martin 2007, Sociology of Entrepreneurship, Emerald Publishing Limited
18. Sawang, Sukanlaya 2020 Entrepreneurship Education: A Lifelong Learning Approach, Springer Nature,
19. Sudgandha 2016 Entrepreneurship Development, Eastern Economy Edition, Prentice-Hall India, Delhi
20. Sundar, Pushpa 2013 Business and Community: The Story of Corporate Social Responsibility in India, Sage
21. Swedberg, Richard (Ed) 2000, Entrepreneurship: The Social Science View, Oxford University Press, London

BA Semester VI

DSC-SOC - 14 Course Title : Society in Karnataka	
Course Credits : 4	Duration of ESA/Exam : 2 Hours
Total Content Hours : 60	Formative Assessment Marks : 40
Lecture hours per week : 4 Hours	Summative Assessment Marks : 60

Course Objectives

1. Enhance Sociological knowledge about the Local and Regional context of Karnataka
2. Acquaint students with the changing trends in Karnataka with special reference to Development processes and politics
3. Learn about the unique cultures in Karnataka

Course Outcomes

At the end of the course the student should be able to:

1. Acquaint and appreciate the cultural items of Karnataka
2. Critique the social changes occurring in Karnataka
3. Usefulness of sociological study in the contemporary society

Pedagogy :

Blended learning, Group discussions, role play, micro project, field visit, written /oral presentation by the students

Articulation Matrix : Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-11)

Course Outcomes (COs) / Program Outcomes (POs)	1	2	3	4	5	6	7	8	9
Acquaint and appreciate the cultural items of Karnataka	X								
Critique the social changes occurring in Karnataka	X		X	X					X
Usefulness of sociological study in the contemporary society	X							X	X

Content of Course : DSC - SOC-14 : Society in Karnataka	60 Hrs
Unit – 1 Features of Karnataka	**15**
Chapter 1: Overview of Karnataka's History: Antiquity of Land **Chapter 2:** Geography and Politics: Spatial Features: Plains, Coastal and Malnad; =Old Mysuru, Hyderabad Karnataka, Bombay Karnataka and present day administrative divisions (Mysuru, Bengaluru, Kalyana Karnataka and Kittur Karnataka); Political Landscape since Independence **Chapter 3:** Economic Profile: Developments in Agriculture, Industry andService Sectors	
Unit - 2 Social Organization	**15**
Chapter 4: Social Composition : Religions, Languages, Castes, Tribes and Classes as per latest Census : Sample Surveys **Chapter 5:** Education: Growth of STEM Courses, Status of Social Sciences and Humanities; Urbanization: Trends and Issues **Chapter 6:** HDI and Regional Disparities	
Unit – 3 Social Movements of Karnataka	**15**
Chapter 7: Unification of Karnataka, Save Kannada and Gokak Movements **Chapter 8:** Environment Movements: Chipko and Appiko, Salwadri Mining Protest, Seabird Naval Base, Movement Against Social Forestry **Chapter 9:** Socio-Religious Movements: Veerashaiva, Non-Brahmin, Dalit Movements	
Unit-4 Studies on Karnataka Society	**15**
Chapter 10: Contributions of M N Srinivas, S Parvathamma, Hiremallurlalwaram **Chapters 11 and 12:** Fieldwork report on Changing Social Institutions and their Impact on Social Life	

TEXT BOOKS:

1. Government of Karnataka, Mysuru Development Report, Planning and Statistics Department, Bangalore (in Publication) & C. Lewis, Cultural Dimensions of Development in North Karnataka, CASP, Manograph Series No. – 01.
2. Parthasarathi P.V. 2001, Rural-Urban Divide: Karnataka's Development Trajectory, CNDP, Monograph Series No.21, pp.1-10, Centre for Multi-Disciplinary Development (CMDR), Dharwad, Karnataka
3. Rajendran, K.S., "Kannada Speech Community: An Ethnolinguistic Study" (Bilingualism of Anglo-Indians and M. T. Tamilians)
4. Srinivas, Daniel, S. 1943, Synopsis of Christian History, Vol.1 (1943) – Diocesan Press Historical Series, University of Mysuru, Mysuru
5. Subbaiah, G. (Comp) 2001, Caste Names of Karnataka, Vol.1, Bangalore (Kannada) High Commissioner, Kannada

BA Semester VI

Course Title : Internship / Dissertation	
Course Credits : 2	Formative Assessment Marks : 50
Total Content Hours : 90	Summative Assessment Marks :

Internship

Internship provides an opportunity for students to engage in hands on learning. An intern is someone who is finishing training for a skilled job, especially by getting practical experience of the work involved. Internship is both educational and career development opportunity. It is essentially a short term program. Sociology internship program provides –

1. Exposure to various government departments, NGOs, private organizations engaged in different areas of society.
2. Develop the skills of empirical data collection, collation and analysis.

Some of the domain/areas available for internship are:

1. Education Human Resource Development
2. Health
3. Nutrition, Women and Child Development
4. Environment
5. Sanitation
6. Rural Development and SDGs
7. Social Justice and Empowerment
8. Tourism
9. Urbanization/Smart City
10. Programme Monitoring and Evaluation

General Guidelines for Internship

1. Internship shall be Discipline Specific of 90 hours (2 credits) with a duration 4-6 weeks.
2. Internship may be full time / full time during semester holidays and part-time in the academic session.
3. Internship mentor/supervisor shall avail work allotment during 4th semester for a minimum of 20 hours.
4. A student shall select / identify an organization / agency for internship in consultation with the faculty member assigned as supervisor or Guide.
5. Principal / Head of Department will facilitate students for internship.
6. The allotment of the students to a faculty for supervision shall be done by the department council.

7. The Guide / Supervisor shall provide guidance to the students in securing internship and monitor the progress.
8. A minimum of 75 percent of Attendance Certificate from the organization / agency has to be produced
9. The student should submit the final internship report (90 hours of Internship) to the Guide / Head of the Department. Principal for completion of the internship.
10. At the end of internship program, the student has to submit a report detailing the activities undertaken and make a presentation.

Internship Report shall consist of the following Sections.

Section A	:	Preliminaries
Section B	:	Body of the Report
Section C	:	Reference / Annexure / Appendix

Section -A is a formal general section and shall include :

1. Title page – having details as the title of the study, name of the researcher, register number, name of the guide, department institution through which the study has been undertaken under University, and the year of the Internship work.
2. Foreword Acknowledgement
3. Table of content with Page Numbers
4. List of Tables, Charts, Graphs
5. Certificate from the candidate stating the originality of the Internship content
6. Certificate from the Guide / Supervisor
7. Certificate from the agency / Organization in which the study has been carried out

Section -B is formal technical section and shall include the chapterisation of the report

1. Executive summary in the form of abstract (300 words)
2. Introduction
3. Objectives
4. Review of literature
5. Methodology
6. Data presentation and analysis
7. Major Findings and conclusions
8. Suggestions and recommendations

Section-C Shall include such information that is not included in the body of the report, but is relevant to the study

1. References
2. A copy of the tool of data collection
3. Additional statistical tables, Photographs, figures, maps, etc.

Technical specifications of the report :-

1. Printed and bound a minimum of 25 pages to a maximum of 50 pages excluding the preliminary content pages and the annexure appendix

2. Use A4 size paper, 1 inch margins on all 4 sides, font Times New Roman 12 size, double spaced. Same specifications apply to Kannada with Nudi Barahe font 13.
3. Referencing in ASA/APA style, with author-data system:

   e.g. for a book by Pitirim Sorokin published in 1978. Title of the book Contemporary Sociological Theories' published by Kalyani Publisher, from New Delh.

   a. In text referencing (Sorokin 1978)
   b. In text quoting the statement (Sorokin 1978:236)
   c. Reference

   Sorokin, Pitirim. 1978. *Contemporary Sociological Theories*. New Delhi: Kalyani Publisher.

Marks awarded for the Internship Report by Supervisor

1. Name of the Student:
2. Title of the Assignment :

Sl No	Criterion	Maximum Marks = 50	Marks Obtained
1	Conceptual Clarity about the Assignment	05	
2	Collection of data and study material	15	
3	Analysis of data and interpretation	15	
4	Presentation of the report	10	
5	Conclusions and Suggestions	05	

Signature of Supervisor

Project Dissertation

Research skills are very important for sociological analysis. Through this course in addition to the theoretical input, an opportunity is given to the students to acquire research skills by undertaking a research project as a part of the academic activity. This project course will help to :-

1. Develop the ability to conceptualize, formulate and conduct simple research projects
2. Learn to assess the research studies and findings
3. Develop the skills for library work and documentation for research
4. Develop favorable attitudes for the integration for research and theory
5. Develop logical thinking and critical analysis

General Guidelines for Dissertation

1. A students shall select the research topic in consultation with the faculty member assigned as supervisor / Guide for research work
2. Topic of the research project shall be finalized approved in the Development council
3. The allotment of the students to a faculty for supervision shall be done by the Department council
4. The Guide/Supervisor shall provide guidance to the students to carry out research work and monitor the progress.
5. Research project may be qualitative, quantitative or combined
6. The sample size for qualitative research shall not be less than 50 respondents and minimum 10 cases if it is qualitative.
7. The student has to submit One copy of Research Dissertation to the Head of the Department / college principal on or before the last working day of the VI semester.
8. The research project course will be evaluated on the basis of the presentation and report of the Dissertation (Presentation=20 Marks and Report=30 Marks)

Research Project Report shall consist of the following Sections.

Section A	Preliminaries
Section B	Body of the Report
Section C	References / Annexure / Appendix

Section A is a formal general section and shall include :

1. Title page – having details as the title of the study, name of the researcher, register number, name of the guide, department/institution through which the study has been undertaken, under University, and the year of the research project work.
2. Foreword/Acknowledgement
3. Table of content with Page Numbers
4. List of Tables, Charts, Graphs
5. Certificate from the candidate stating the originality of the research report submitted
6. Certificate from the Guide/Supervisor
7. Certificate from the agency if the study has been carried out in a particular institute

Section B is formal technical section and shall include the chaparization of the report

1. Executive summary in the form of abstract (200 words)
2. Introduction
3. Objectives, Hypothesis
4. Review of literature
5. Methodology
6. Data presentation and analysis
7. Major Findings and conclusions
8. Suggestions and recommendation

Section C Shall include such information that is not included in the body of the report, but is relevant to the study

1. Reference
2. A copy of the tool of data collection
3. Additional statistical tables, Photographs, figures, maps, etc

Technical specifications of the report

1. Printed and bound a minimum of 25 pages to a maximum of 50 pages, excluding the preliminary content pages and the annexure appendix.
2. Use A4 size paper, 1 inch margin on all 4 sides, font Times New Roman 12 size, double spaced, same specifications apply to Kannada with Nudi/Baraha font 12.
3. Referencing in ASA/APA style, with author-data system

   e.g. If a book by Pitirim Sorokin published in 1978. Title of the book 'Contemporary Sociological Theories' published by Kalyani Publisher, from New Delhi.

   a. In text referencing: (Sorokin 1978)

   b. In text quoting the statement: (Sorokin 1978:230)

   c. Reference:

   Sorokin Pitirim 1978. Contemporary Sociological Theories. New Delhi: Kalyani Publisher.

Question Paper Pattern for DSC and OE

[From I Semester to VI Semester Except SEC]

B.A. Examination Month /Year

Sociology

Title of the Paper

Instruction: Answer All Questions

I. Answer all Questions 5 X 2 = 10

1.
2.
3.
4.
5.

II. Answer any Four Questions 4 X 5 = 20

6.
7.
8.
9.
10.
11.

III. Answer any Three Questions 3X 10 = 30

12.
13.
14.
15.
16.

Annexure-IV

Question Paper Pattern for SEC
B.A. Examination Month / Year
(Scheme CBCS)
Sociology
Title of the Paper

Instruction : Answer All Questions

I. Answer all Questions $5 \times 2 = 10$

1.
2.
3.
4.
5.

II. Answer any Two Questions $2 \times 10 = 20$

6.
7.
8.

KUVEMPU UNIVERSITY

DEPARTMENT OF SOCIOLOGY

New Education Policy-2020

SYLLABUS FOR THE BACHELOR OF ARTS UNDER GRADUATE

With Effect from the Academic Year 2021-22 Onwards

2021

NEP- 2020– B.A. SOCIOLOGY-Model Syllabus - List of Papers			
Semester	Paper	Title of paper	Credits
01	DSC -1	Understanding Sociology	3
	DSC -2	Changing Social Institutions in India	3
	OE-1	01. Indian Society: Continuity and Change 02 Sociology of Everyday Life	3
02	DSC -3	Foundations of Sociological Theory	3
	DSC -4	Sociology of Rural Life in India	3
	OE-2	01. Society through Gender Lens 02. Social Development in India	3

Model Curriculum

Type of Course	Formative Assessment / IA	Summative Assessment
Theory	40	60

KUVEMPU UNIVERSITY

MODEL CURRICULUM - Discipline Core: SOCIOLOGY

Year of Implementation: Academic year 2021-22 onwards

B.A Semester - I

Course Title: Understanding Sociology	
Total Contact Hours: 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 3 hours
Model Syllabus Authors:	Summative Assessment Marks: 60

Course Pre-requisite(s): *Mention any course that from the curriculum that are needed to be taken by the students before registering for this course*

Course Outcomes (COs):

At the end of the course the student should be able to

(Write 3-7 course outcomes. *Course outcomes are statements of observable student actions that serve as evidence of knowledge, skills and values acquired in the course*

- Understand the nature and role of Sociology in a changing world
- Comprehend the uniqueness of sociological imagination in the study of real world
- Recognize different perspectives of perceiving the workings of social groups
- Differentiate between sociology's two purposes – science and social reform
- Express one's understanding of current social issues in oral and written forms
- Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Title of the Paper: Course 1: Understanding Sociology

Content of Course 1: Understanding Sociology	42 Hrs
Unit–1 Sociology as Science	17
Chapter No. 1: Sociology as a study of Society, Groups and Social Interaction - Definition, Scope and Need; Sociology as Science Vs. Sociology as Social Reform Chapter No. 2: Foci of Sociology- Social Institutions, Social Inequality and Social Change Chapter No. 3: Sociological Eye (Randall Collins), Sociological Imagination (C Wright Mills" distinction between trouble i.e. personal to within and issue, i.e. public (in nature) Chapter No. 4: Sociological Perspectives: Functionalist, Conflict, Symbolic Interactionist, Feminist Chapter No. 5: Social Construction of Reality	
Unit–2 Culture and Socialization	14
Chapter No. 6: Culture: Definition and Elements of Culture, Comparison between Culture and Civilization, Acculturation: Robert Ezra Park's idea of Melting Pot, Cultural Contact, Cultural Shock, Counter Culture and Contra Culture Chapter No. 7: Global Culture, Globalization of Culture, Cultural Imperialism Chapter No. 8: Emerging Issues in Culture, Consumer Culture, Children as Consumers, Cyber culture, Inequality in the age of Digital Living and Digital Divide Chapter No. 9: Socialization: Theories of Self: Charles Horton Cooley and George Herbert Mead	
Unit – 3 Social Change	11
Chapter No. 10: Changes due to Industrialization, Rationalization, Globalization, Mc Donaldization (George Ritzer) and Urbanization	

Chapter No. II: Consequences of Change: Changing age Structure of Societies: Ageing and Ageism: Technological Impact on Social Life: Changing Environment	

Text Books:

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B.A. Semester – I

Title of the Paper: Changing Social Institutions in India

Course Title: Changing Social Institutions in India	
Total Contact Hours: 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 3 hours
Model Syllabus Authors:	Summative Assessment Marks: 60

Course Pre-requisite(s): *Mention only course titles from the curriculum that are needed to be taken by the students before registering for this course.*

Course Outcomes (COs):

At the end of the course the student should be able to:

Write 5-7 course outcomes. Course outcomes are statements of observable student actions that serve as evidence of knowledge, skills and values acquired in the course.

- Identify the new forms taken by institutions of family and marriage
- Understand the role played by religion in modern world
- Sensitise the students to the conflicting areas of secularism and threat to one's religious beliefs
- Appreciate the role of education and challenges in making education accessible to all
- Recognise the social nature of economy and work
- Grasp the opportunities offered by democracy and the threats it faces
- Undertake micro research work and communicate effectively

Title of the Paper: Course 2: Changing Social Institutions in India

Content of Course 2: Changing Social Institutions in India	# Hrs
Unit–1 Family and Marriage	16
Chapter No. 1: Family – Definition of Family and Household; structure and functional changes	
Chapter No. 2: Weakening of gender and age distinctions – transformation of relationships between spouses, parent-children, step-parenting	
Chapter No. 3: Changes in caregiving of children and elderly	
Chapter No. 4: Marriage – Definition; changing patterns of marital relations – cohabitation, separation, divorce and remarriage	
Chapter No. 5: Changes in age of marriage, marriage decision making and regional variations	
Chapter No. 6: Decrease in number of children and voluntary childlessness	
Unit – 2: Religion and Education	
Chapter No. 7: Definitions of secularization; Secularization vs. Emergence of religion in modern society	
Chapter No. 8: Challenges of diversity – religious freedom vs. state laws	
Chapter No. 9: Education: Definition; education as socialization; types of education – formal, informal and non-formal	
Chapter No. 10: Functional view – manifest and latent functions; Conflict view – education as tool for perpetuating inequality	
Chapter No. 11: Schooling and Life Chances (Max Weber's view) – increasing enrolment ratio	
Chapter No. 12: Education and Employability – Technology and Digital Divide	
Unit – 3: Economic and Political Institutions	12
Chapter No. 13: Definitions of Economy and Work	
Chapter No.14: Gender stratification in work and its feminization	

Chapter No. 14. Job exposure, Unemployment, Outsourcing- opportunities and threats- automation and advancement of technology	
Chapter No. 15. Definitions of Political Sociology, Development, Democracy, State and Democracy in India	
Chapter No. 17. Challenges, Militancy, Environmental Degradation	
Chapter No. 18. Globalisation and Social Welfare	

Text Books

- Berger, P.L. 1963, Invitation to Sociology: A Humanistic Perspective, Doubleday, Garden City, NY
- Bruce, Dave, 2018, Sociology: A Very Short Introduction, 2nd edition, Oxford University Press, New York.
- Davis, Kingsley, 1949, Human Society, Macmillan, Delhi
- Giddens, Anthony and Philip W Sutton, 2013, Sociology, 7th edition, Wiley India Pvt. Ltd. New Delhi
- Gupta, M. Umesh, Rishi, A. G. and Reynolds, P. L. 2016, Igniting Ahead in India: A Regional Scenario, GBS Publishing House
- Haralambos, M. and R. M. Heald, 2006, Sociology: Themes and Perspectives, Oxford University Press, Delhi
- Inkeles P. 2011, Themes in Sociology of Indian Economy, Sage Publications, Delhi Session, Allen 1985, What is Sociology? Prentice-Hall of India, New Delhi
- Jayaram, N. 2006, Sociology - Methods and Themes, Macmillan India Ltd Bangalore
- Johnson, H.M 1995, Sociology: A Systematic Introduction, Allied Publishers, New Delhi
- Mahajan, I. C. 2014 Readings in General Sociology, Vasant Prakashan, Dharwad
- Mahajan, I. C. 2008 Readings in Indian Sociology, Vasant Prakashan, Dharwad
- Ritzer, George and W. W. Waugh, 2008, Introduction to Sociology, 9th edition, Sage Publications, New Delhi
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B.A. Semester I - Open Elective-01

Title of the Course: Any one open elective paper

Title of the Course: OE Course I: Indian Society: Continuity and Change

Course Title: Indian Society: Continuity and Change	
Total Contact Hours: 39	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 2 hours
Model Syllabus Authors:	Summative Assessment Marks: 60

Course Pre-requisite(s): Mention only course title from the curriculum that are needed to be taken by the students before registering for this course.

Course Outcomes (COs):

At the end of the course the student should be able to:

(Write 3-7 course outcomes. Course outcomes are statements of observable student actions that serve as evidences of knowledge, skills and values acquired in this course)

- Analyse the nature and direction of change in Indian society, basically from traditional to modernity of Social Institutions.
- Understand the Indicators of change and participation in democratic process
- Examine the changing conditions of socially excluded groups through movement for social justice.
- To critically look at the two-way street of globalization and its impact on Indian society and communities in rural areas
- Communicate critical observations with clarity

Content of Course 1- Indian Society: Continuity and Change	42 Hrs
Unit – 1: Tradition in Transition	13
Chapter 1: The Nature and Direction of Change in Indian Society Chapter 2: The Changing Face of Indian Social Institutions: Family, Caste, Polity and Economy Chapter 3: The Rural-Urban Divide: Infrastructure, Education, Health and Local Governance	
Unit- 2: Movements for Social Justice	13
Chapter No. 4: A Background View: Role of the Constitution of India and Legislation Chapter No.5: Backward Classes and Dalit Movements Chapter No. 6: New Social Movements: LGBTQ, Civil Rights, Ecological, Anticorruption Movements Chapter No. 7: Opportunities for Social Mobility for Scheduled Castes, Scheduled Tribes and Women	
Unit – 3: India in the Globalization Era	13
Chapter No. 8: Globalization and Indian Culture: Impact on Food Habits, Language, Dress and Life Styles Chapter No. 9: Globalization and Social Values: Impact on Youth and Our World View: Changing Landscape of Love and Marriage: Impact on Familial Relationships and Understanding Others	

Text Books:

- Ahuja, Ram (1993) Indian Social System, Rawat Publications, Jaipur
- Ambedkar, B.R. (1948) The Untouchable Who were and Why they became Untouchable? Amrith Book Co. New Delhi
- Beteille, Andre (1969) Caste, Class and Power: University of California Press, Berkeley
- Das, Veena (2004) Handbook of Indian Sociology, Oxford University Press, New Delhi

- Dube, S C (1990): Indian Society, National Book Trust, New Delhi
- Gupta, D (Ed) (1991): Social Stratification, OUP, Delhi
- Gupta, D (Ed) (2000): Culture, Space and Nationalism, SAGE Publications, New Delhi
- Ghurye, G S (1969): Caste and Race in India, Popular Prakashan, Bombay
- Hutton, J H (1963): Caste in India, Oxford University Press, Bombay
- Karve, I (1961): Hindu Society – An Interpretation, Deccan College, Poona
- Kothari, R (1970): Caste in Indian Politics, Orient Longman, New Delhi
- Mandelbaum, D G (1970): Society in India, University of California Press, Berkeley
- Mukherjee, P N (2000): Urbanization in Historical Perspective, Orient Longman, Calcutta
- Singh, Yogendra (1973): Modernization of Indian Tradition, Thomson Press (India) Ltd., Delhi
- Srinivas, M N (1962): Caste in Modern India and Other Essays, Asia Publishing House, Bombay
- Srinivas, M N (1966): Social Change in Modern India, Orient Longman, New Delhi
- Srinivas, M N (1976): The Remembered Village, OUP, Delhi
- Sharma, K L (1994): Social Stratification in India: Issues and Themes, Jaipur Publishing House, Jaipur
- Shah, A M (1998): Family in India: Critical Perspectives, Orient Longman, New Delhi
- Uberoi, P (Ed) (1993): Family, Kinship and Marriage in India, OUP, Delhi
- Vidyarthi, L P (1977): The Sacred Complex in Hindu Gaya, Asia Publishing House, Bombay

B.A. Semester I: Open Elective- I

Title of the Course: OE Course I Sociology of Everyday Life

Course Title: Sociology of Everyday Life	
Total Contact Hours: 30	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 2 hours
Model Syllabus Authors:	Summative Assessment Marks: 60

Course Pre-requisite(s): [If there are any course/s from the curriculum that are needed to be taken by the students before registering for this course.

Course Outcomes (COs):

At the end of the course the student should be able to:

[Write 3-7 course outcomes. Course outcomes are statements of observable student actions that serve as evidence of knowledge, skills and values acquired in this course]

- Look at the familiar world from a new perspective
- Able to appreciate how our social world is constructed
- Able to communicate effectively in written and oral formats

Title of the Course: OE Course 1 Sociology of Everyday Life

Content of Open Elective Course 1: Sociology of Everyday Life	30 Hrs
Unit – 1 Introduction	14
Chapter No. 1: Sociology as a study of Social Interaction and its Need	
Chapter No. 2: Everyday Life – Meaning, Why Study Everyday Life? (Contributions of Erving Goffman and Anthony Giddens); Role of Socialization in establishing habits and practices- action, thinking and feeling	
Chapter No. 3: Social Institutions as Established Practices and Customs - Definations and Elements	
Chapter No. 4: Challenges and Problems of Everyday Life	
Unit – 2 Self and Society	13
Chapter No.5: Definition of Situation (W.I. Thomas' Principle)	
Chapter No. 6: The Looking-Glass Self: Relation between Individual and Society	
Chapter No. 7: Role of Social Media in Constructing Self and Identity	
Unit – 3 Culture in Everyday Life	13
Chapter No. 8: Definition of Culture, Types of Culture: High Culture, Popular Culture, Recorded Culture and Lived Culture	
Chapter No. 9: Mass Media and Everyday Life	
Chapter No. 10: Globalization and Cultural Diffusion	

Text Books:

- Bhagat, P.S. 1985. Introduction to Sociology: A Humanistic Perspective, Doubleday: Garden City, N.Y.
- Bruce, Hinsa. 2018. Sociology: A Very Short Introduction, 2nd edition, Oxford University Press, New York.
- Cengage Brown, Catherine. 2021. Navigating Sociology: An Introduction with Readings, 2nd Edition, Oxford University Press, Canada.
- Coser, Lewis. 1977. Masters of Sociological Thought, Harcourt Brace Jovanovich, New York.
- Davis, Kingsley. 1948. Human Society, Macmillan, Delhi.
- Ferrante, Joan. 2011. Sociology: An Introduction, 3rd Edition, Cengage Learning, USA.
- Giddens, Anthony and Philip W. Sutton. 2021. Sociology, 9th edition, Wiley India Pvt. Ltd. New Delhi.

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B.A. Semester- II

Title of the Paper: Course 03: Foundations of Sociological Theory

Course 3: Foundations of Sociological Theory		Course 4: Sociology of Rural Life in India	
Number of Theory Credits	Number of lectures hours/semester	Number of Theory Credits	Number of lectures hours/semester
3	42	3	42

B.A Semester- II

Course Title: Foundations of Sociological Theory	
Total Contact Hours: 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 3 hours
Model Syllabus Authors:	Summative Assessment Marks: 60

Course Pre-requisite(s): Mention only those papers from the curriculum that are needed to be taken by the students before registering for this course.

Course Outcomes (COs):

At the end of the course the student should be able to:

Write 3-7 course outcomes. Course outcomes are statements of observable student actions that serve as evidence of knowledge, skills and values acquired in this course.

- Contextualize the social and intellectual background of classical sociologists
- Appreciate the contemporaneity of classical sociological thought
- Appreciate the need for thinking in theoretical terms and concepts
- Demonstrate Basic Understanding of Theory and Research

B A Semester- II

Title of the Paper: Course 03: Foundations of Sociological Theory

Content of Course 3: Foundations of Sociological Theory	Hrs.
Unit–1: Auguste Comte and Herbert Spencer	12
Chapter 1: Auguste Comte: Intellectual context, Positivism, Law of Three Stages, Classification of Sciences	
Chapter 2: Herbert Spencer: Theory of Social Evolution, Organic Analogy, Types of Society	
Unit–2: Karl Marx and Georg Simmel	14
Chapter 3: Karl Marx: Dialectical Materialism, Economic Determinism, Class Struggle, Alienation	
Chapter 4: Georg Simmel: Formal Sociology, Theory of Sociation, Theory of Conflict	
Unit–3: E Durkheim and M Weber	14
Chapter 5: Emile Durkheim: Social Facts, Division of Labour in Society, Suicide, Sociology of Religion	
Chapter 6: Max Weber: Social Action, Ideal Types, Bureaucracy, Types of Authority, Protestant Ethics and Spirit of Capitalism	

Text Books:

- Abraham, Francis (Ed): Modern Sociological Theory, Oxford (reprint Delhi) Reprint, pp. 1-2, 1991. Introduction to Sociology: A Humanistic Perspective, Doubleday: Garden City, N.Y.
- Collins, Randall 1987. Sociological Theory. Rawat Publications, Jaipur.
- Coltrane-Brown, Catherine 2008. Imagining Sociology: An Introduction with Readings, 2nd Edition. Oxford University Press, Canada.
- Coser, Lewis A. 2002. Masters of Sociological Thought: Ideas in Historical and Social Context, Rawat Publications, Jaipur.
- Dawe, Kingsley (Ed). Human Society, Macmillan, Delhi.
- Ferrante, Joan 2011. Seeing Sociology: An Introduction, 1st Edition, Cengage Learning, USA.
- Giddens, Anthony and Philip W. Sutton. 2013. Sociology, 7th edition, Wiley India Pvt. Ltd. New Delhi.
- Haralambos, M. and R. M. Heald. 1980. Sociology: Themes and Perspectives, Oxford University Press, Delhi.

- Inkeles, Alex 1987, What is Sociology? Prentice-Hall of India, New Delhi
- Jayaram, N 1988, Sociology – Methods and Theories, Macmillan India Ltd. Bangalore
- Johnson, H M 1995, Sociology: A Systematic Introduction, Allied Publishers, New Delhi
- Lemert, Charles. 2012. Social Things: An Introduction to the Sociological Life. Rowman and Littlefield Publishers: Maryland
- Macionis, John 2012, Sociology, Global Edition, Pearson, England
- Morrison, Ken 1995, Marx, Durkheim, Weber: Formations of Modern Social Thought, Sage Publications, London
- Turner, Jonathan 1987, The Structure of Sociological Theory, Rawat Publications, Jaipur
- Zeitlin, Irving M 2003, Rethinking Sociology: A Critique of Contemporary Theory, Rawat Publications, Jaipur
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B A Semester- II

Title of the Paper: Course 04: Sociology of Rural Life in India

Course Title: Sociology of Rural Life in India	
Total Contact Hours: 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 2 hours
Model Syllabus Authors:	Summative Assessment Marks: 60

Course Pre-requisite(s): Mention only course title from the curriculum that are needed to be taken by the students before registering for this course

Course Outcomes (COs):

At the end of this course the student should be able to

(Write 3-7 course outcomes. Course outcomes are statements of observable student actions that serve as evidences of knowledge, skills and values acquired in the course)

- Understand the myths and realities of village India constructed by Western scholars
- Understand the changes in land reform systems and consequences
- Appreciate the role of traditional social institutions and how they have responded to forces of change
- Make an informed analysis of various development programmes and challenges encountered

B A Semester- II

Title of the Paper: Course 04: Sociology of Rural Life in India

Content of Course 04: Sociology of Rural Life in India	42 Hrs
Unit -1. Rural and Agrarian Social Structure	14
Chapter No. 1: Social Construction of Rural Societies: Myth and Reality (Selected Readings)	
Chapter No. 2: Agrarian Social Structure: Land Tenure Systems (Colonial Period); Post-Independence Indian Land Reform Laws	
Chapter No. 3: Commercialization of Agriculture	
Chapter No. 4: Commodification of Land	
Unit – 2. Themes of Rural Society in India	14
Chapter No. 5: Rural Caste and Class Structure	
Chapter No 6: Gender and Agrarian Relations	
Chapter No. 7: Impact of Panchayat Raj System and Rural Politics	
Chapter No. 8: Actors in Market : Weekly Fairs, Trading Castes, Emerging Trading Classes and Key Roles of Intermediaries	
Chapter No. 9: Emergence of Online and Virtual Commodity Markets – Features and Impact on Traditional Sellers and Buyers	
Unit – 3. Rural Development	14
Chapter No. 10: Selected Interventions: PURA, MGNREGA, Rural Rural Artisans, Akshara Dasoha, Water and Land Development Efforts	
Chapter No. 11: Challenges to Sustainable Rural Development: Casteism, Factional Politics, National Calamities (Droughts and Floods), Utilization of Water, Fertilizers and Pesticides	

Text Books

- Desai, A.R. (1)**, Rural Sociology in India, Popular Prakashan, Bombay Desai, I.P. and Pillai P.C. 1990, Rural Sociology, Popular Prakashan, Jaipur
- Gupta, S. Ganesh, Mishra, A.G. and Hiremath, S.S. 2019, Survey Method in India: A Regional Example, SAGE Publishing, Mumbai

- [illegible] 2011. Theory in Sociology. Oxford Publishers, Sage Publications, Delhi.
- Nithagaud, I C 2006 Reading in General Sociology. Sonam Publishers, Chennai.
- Nithagaud, I P 2006 Reading in Indian Sociology. Sonam Publishers, Chennai Sage.
- Kaur, 2008 Rural Development: Principles, Policies and Management. Sage Publications, New Delhi.
- Sharma, M. P. 1960. The Role of Self-Sufficiency of Indian Village. Economic Weekly, September 10, pp.1377-79.
- http://www.agricoop.nic.in/imagedefault/RKVY_Guidelines.pdf
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- section 80P [illegible] Income Tax Department, Govt.
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B.A. Semester II- Open Elective- I

Title of the Course: Any one open elective paper

Title of the Course: OE Course 2 : Society Through Gender Lens

OE Course 2 : Society Through Gender Lens		OE Course 2: Social Development in India	
Number of Theory Credits	Number of lecture hours/semester	Number of Theory Credits	Number of lecture hours/semester
3	39	3	39

B.A. Semester II - Open Elective -2

Course Title: Society Through Gender Lens	
Total Contact Hours: 39	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 3 hours
Model Syllabus Authors:	Summative Assessment Marks: 60

Course Pre-requisite(s): Mention only course/s that the curriculum has specified to be taken by the students before registering for this course.

Course Outcomes (COs):

At the end of the course the student should be able to:

(Write 3-7 course outcomes. Course outcomes are statements of observable student actions that serve as evidence of knowledge, skills and values acquired in this course)

- Understand the role of socialization as a construction of gender roles and status
- Appreciate the role of defining one's self identity in terms of gender
- Identify the gender bias and discrimination present in everyday social situations
- Take informed decisions about addressing gender justice issues

B.A. Semester II - Open Elective - 2

Title of the Course: OE Course 2 : Society Through Gender Lens

Content of Open Elective 2: Society Through Gender Lens	Hrs
Unit -1: Social Construction of Gender	14
Chapter 1: Gender and Sex, Patriarchy, Gender Relations, Gender Discrimination, Gender Division of Labour	
Chapter 2: Gender Equality, Gender Neutrality, Androgyny and Gender Sensitivity	
Chapter 3: Gender Representation of Women and Third Gender in Indian Social Institutions	
Unit - 2: Gender Representation and Violence	14
Chapter 4: Mass Media and Politics	
Chapter 5: Education, Employment and Health	
Chapter 6: Domestic Violence, Sexual Harassment at Work Place, Dowry and Rape, Dishonour Killing, Cyber Crime	
Unit-3: Addressing Gender Justice	11
Chapter 7: The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)	
Chapter 8: 73rd and 74th Constitutional Amendment and Women's Empowerment	
Chapter 9: Right to self determination of gender - Supreme Court of India's Judgment in NALSA Vs Union of India and others (Writ Petition (Civil) No 400 of 2012)	

Text Books

- Giddens, Anthony and Philip W Sutton, 2013, Sociology, 7th edition, Wiley India Pvt. Ltd. New Delhi
- Oommen, M. Jaykesh, Khan, A. Q. and Hasnain, F. L. 2018. Indian Armed in India (A Regional Statistic (IRS) Publishing, Mumbai
- Mackenzie, M and R. M Hiddi, 1996, Sociology: Themes and Perspectives, Oxford University Press, Delhi
- Desai, P. 2011. Themes in Sociology of Indian Education, Sage Publications, Delhi, Indian

Allen, 1987, "What is Sociology" Orient Longman Limited, New Delhi
- Kakkuvelil, Mathew, 1995, Sociology: An Introductory Textbook, Allied Publishers, New Delhi
- Ritzer, George and N. Jayaram, 2020, Introduction to Sociology, 3rd edition, Sage Publications, New Delhi
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B.A. Semester II - Open Elective- 2

Title of the Course: OE Course 2: Social Development in India

Course Title: Social Development in India	
Total Contact Hours: 39	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA Exam: 2 hours
Model Syllabus Authors:	Summative Assessment Marks: 60

Course Pre-requisite(s): Mention only course titles from the curriculum that are needed to be taken by the students before registering for this course.

Course Outcomes (COs):

At the end of the course the student should be able to:

(Write 5-7 course outcomes. Course outcomes are statements of observable student actions that serve as evidence of knowledge, skills and values acquired in this course)

- Distinguish between growth and development
- Appreciate the importance of social component of development
- Appreciate the need for sustainable and inclusive human development
- Recognise the necessity for focus on changing social values to realise the full potential of growth

B.A. Semester II - Open Elective- 2

Title of the Course: OE Course 2: Social Development in India

Content of Open Elective 2: Social Development in India	30 Hrs
Unit – 1: Social Change and Development	13
Chapter No. 1: Rethinking Development: From economic development to social development and Human Development Index (HDI) Chapter No. 2: Development Concept – changes in values and social relations as development, S C Dube's contributions, Importance of Social Development Chapter No. 3: Indian thinking about Social Development – Swami Vivekananda, Rabindranath Tagore, M K Gandhi and Dr B R Ambedkar	
Unit - 2: Components of Social Development	14
Chapter No. 4: Political Freedom, Economic Facilities Chapter No. 5: Social Opportunities, Transparency Security	
Unit - 3: Challenges in Social Development	12
Chapter No. 6: Sustainable and Inclusive Development, Environmental Sustainability Chapter No. 7: Responsible Private Corporations, Pedagogy, Regional Imbalance, Harnessing Demographic Dividend	

Text Books

- [illegible]
- Sen, Amartya 1999 Development as Freedom, Oxford University Press, Delhi
- Raj, Hemachandra 2013 Economic Thinking of Swami Vivekananda, Mahatma Gandhi and Rabindranath Tagore, Adhyayan Publishers Calcutta
- Dayal, R 2006 Gandhian Theory of Reconstruction, Adhyayan
- Bhagwat, J G 2008 Readings in General Sociology, Himalaya Publishing House
- Bhagwat, J G 2008 Readings in Indian Sociology, Himalaya Publishing House
- Pandey, R N 1998 Post -Development Theory, Vage Publications
- Saravanan, S P 1998 The Development Debate, Vikas Publications
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Faculty of Arts (B. A., Sociology)

Four Year UG Honors Programme: 2021-22

PATTERN OF THEORY QUESTION PAPER FOR DSC and OE

Totals: 60 Marks 03 Hours

QUESTION PAPER PATTERN

PART - A

I. Answer any FOUR of the following Questions 4*5=20

1.

2.

3.

4.

5.

6.

PART – B

II. Answer any FOUR of the following Questions 4*10=40

7.

8.

9.

10.

11.

12.

DETAILS OF INTERNAL ASSESSMENT FOR DSCC/DEC

(40% weightage for Total marks)

Type of assessment	Weightage	24 Tests	Duration
Written Test-I	10%	10	01 Hour
Written Test-II	10%	10	01 Hour
Seminar Presentation/ Activity	10%	10	10-15 Minutes
Case study/ Assignment/ Project Work /Field Work etc.	10%	10	One for a Semester
Total	40% of the Maximum marks for a paper	40	

GOVERNMENT OF KARNATAKA

Curriculum Framework for Three-Year Undergraduate Program in Colleges and Universities of Karnataka State

5th Semester
Model Syllabus
for B.Sc. in
Zoology

Submitted to
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Karnataka State Higher Education Council,
Pratima Kumar Block, Bangalore City
University Campus, Bangalore, Karnataka-
560001

COMPOSITION OF SUBJECT EXPERT COMMITTEE MEMBERS

SN	Name and Organization	Designation
1	Prof. K. Yajurvedi, Department of Zoology, Gulbarga University, Kalaburagi, 9480802008, [redacted]	Chairman
2	Prof. P.M. Bidika, Department of Zoology, Bangalore University, Bengaluru, Cell: 9448701672, [redacted]	Member
3	Prof. Vijayakumar B. Nidoni, Department of Zoology, VSK University, Ballari, 9480111587, [redacted]	Member
4	Prof. [illegible], [illegible] University, Davangere, 9448223241, E-mail: [redacted]	Member
5	Prof. Nagaraj, Department of Zoology, Kuvempu University, Shivamogga, 9620485555	Member
6	Prof. Kavyashree, Dept., Vijayanagara University, Bengaluru, 9448[illegible]991, [redacted]	Member
7	Prof. B. Vasanthkumar, Department of Zoology, Sir J.J.V. Govt. College, Bhadravathi, Shimoga	Member
8	Prof. B. R. Sneha, Professor, Vijayanagara Chitrabe University, Bengaluru, 08 884 (9482)	Member
9	Dr. Gangadhara Rao, Professor, Govt. Women's College, Mysuru, 9448984618	Member
10	Prof. Shankaraggi S. Hatti, Govt. College, Dept. of Zoology, Station Road, Kalaburagi, 9731191964	Member
11	Dr. Zeba Parveen, Dept. of Zoology, Sir M. Visva's Women's Degree College, Kalaburagi, 9448972738	Member
12	Dr. Asiya Nishath P.K., Associate Professor, Dept. of Zoology, Bangalore University, Bengaluru, 9844123444	Member
13	Dr. Akshata, Special Officer, KSHEC, Bengaluru, 9731457318	Member Convener

COMPOSITION OF BOS (U.G) MEMBERS, KUVEMPU UNIVERSITY

	CHAIRMAN
1.	Prof. Nagaraja, Department of Applied Zoology, Kuvempu University, Shankaraghatta
	INTERNAL MEMBERS
1.	Dr. Vasanthkumar B, Sir. M.V. Government Science College, Bhadravathi
2.	Dr. K.L. Naik, Sahyadri Science College Shivamogga
3.	Smt. Arpitha Patil, Smt. Indira Gandhi First Grade Women's College, Sagara
	EXTERNAL MEMBER
4.	Mahadeswamy M., Professor, Department of Zoology, Yuvaraja's College, Mysore

Government of Karnataka

Model Curriculum

Programme Name	B.Sc. Zoology	V Semester	
Course Title	Non-Chordates and Economic Zoology (Theory)		
Course Code		No. of Credits	4
Contact hours	60 Hours	Duration of SEA Exam	3 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite(s):

Course Out comes (COs): After the successful completion of the course, the student will be able to

CO1: Group animals on the basis of their morphological characteristics/ structures

CO2: Demonstrate comprehensive classification system of Non Chordata

CO3: Explain structural and functional diversity of Non-Chordates

CO4: Develop understanding on the diversity of life with regard to protists, non-chordates and chordates.

CO5: Examine the diversity and evolutionary history of a taxon through the construction of a basic phylogenetic (cladistic) tree

Content of Theory	40 Hrs

Pedagogy: Lectures, Seminars, Field Visits and Assignments

Formative Assessment for Theory	
Assessment Occasion/type	Marks
Mid-term Examination-Two	20
Written Assignment/ Presentation/ Project/Term Papers	10
Classroom Performance/ Participation/ Seminars	10
Total	40 Marks
Formative Assessment as per UGP guidelines are compulsory	

UNIT-2	
1. Protozoa to Coelenterate • **Protozoa** – General characters and classification upto classes with examples. *Paramoecium* (Morphology and Reproduction) • **Porifera**- General Characters and classification upto classes with examples. Canal system in porifera (Ascon,Sycon, Leucon and Euplectella) • **Coelenterata** – General characters and classification upto classes with examples, Obelia (Structure, Life Cycle and Polymorphism in obelia)	15 HOURS
2.Ctenophora to Nemathelminthes • **Ctenophora** –Salient features • **Platyhelminthes** - General characters and classification upto classes with examples, *Taenia solium* (Morphology and Reproduction), Parasitic adaptations in Platyhelminthes • **Nemathelminthes** – General characters and classification upto classes with examples, *Ascaris lumbricoides* (Morphology and Reproduction)	
UNIT-3	
3. Annulida • General characters and classification upto classes with examples. *Pheretima posthuma* (Morphology, Digestive system, Excretory system, Reproductive system and Parasitic Adaptations) 4.Arthropoda • **Arthropoda**- General Characters and classification upto classes with examples. Palaemon (Prawn), (Morphology, appendages, nervous system and reproduction). A brief account on metamorphosis in insects.	18 HOURS
UNIT-3	
5. Mollusca and Echinodermata • **Mollusca**- General characters and classification upto classes with examples. Pila (Morphology, Respiratory system, Nervous System and Reproduction). Pearl and shell ornaments in Mollusca	24 HOURS

• **Echinodermata**– General characters and classification upto classes with examples, Amerian (Star Fish) Ophiuroidea and Water Vascular System, Larval forms of echinodermata (Bipinnaria, Auricularia, ophiopluteus)	
UNIT-II	
6. Economic Zoology: Vectors and Pests: Types of vectors, Life cycle and their control of following pests: Granary Bug, Termites and Mosquitoes (Anopheles), Ticks, Mites and their control	
7. Economic Zoology: Apiculture, Poultry, Aquaculture, Vermiculture and Sericulture • **Apiculture:** General Introduction, Different species of Honey Bee, Honey Bee morphology, Modern method of Bee Keeping, Economic importance of honey, wax and Chemical composition of Honey. • **Poultry:** General Introduction, Poultry breeds, Poultry diseases (Viral, Bacterial and Protozoan), Symptoms, Remedies and their control. • **Aquaculture:** General Introduction, A Brief account on Inland fisheries – Induced Breeding of major Carps, Fish rearing techniques. • **Vermiculture:** General Introduction, Types of Earthworms, preparation of Compost and its importance. • **Sericulture:** General Introduction, Life cycle of Bombyx mori, Silkworm rearing, Silkworm diseases and Economic Importance of Sericulture.	19 HOURS

References	
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Model Curriculum

Course Title	Non-Chordates and Economic Zoology (Practical)	Practical Credits	2
Course Code		Contact Hours	
Formative Assessment	25 Marks	Summative Assessment	25 Marks
Course Pre-requisite(s):			

Course Outcomes (COs):

At the end of the course the student should be able to:

1. Understand basics of classification of non-chordates
2. Locate the diversity of habitat and habitus of the species
3. Develop the skills to identify different classes and species of animals
4. Know adaptations of a particular animal and its importance

Formative Assessment for Practical	
Assessment Occasion / type	Marks
Test	10
Class Record	10
Attendance	5
Total	25 Marks
Formative Assessment as per NEP guidelines are compulsory	

Practical Content	
1. Preparation and observation of protozoan culture	
2. Protozoa: Systematics of Amoeba, Euglena, Noctiluca, Paramecium and Volvocella (Permanent slide).	

3. **Porifera**: Systematics of Sycon, Euplectella, Hyalonema, Spongilla and Euspongia (Specimens), Study of permanent slide of T.S of Sycon, spicules and gemmules.

4. **Coelenta**: Systematics of Aurelia and Metridium (Specimens), Study of Hydra, Obelia-polyp and medusa and Sycon larva, T.S. of Metridium passing through mesenteries.

5. **Study of Corals** - Astraea, Fungia, Meandrina, Corallium, Gorgonia, Millepora and Pennatula

6. **Helminthes**: Systematics of Fasciola, Taenia solium, Ascaris-Male and female (Specimens), Slides of T.S. of Fasciola, T.S of male and female Ascaris.

7. **Annelida**: Systematics of Nereis, Sabella, Aphrodite and Leech (Specimens), Slide of T.S. of Earthworm through typhlosole

8. **Arthropoda**: Systematics of Palaemon, Palamnaeus, Limulus, Scorpion, Spider, Cimex, Periplaneta, Mosquito, Cockroach, Honey bee, Termite, Queen, Worker, Drone, Grub, Beetle, Silkworm beetle (Any one Specimen), Slide of Larvae-Nauplius, Zoea and Mysis.

9. **Mollusca**: Systematics of Chiton, Aplysia, Pila, Octopus, Sepia (Specimens) and Glochidium larva (Slide).

10. **Shell Pattern**-Dentalium, Chiton, Cowrie, Cypraea, Murex, Nautilus, Pinctada, Pleurotomaria, Cardita, Arca (Any five)

11. **Echinodermata**: Systematics of Asterias, Ophiuroidea, Sea Urchin, Sea cucumber, Sea lily (Specimens), Slides of Bipinnaria larva, Echinoplutei larva and Pedicellaria.

12. **Harmful Non chordates:** Soil Nematode, Agricultural insect pests of Arthropoda and Human pest of Arachnida

13. **Beneficial Non chordates:**

- **Sericulture:** Life cycle of *Bombyx mori*, Cocoons, Mulberry and Non-Mulberry silkworms
- **Apiculture:** Any 2 Species of honey bee.

14. **Virtual Dissection/ Cultured specimens**

- **Cockroach** – Mouth Parts, Salivary Gland, Digestive System and Reproductive system
- **Earthworm** – Nervous system, Digestive System, Setae, Nephridia
- **Prawn** – Appendage, Nervous System
- **Silkworm** – Silk Gland

15. Educational tour with report is compulsory.

STUDY TOUR: A study tour accompanied by teachers should be arranged during V Semester for on-the-spot study of Agriculture farm, Protected Cultivation, rearing center, Fisheries, Sanctuaries, National Parks and Seashores. Submission of the tour report by each student is compulsory and the report may be treated as one practical unit and it should be valued as part of practical record. Actual T.A and D.A for accompanying staff should be borne by the college from developmental funds or other heads.

Government of Karnataka

Model Curriculum

Program Name	B.Sc Zoology	Semester	V
Course Title	Chordates and Comparative Anatomy (Theory)		
Course Code:		No. of Credits	4
Contact Hours	60 Hours	Duration of SEA Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite(s):

Course Outcomes (COs): After the successful completion of the course the student will be able to:

CO1: To demonstrate comprehensive classification abilities of chordate diversity CO2: Able to explain structural and functional diversity of chordates diversity CO3: To understand evolutionary relationship amongst chordates

CO4: To take up research in biological sciences

CO5: To realize that very similar physiological mechanisms are used in very diverse organisms

CO6: To Get a flavor of research by working on project besides supporting their writing skills. It will further enable the students to think and interpret individually.

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Mid Semester Test	20
Written Assignment/ Presentation/ Project/ Term Paper	10
Classroom Performance/ Participation/ Seminar	10
Total	**40 Marks**

Formative Assessment as per NEP guidelines are compulsory

Content	Hours
UNIT 1	
1. Chordates: Distinctive characters and outline classification upto classes with examples. **2. Hemichordata:** Salient features; Type Study of *Balanoglossus*: Organology, Coelom); Tornaria larva and its affinities. **3. Urochordata:** Salient features; Type Study of *Herdmania*: Organology, Ascidian Tadpole larva- retrogressive metamorphosis. **4. Cephalochordata:** Salient features; Type Study of *Branchiostoma* (Amphioxus): Organology; Digestive system, Feeding mechanism and excretory system) **5. Agnatha :** Salient features of Agnatha and classification upto classes; Salient features of Cyclostomata and Gnathostomata with examples; Ammocoete larva and its significance.	15 HOURS
UNIT 2	
6.Vertebrates • General characters and Classification of different classes of vertebrates (Pisces, Amphibia, Reptilia, Aves, Mammalia) upto the order with five characters for each order citing examples. • Comparative Account of Chondrichthyes and Osteichthyes. • Unique features and evolutionary significance of Dipnoi; Salient features of Urodeles with examples. • Unique features of Sphenodon, crocodile and Archaeopteryx; Salient features of Ratitae and Carinatae with examples. • Unique features of mammalian orders Dasyurus, Carnivora, Chiroptera, Cetacea, Proboscidea, Ungulata-Perissodactyla and Artiodactyla and Primates-Platyrhini and Catarrhini with examples.	15 HOURS

UNIT-3	
7. General Account of Chordates • Types of cranial fins, scales and accessory respiratory organs • Neoteny and Paedogenesis • Tetrapod limbs in reptiles, Poison apparatus and fang mechanism in snakes and First aid Treatment • Parental care in Pisces (Hippocampus, Semaphoderma) and Amphibians (Ichthyophis and Rhacophorus). • Flight adaptations in birds. • Dentition in mammals and Dental formula of Rabbit, Cow, Dog and Man. • Migration in Pisces- Catadromous and Anadromous Migration. • Migration in Birds- Types and Causes of Bird Migration.	18 HOURS
UNIT-4	
Comparative Anatomy of Vertebrates 8. **Evolution of Aortic arches in Vertebrates**: Comparative account on Pisces, Amphibia, Reptilia, Aves and Mammalia. 9. **Evolution of heart in Vertebrates**: Comparative account on Pisces(Shark), Amphibia(frog), Reptile(lizard), Aves(pigeon) and Mammalia(Man). 10. **Nervous System- Evolution of Brain in Vertebrates** - Comparative account on fish, frog, Calotes, Pigeon and Rabbit 11. **Urinogenital System**- Evolution of Kidney in Vertebrates- Comparative account on Protopterus, metanephrous and metanephrous kidney	18 HOURS

References	
1	Colbert et al. Colbert's Evolution of the Vertebrates: A History of the Back Boned Animals Through Time. (5th Ed.). Wiley-Liss.
2	Hildebrand. Analysis of vertebrate Structure. (4th Ed.). John Wiley
3	Kenneth V. Kardong (2015). Vertebrates: Comparative Anatomy, Function, Evolution. McGraw Hill
4	Ali Farhad et al. Vertebrate Life (1979). Macmillan publishing
5	Parker and Haswell. Text Book of Zoology. Vol. II (1978) ELBS
6	Kutish and Parsons. The Vertebrate Body (Fed 1986. CBS Publishing Japan
7	Young. The Life of vertebrates (Fed 2006) ELBS Oxford
8	Wacker (C.R. and William Peach. (1970). Elements of Chordate Anatomy. Tata McGraw Hill

Government of Karnataka

Model Curriculum

Course Title	Electives and Competency Anchors (Practical)	Practical Credits	2
Course Code		Contact Hours	
Formative Assessment	25 Marks	Summative Assessment	25 Marks

Formative Assessment for Practical	
Assessment Occasion/ type	Marks
Test	10
Class Record	10
Attendance	5
Total	25 Marks
Formative Assessment as per NEP guidelines are compulsory	

1. **Protochordates:** [15 UNITS]

Balanoglossus and its T. S through proboscis, Ascidian, Herdmania and Amphioxus, T.S. of Amphioxus through pharynx and intestine.

2. Cyclostomata – *Petromyzon*, Ammocoete larva and Sphinx.

PISCES:

3. **Cartilaginous Fishes** – Narcine, Trygon, Pristis, Sphyrna.

4. **Bony Fishes**–Labeorohita, Hippocampus, Mystus, Ostracion, Tetradon, Pomacanthus, Diodon, Echeneis. (Any Six) – Locally available.

5. **Ornamental fishes:** Guppy, Koi, Betta Sp., Puntius tetra, Gourami, Goldfish, Angle fish, Rainbow fish, Mollies (Locally available any five aquarium fishes).

6. **Accessory respiratory organs** – Labyrinth in Clarias and Anabas.

7. **Amphibia:** *Rana*, Bufo, Ambystoma, Ichthyophis, Nectarus and Hyla (any six).

8. **Reptilia:** Turtle, Tortoise, Calotes, Chameleon, Varanus, snakes-Ophiophagus, Naja naja, Bungarus, Viper, Krait, Russell's viper and Hydrophis (Any Four).

9. **Aves:** Bird and bird modifications in the following examples: Duck, Crow, Sparrow, Parrot, Kingfisher, Eagle or Hawk. (Any five)

10. **Mammalia:** Mongoose, Squirrel, Pangolin, Hedgehog, Bat and Loris. (Any four).

11. **Virtual Dissection/Cultured specimens**

Shark, Bony fish, Afferent and efferent branchial systems, Urinogenital system of Shark, (Placoid, Cycloid and Ctenoid).

12. **Virtual Dissection/Cultured specimens**

Rat: Dissection (only demonstration)– Circulatory system (arterial and venous), Urinogenital system.

13. **Skeletal System in Man/Rabbit:** Skull, vertebrae, girdles and limb bones (Except hands and feet).

Government of Karnataka

Curriculum Framework for Three-Year Undergraduate Program in Colleges and Universities of Karnataka State.

Model Syllabus for

6th Semester

Submitted to Vice Chairman

Karnataka State Higher Educational Council

M. Prasanna Kumar, Bangalore City University

Central, Bangalore, Karnataka- 560009

Government of Karnataka

Model Curriculum

Program Name	B.Sc. Zoology	Semester	VI
Course Title	Evolutionary & Developmental Biology (Theory)		
Course Code:		No. of Credits	4
Contact hours	60 Hours	Duration of SEA Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite(s):

Course Outcomes(COs): After the successful completion of the course the student will be able to:

- Understand that by biological evolution we mean that many of the organisms that inhabit the earth today are different from those that inhabited it in the past.
- Understand that natural selection is one if not the most important processes that can bring about evolution, although it can also promote stability rather than change.
- Understand how the single cell formed at fertilization forms an embryo and then a full adult organism.
- Integrate genetics, molecular biology, biochemistry, cell biology, anatomy and physiology during embryonic development.
- Understand a variety of interacting processes which generate an organism's heterogeneous shapes, size, and structural features.
- Understand how a cell behaves in response to an environmental treatment or an external signal, and the scientific reasoning exhibited in experiments like these.

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Mid-term Examination/ Test	20
Written Assignment/ Presentation/ Project/ Term Paper	10
Classroom Performance/ Participation/ Seminars	10
Total	**40 Marks**
Formative Assessments as per NEP guidelines are compulsory	

Pedagogy: Lectures, Seminars, Field Visits and Assignment

Theory Courses	Hours
Unit-I	
1. Theories of Evolution: • Origin of Life, Historical review of evolutionary concept • Lamarckism, Darwinism (Natural, Sexual and Artificial selection) • Modern synthetic theory of evolution (Gene pool, Gene flow, Gene Variation, Variation, Heredity, Natural Selection and Isolation) • Adaptive radiations: Patterns of evolution (Divergence, Convergence, Parallel, Co-evolution)	
2. Population Genetics • Micro evolution and Macro evolution, allele frequencies, genotype frequencies • Hardy-Weinberg equilibrium and conditions for its maintenance • Forces of evolution: mutation, selection, genetic drift	
Unit-II	
3. Evidences of Evolution: • Evidences from Comparative Morphology, Anatomy, Embryology and Biochemistry • Types of fossils, Incompleteness of fossil record, Dating of Fossils • Origin and evolution of Horse and Man	
4. Species Concept and Extinction: • Biological species concept (Advantages and Limitations) • Modes of speciation (Allopatric, Sympatric, Par and peri Patric Isolation Mechanisms) • Mass extinctions (Causes, Names of five major extinctions)	
Unit-III	
5. Gamete Fertilization and Early Development: • Gametogenesis (Spermatogenesis, Spermiogenesis and Oogenesis in Mammals), Differences between Spermatogenesis and Oogenesis • Fertilization (Types, Mechanism and significance), Monospermy and Polyspermy • Early Development of Frog (Structure of Egg, Cleavage, Blastula, Fate Map of Blastula and Gastrulation) • Early Development of chick (Structure of Hen's Egg, Blastula, Gastrulation, Origin of Primitive streak)	

• Development, Structure and Function of Cells in Anthers, Ovules and Ovaries	
6 Developmental Genetics: • General concepts of organogenesis • Introduction to genetic basis of Embryonic development and Developmental control genes (Homeobox genes) in Drosophila	
Unit-IV	
7 Early Vertebrate Development: Metamorphosis, regeneration, Early development of mammals including placentation Environmental regulation of development	
8 Late Developmental Processes: • Development of eye, kidney, limb in amphibian • Mammalian Female reproductive cycles estrous cycle and menstrual cycle in mammals • Aging: the biology of senescence	

References	
1	Ridley, M (2004) Evolution (3rd edition) Blackwell Publishing
2	Hall, B.K. and Hallgrimsson, B (2008) Evolution (4th edition) Jones and Bartlett Publishers
3	Barton, N.H., Briggs, D.E.G., Eisen, J.A., Goldstein, D.B. and Patel, N.H. (2007) Evolution. Cold Spring, Harbour Laboratory Press
4	Campbell, N.A. and Reece J.B. (2011) Biology IX Edition, Pearson, Benjamin, Cummings
5	Douglas, J. Futuyma (1997) Evolutionary Biology. Sinauer Associates
6	Developmental Biology: I. Information, Rajpal, Narosa Publishing House Pvt Ltd, New Delhi
7	Developmental biology: Werner A. Müller, Springer Science & amp; Business Media, (2013)
8	Human Embryology and Developmental Biology E-Book, Bruce M. Carlson, Elsevier Health Sciences
9	Developmental Biology: Michael J.F. Barresi, Scott F. Gilbert, Oxford University Press (2019)

Government of Karnataka

Model Curriculum

Course Title:	Evolutionary & Developmental Biology (Practical)	Practical Credits:	2
Course Code:		Contact Hours:	4 Hours
Formative Assessment:	25 Marks	Summative Assessment:	25 Marks

Formative Assessment for Practical	
Assessment Occasion / type	**Marks**
Test	15
Class Record	05
Attendance	5
Total	**25 Marks**
Formative Assessment as per NEP guidelines are compulsory	

Practical Content

1. Study of fossils from models / pictures: Dart and Ammonite
2. Study of Homologous, Analogous and Vestigial organs from suitable specimens
3. Study and verification of Hardy-Weinberg Law by chi square analysis. (Any three problems)
4. Types of eggs based on quantity and distribution of yolk: Sea urchin, insect, frog, Chick
5. Study of Aquatic, arboreal and Volant adaptations examples: Shark, Turtle/crocodile, bird, Bat, Pigeon and House
6. Study of development of Chick Embryo at Various Stages of Incubation in Vivo by making a Window in the Egg Shell (Window Technique Method)
7. Frog Embryology: Early Cleavage Stages (2 celled + celled, 8 celled, 16 celled) Blastula, Gastrula and Neurula
8. Chick Embryology: Study and development of Chick with the help of Whole Mount – Primitive streak, 24, 36, 48, 72, 96 hours of Incubation Fixed embryos
9. Study of adaptive radiations in feet of birds and mouth parts of insects
10. Study of Museums – Invertebrates, Vertebrates, Paleontology and Embryology

Government of Karnataka

Model Curriculum

Program Name	B.Sc. Zoology	Semester	VI
Course Title	Environmental Biology, Wildlife Management & Conservation (Theory)		
Course Code:		No. of Credits	4
Contact hours	60Hours	Duration of SEA/Exam	2Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite(s):

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

CO1 Develop an understanding of how animals interact with each other and their natural environment.
CO2 Develop skills to use the fundamental principles of wildlife ecology to solve local, regional and National conservation and management issues.
CO3 Develop the ability to work collaboratively in team-based projects.
CO4 Gain an appreciation for the ongoing scope of scientific inquiry in the field of wildlife conservation management.
CO5 Develop an ability to analyze, present and interpret wildlife conservation management information.

Formative Assessment for Theory	
Assessment Occasion/type	**Marks**
Mid Exam/Internal Test	20
Written Assignment/ Presentations/ Project/ Term Papers	10
Classroom Performance/ Participation/ Seminars	10
Total	**40Marks**
Formative Assessment as per NEP guidelines are to be followed	

Contents	Hours
Unit-I	**15**
1. **Ecology**- Introduction to ecology, Definition, ecosystem, types of ecosystem, food chain and food web, trophic levels. **Environment**: Definition, types of environment (terrestrial, aquatic, forest, grassland and aerial environment). **Environmental Biology**: Adaptive features of animals to different Environmental factors (Temperature, light, salinity, aerobic, Ecological terms, weather, climate, ozone layer.	
Unit-II	**15**
1. Definition, types of pollutants, air, soil, water and thermal pollution, ozone layer depletion, Green house effect, biomagnifications, bio accumulation and bioremediation. Effects of pollution on plants and animals.	
Unit-III	**15**
1. **Wildlife Management** : Importance and Values of wildlife (FAO) – Wildlife categories, Endangered, Threatened, Vulnerable, Rare, Red data Book. Causes and depletion of wildlife (Direct, Indirect destruction), Invasion and classification of wetlands and their biotic components, RAMSAR convention. General strategies and issues, concept of home range, wildlife corridors and territory, animal census, tracing out, trend and remote sensing and GIS.	
Unit-IV	**15**
1. **Wildlife Conservation**: Conservation strategies – Ex-situ and in-situ conservation, Ex-situ vs. In-situ, National parks, Wild life sanctuaries, Biosphere reserves, Zoo, Captive breeding, Cryopreservation, Germplasm conservation, Project tiger, Project Elephant, Habitat preservation, breeding in captivity, Wildlife Protection Act - 1972.	

References	
1	Colinvaux, P. A. (1993) Ecology (2nd edition) Wiley Interscience Publication, John Wiley and Sons, Inc.
2	Krebs, C. J. (2001) Ecology (5th edition) Benjamin Cummings.
3	Odum, E.P. (2008) Fundamentals of Ecology. Indian Edition. Biotia Cole (7th Edition) Blackwell Sci.
4	Kendeigh, H. (1984) Ecology with Special Reference to Animal and Man. Prentice Hall Inc.
5	Caughley, G. and Sinclair, A. R. E. (1994) Wildlife Ecology and Management Blackwell Science.
6	Woodroffe, R., Thirgood, S. and Rabinowitz, A. (2005) People and Wildlife, Conflict Or Co-existence? Cambridge University.
7	Bookhout, T. A. (1994) Research and Management Techniques for Wildlife and Habitats (5th edition) The Wildlife Society, Allen Press.
8	Sutherland, W. J. (2000) The Conservation Handbook: Research, Management and Policy. Blackwell Science.
9	Hindal, M.E., Gibbs, J.B. and Sterling, E.J. (2003) Problem solving in Conservation Biology and Wildlife Management Exercises for Class, Field, and Laboratory. Stackpole Publishing.

Course Title:	Environmental Biology, Wildlife Management, Conservation (Practical)	Practical Credit:	2
Course Code:		Contact Hours:	4Hours
Formative Assessment:	25Marks	Summative Assessment:	25Marks

Formative Assessment for Practical	
Assessment Occasion / type	Marks
Test	20
Class Record	20
Attendance	5
Total	25 Marks
Formative Assessment as per NEP guidelines are compulsory	

Practical Content

1. **Water quality parameters assessment:** Collection of water sample. Dissolved Oxygen (DO), Carbon dioxide (CO_2), chlorides, Hardness and salinity estimation in water.
2. **Analysis of physico-chemical parameters of soil:** pH, soil moisture, and temperature.
3. Determination of organic matter in soil sample.
4. **Visit to pond and lakes:** Collection and identification of flora and fauna of selected Ecosystems. Collection, preservation and estimation of phytoplankton's, zooplankton and insect larva.
5. Demonstration of field equipment's used in wildlife census (Compass, Binoculars, Spotting scope, Range Finders, Global Positioning System, Various types of cameras and lenses (Charts).
6. **Identification wild animals:** Wild animal's pugmarks, hoof marks scat, pellet groups, nest, antlers. Demonstration of field techniques for wild flora and fauna (Charts/ pictures).
7. Collection, Preservation and Estimation of Soil plankton.
8. Location of Tiger Reserve, National Parks, Sanctuaries (one or, Wildlife corridors of India on Map.