MANAKULA VINAYAGAR
INSTITUTE OF TECHNOLOGY
An Autonomous Institution
Affiliated to Pondicherry University, Approved by AICTE, New Delhi.
Accredited by NBA, New Delhi and NAAC with 'A' Grade
Kalitheerthalkuppam, Puducherry- 605 107.

(An Autonomous Institution)

Curriculum & Syllabus

For

UG Degree Course

in

B.Tech

Computer Science and Engineering

R 2025

SEMESTER III

SEMESTER III											
S.No	**Course Code**	**Course Title**	**Category**	**L**	**T**	**P**	**SL+ TW**	**Credits**	**MARKS**		
									IA	**ESE**	**TM**
THEORY COURSES											
1.	25UMAT31	Fourier Series, Probability and Statistics	BS	45	15	0	60	120/30 =4	40	60	100
2.	25UCST31	Data Structures and Algorithms	PC	45	0	0	45	90/30 =3	40	60	100
3.	25UCST32	Object Oriented Programming using Java	PC	45	0	0	45	90/30 =3	40	60	100
4.	25UCST33	Microprocessor and Microcontroller	ES	45	0	0	45	90/30 =3	40	60	100
5.	25UHST31	Human Resource Management	HS	45	0	0	45	90/30 =3	40	60	100
INTEGRATED COURSE											
6.	25UCSI33	Fundamentals of Data Science	PC	45	0	30	45	120/30=4	50	50	100
PRACTICAL COURSES											
7.	25UCSP31	Data Structures and Algorithms Lab	PC	0	0	30	-	30/30 =1	60	40	100
8.	25UCSP32	Object Oriented programming using Java Lab	PC	0	0	30	-	30/30 =1	60	40	100
9.	25UCSP33	Microprocessor and Microcontroller Lab	ES	0	0	30	-	30/30 =1	60	40	100
EMPLOYABILITY ENHANCEMENT COURSE											
10.	25UPCE31	Personality Development Skills	EEC	0	0	30	-	-	100	-	100
11.	25UCCCXX	Certification courses- II	CCC	0	0	30	-	-	100	-	100
MANDATORY COURSES											
12.	25UMCC31	Indian Constitution and Human Rights	MCC	30	0	0	-	-	100	-	100
Total								**23**	**730**	**470**	**900**

FOUREIR SERIES, PROBABILITY AND STATISTICS			
Course Code:	**25UMAT31**	**Course Type:**	**BS**
Teaching Periods / Week (L:T:P):	**3:1:0**	**Credits:**	**4**
Total Teaching Periods:	**60**	**CAM+ ESE Marks**	**40+60=100**
Teaching Department:	**Mathematics**		

Course Objectives:

- To enable the students to expand functions in to Fourier series using change of intervals
- To gain knowledge in application of Fourier series
- To acquire knowledge in discrete random variable.
- To familiarize the student about the continuous random variables and their applications.
- To study the basic concepts of Statistics

UNIT 1	FOURIER SERIES	12

Dirichlet ‘s conditions – General Fourier series - Expansion of periodic function into Fourier series – Fourier series for odd and even functions – Half-range Fourier cosine and sine series – Change of interval – Related problems.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT
	RBT Level: Apply

UNIT 2	PARSEVAL’S THEOREM & HARMONIC ANALYSIS	12

Root Mean Square Value – Parseval ‘s theorem on Fourier Coefficients. Complex form of Fourier series – Harmonic Analysis.

Teaching Learning Process	Pedagogy :Chalk & Talk, PPT
	RBT Level: Apply

UNIT 3	DISCRETE RANDOM VARIABLES	12

Random Variables and their event spaces – The probability mass function – Distribution functions – Binomial – Geometric – Negative Binomial and Poisson (Excluding Derivation of Mean, variance and MGF)

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT
	RBT Level: Apply

UNIT 4	CONTINUOUS RANDOM VARIABLES	12

Probability density function – Exponential distribution – Gamma – Uniform – Gaussian distributions (Excluding Derivation of Mean, variance and MGF).

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT
	RBT Level: Apply

UNIT 5	STATISTICS	12

Measures of central tendency – Arithmetic Mean, Median, Mode and Standard deviation – Correlation – Rank correlation and regression.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT
	RBT Level: Understand
Total Periods	**60 hrs**

Suggested Activities and Evaluation Methods:
Assignments, Tutorials, Quiz , Case Study ,Students' performance in continuous Assessment / Student Presentations, Model Exam

Course Outcomes:

CO1: Compute a periodic function into series form

CO2: Solve engineering problems on Fourier series expansion of complex functions, Harmonic analysis and Parseval's theorem

CO3: Apply the concept of probability in random variables.

CO4: Solve the problem using continuous random variables

CO5: Understand the basic concepts of Statistics.

Textbooks:

T1. M.K. Venkataraman, "Engineering Mathematics, The National Publishing Company, Madras, 2016.

T2. Balaji, "Engineering Mathematics II and Transforms and Partial Differential Equations", Balaji publishers, 18th Edition, 2018.

T3. H.K. Dass, "Advanced Engineering Mathematics", S. Chand & Co. New Delhi, 2019.

T4. B.S. Grewal, "Higher Engineering Mathematics", Khanna publishers - **Paperback –** 3rd Edition - **2017.**

T5. T. Veerarajan, "Probability, Statistics and Random Processes", Tata McGraw-Hill Education, 2008.

T6. Dr. A. Singaravelu, "Probability and Statistics", Meenakshi Agency, Paperback – 1, 2019

References:

R1. N.P. Bali and Dr. Manish Goyal, "Engineering Mathematics", Lakshmi Publications Pvt. Ltd. New Delhi, 9th Edition, 2015.

R2. Erwin Kreyszig, "Advanced Engineering Mathematics", John Wiley & Sons, New Delhi, 10th Edition 2019.

R3. B.V. Ramana, "Higher Engineering Mathematics", Tata McGraw Hill, New Delhi 2018.

R4: Ravish R. Singh, Mukul Bhatt "Engineering Mathematics", McGraw-Hill, 1stEdition, 2017.

R5: William Mendenhall, Robert J. Beaver, Barbara M. Beaver: "Introduction to Probability & Statistics", Cengage Learning; 15thEdition 2019.

R6: Richard. A. Johnson, Irwin Miller and John E. Freund," Probability and Statistics for Engineers", Pearson Education, Asia, 9th Edition, 2018.

Web links and Video Lectures (e-Resources):

W1. https://nptel.ac.in/courses/111105121/
W2. https://nptel.ac.in/courses/111105035/
W3. http:// www.stat110.net
W4. http://www.nptel.ac.in/courses/111105035 (R.V)
W5. http:// www.probabilitycourse.com.

CO-PO-MAPPING-FOUREIR SERIES, PROBABILITY AND STATISTICS

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2	1	1	-	-	-	1	-	-	-	-
CO2	3	2	2	1	1	-	-	-	1	-	-	-	-
CO3	3	2	2	1	1	-	-	-	1	-	-	-	-
CO4	3	2	2	1	1	-	-	-	1	-	-	-	-
CO5	3	2	2	1	1	-	-	-	1	-	-	-	-
AVG	**3**	**2**	**2**	**1**	**1**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**

1 – Low, 2 – Medium, 3 – High, '-' – No correlation

DATA STRUCTURES AND ALGORITHMS			
(Common to CSE &IT)			
Course Code:	**25UCST31**	**Course Type:**	PC
Teaching Periods / Week (L:T:P):	**3:0:0**	**Credits:**	**3**
Total Teaching Periods:	**45**	**CAM+ ESE Marks**	**40+60=100**
Teaching Department:	**Computer Science and Engineering**		

Course Objectives:

To Impart knowledge about the importance of data structures in programming and to familiarize basic searching and sorting algorithms.

UNIT 1	**BASIC TERMINOLOGIES OF DATA STRUCTURES**	**9**

Data structures: Definition, Types - Algorithm: Definition, Properties, Analyzing algorithms: Space and Time Complexity-Array and its operations. Searching: Linear search, Binary Search, Fibonacci search. Sorting Algorithms: Selection Sort, Bubble Sort, Quick Sort, Insertion sort, Heap Sort and Merge Sort

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT, Case Study
	RBT Level: Understand

UNIT 2	**STACK,QUEUE AND LINKED LISTS**	**9**

Stacks: Definition – Operations - Applications of stack. Queues: Definition-Operations - Priority queues – De-queues – Applications of queue. Linked List: Singly Linked List, Doubly Linked List, Circular Linked List, Linked stacks, Linked queues, Applications of Linked List – Dynamic storage management

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT, Problem solving ,Case study
	RBT Level: Apply

UNIT 3	**TREE**	**9**

Definition - Binary tree – Terminology – Representation – Operations - Applications – Binary search tree – AVL tree. B Trees: B Tree indexing - Operations on a B Tree - B + Tree Indexing. Trie - Trie operations.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT, quiz
	RBT Level: Apply

UNIT 4	**GRAPH**	**9**

Definition – Terminology – Representation - Traversals – Applications - Spanning tree, Shortest path and Transitive closure, Topological sort. Set: Definition - Representation - Operations on sets – Applications.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT, Quiz
	RBT Level: Apply

UNIT 5	**HASH TABLE**	**9**

Tables: Rectangular tables - Jagged tables – Inverted tables - Symbol tables – Static tree tables - Dynamic tree tables - Hash tables-Overflow handling- Files: Sequential organization – Indexed organization.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT, Case study
	RBT Level: Analyze
Total Periods	**45 hrs**

Suggested Activities and Evaluation Methods:

Assignments , Tutorials, Mini Projects, Quiz / MCQ (Gate Related Questions), Case Study

Students' performance in continuous Assessment / Student Presentations, Model Exam

Course Outcomes:

CO1: Understand the fundamental concepts of data structures, algorithms, complexity analysis, and the principles of searching and sorting techniques.

CO2 : Apply stack, queue, and linked list operations to solve computational problems using appropriate data structures.

CO3: Apply tree-based data structures, including binary trees, binary search trees, AVL trees, B-trees, B+ trees, and tries, for efficient data organization and retrieval.

CO4: Apply graph representations, graph traversal algorithms, set operations, and related techniques to solve real-world computational problems.

CO5: Analyze different table organizations, hash table techniques, overflow handling methods, and file organization strategies to determine efficient data storage and retrieval mechanisms.

Textbooks:

T1. Ellis Horowitz, Sartaj Sahni," Fundamentals of Data Structures", Illustrated Edition, Computer Science Press, 2018.

T2. Thomas H. Coreman, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, "Introduction to Algorithms", PHI, Third Edition, 2010.

T3. Alfred V. Aho, Jeffrey D. Ullman, John E. Hopcroft, "Data Structures and Algorithms", 4th Edition, 2009.

T4. Michael T. Goodrich and Robert, Tamassia, Wiley "Data Structures and Algorithms in Python", by, 1st Edition.

References:

R1. D. Samanta, "Classic Data Structures", Prentice-Hall of India, Second Edition, 2012.

R2. John Canning, Alan Broder, Robert Lafore, "Data Structures & Algorithms in Python", Addison-

Wesley Professional,1st Edition, 2022

Web links and Video Lectures (e-Resources):

W1. Programming, Data Structures and Algorithms using Python:

W2. https://nptel.ac.in/courses/106106145

W3. The Joy of Computing using Python:

W4. https://nptel.ac.in/courses/106106182

W5. Python for Data Science: https://nptel.ac.in/courses/106106212

W6. Python for beginners: //nptel.ac.in /courses/106106145

CO-PO MAPPING :DATA STRUCTURES AND ALGORITHMS

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	1	1	2	-	-	-	-	-	1	2	2
CO2	3	2	1	1	2	-	-	-	-	-	1	2	2
CO3	3	2	1	1	2	-	-	-	-	-	1	2	2
CO4	3	2	1	1	2	-	-	-	-	-	1	2	2
CO5	3	2	1	1	2	-	-	-	-	-	1	2	2
AVG	**3**	**2**	**1**	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**1**	**2**	**2**

1 – Low, 2 – Medium, 3 – High, '-' – No correlation

OBJECT ORIENTED PROGRAMMING USING JAVA			
(Common to CSE &IT)			
Course Code:	**25UCST32**	**Course Type:**	**PC**
Teaching Periods / Week (L:T:P):	**3:0:0**	**Credits:**	**3**
Total Teaching Periods:	**45**	**CAM+ ESE Marks**	**40+60=100**
Teaching Department:	**Computer Science and Engineering**		

Course Objectives:

This course introduces learners to the foundational principles of Java programming and guides them through structured problem-solving using classes, objects, and reusable code.

UNIT 1	**INTRODUCTION TO OOP AND JAVA**	**9**

Overview of OOP – Object oriented programming paradigms – Features of Object-Oriented Programming – Java Buzzwords – Overview of Java – Data Types, Variables and Arrays – Operators – Control Statements – Programming Structures in Java – Defining classes in Java – Constructors Methods -Access specifiers – Static members- Java Doc comments

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT, Quiz
	RBT Level: Understand

UNIT 2	**INHERITANCE, PACKAGES AND INTERFACES**	**9**

Overloading Methods – Objects as Parameters, Returning Objects, Static, Nested and Inner Classes- Inheritance: Basics, Types of Inheritance, Super keyword, Method Overriding, Dynamic Method Dispatch, Abstract Classes, final with Inheritance - Packages and Interfaces Packages, Packages and Member Access, Importing Packages, Interfaces.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT, Scenario based problem solving
	RBT Level: Apply

UNIT 3	**EXCEPTION HANDLING AND MULTITHREADING**	**9**

Exception Handling basics – Multiple catch Clauses – Nested try Statements – Java's Built-in Exceptions – User defined Exception. Multithreaded Programming: Java Thread Model–Creating a Thread and Multiple Threads – Priorities – Synchronization – Inter Thread Communication- Suspending –Resuming, and Stopping Threads –Multithreading. Wrappers – Auto boxing.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT, Problem solving
	RBT Level: Analyze

UNIT 4	**I/O, GENERICS, STRING HANDLING**	**9**

I/O Basics – Reading and Writing Console I/O – Reading and Writing Files. Generics: Generic Programming – Generic classes – Generic Methods – Bounded Types – Restrictions and Limitations. Strings: Basic String class, methods and String Buffer Class.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT, Quiz, Case study
	RBT Level: Create

UNIT 5	**JAVAFX EVENT HANDLING, CONTROLS AND COMPONENTS**	**9**

JAVAFX Events and Controls: Event Basics – Handling Key and Mouse Events. Controls: Checkbox, Toggle Button – Radio Buttons – List View – Combo Box – Choice Box – Text Controls – Scroll Pane. Layouts – Flow Pane – HBox and VBox – Border Pane – Stack Pane – Grid Pane. Menus – Basics – Menu – Menu bars – Menu Item.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT, Mini Projects
	RBT Level: Create

Total Periods	**45 hrs**

Suggested Activities and Evaluation Methods:

Assignments, Tutorials, Mini Projects, Quiz, Case Study , continuous Assessment and Model Exam

Course Outcomes:

CO1: Understand the principles of Object-Oriented Programming (OOP) and its implementation using Java, including classes, methods, and access specifiers.

CO2: Apply concepts of inheritance, polymorphism, and abstraction in developing Java programs.

CO3: Analyze error-handling mechanisms using exception handling and implement multithreading for concurrent programming.

CO4: Develop generic programs and handle strings effectively using Java's built-in libraries.

CO5: Design graphical user interfaces (GUIs) and event-driven applications using JavaFX controls, layouts, and menus.

Textbooks:

T1. Herbert Schildt, "Java: The Complete Reference", McGraw Hill Education, 11th Edition, 2019.

T2. Herbert Schildt, "Introducing JavaFX 8 Programming", McGraw Hill Education,

References:

R1. Cay S. Horstmann, "Core Java Fundamentals", Volume 1, Prentice Hall, 11th Edition, 2018

Web links and Video Lectures (e-Resources):

W1. Object Oriented System Development using UML: https://nptel.ac.in/courses/106105224

W2. Java: https://nptel.ac.in/courses/106105225

CO-PO MAPPING :OBJECT ORIENTED PROGRAMMING USING JAVA													
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CO1	3	2	-	-	-	-	-	-	-	-	1	1	2
CO2	3	2	1	1	-	-	-	-	-	-	2	2	2
CO3	3	3	2	2	2	-	-	-	-	-	2	2	3
CO4	2	1	1	3	3	-	-	-	-	-	3	2	3
CO5	2	2	1	3	3	-	-	-	-	-	3	2	3
AVG	**2.6**	**2**	**1.25**	**2.25**	**2.6**	**-**	**-**	**-**	**-**	**-**	**2.2**	**1.8**	**2.6**
1 – Low, 2 – Medium, 3 – High, '-' – No correlation													

MICROPROCESSOR AND MICROCONTROLLER			
Course Code:	**25UCST33**	**Course Type:**	ES
Teaching Periods / Week (L:T:P):	**3:0:0**	**Credits:**	**3**
Total Teaching Periods:	**45**	**CAM+ ESE Marks**	**40+60=100**
Teaching Department:	**Computer Science and Engineering**		

Course Objectives:

- To understand the concepts of Architecture of 8086 microprocessor
- To understand the design aspects of I/O and Memory Interfacing circuits
- To understand the architecture and programming of ARM processor

UNIT 1	**8086 MICROPROCESSOR**	**9**

Introduction to 8086 – Microprocessor architecture – Addressing modes - Instruction set and assembler directives – Assembly language programming – Modular Programming - Linking and Relocation - Stacks - Procedures – Macros – Interrupts and interrupt service routines – Byte and String Manipulation.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT, Quiz
	RBT Level: Understand

UNIT 2	**8086 SYSTEM BUS STRUCTURE**	**9**

8086 signals – Basic configurations – System bus timing –System design using 8086 – IO programming – Introduction to Multiprogramming – System Bus Structure – Multiprocessor configurations – Coprocessor, Closely coupled and loosely Coupled configurations – Introduction to advanced processors.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT, Quiz
	RBT Level: Analyze

UNIT 3	**MICROCONTROLLER**	**9**

Architecture of 8051 – Special Function Registers(SFRs) - I/O Pins Ports and Circuits - Instruction set - Addressing modes - Programming 8051 Timers – Interfacing Microcontroller - Serial Port Programming - Interrupts Programming – LCD & Keyboard - External Memory Interface- Stepper Motor.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT
	RBT Level: Describe

UNIT 4	**INTRODUCTION TO EMBEDDED SYSTEMS**	**9**

Complex systems and micro processors– Embedded system design process – Instruction sets preliminaries - ARM Processor – CPU: programming input and output supervisor mode, exceptions and traps – Co-processors- Memory system mechanisms – CPU performance

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT	
	RBT Level: Interpret	
UNIT 5	**EMBEDDED COMPUTING PLATFORM DESIGN AND OPTIMIZATION THE CPU**	**9**
Bus-Memory devices and systems–Designing with computing platforms – platform level performance analysis - Components for embedded programs-Models of programs Assembly, linking and loading – compilation techniques- Program level performance analysis – Software performance optimization – Analysis and optimization of program size- Program validation and testing.		
Teaching Learning Process	Pedagogy: Chalk & Talk, PPT	
	RBT Level: Apply	
	Total Periods	**45 hrs**

Suggested Activities and Evaluation Methods:

Tutorials, Quiz , Case Study, continuous Assessment, Model Exam

Course Outcomes:

CO1: Explain the architecture, addressing modes, instruction set, and programming concepts of the 8086 microprocessor, and develop assembly language programs using modular programming, procedures, macros, and interrupts.

CO2: Analyze the 8086 system bus structure, signal configurations, I/O programming, multiprocessor configurations, and system design concepts including coprocessor and advanced processor architectures.

CO3: Describe the architecture and features of the 8051 microcontroller, and develop embedded programs involving timers, serial communication, interrupts, and interfacing devices such as LCDs, keyboards, and stepper motors.

CO4: Interpret the fundamentals of embedded systems design, ARM processor architecture, memory systems, exceptions, traps, and performance considerations in embedded computing environments.

CO5: Apply embedded computing platform design principles, performance analysis, compilation techniques, optimization strategies, and program validation methods to develop efficient embedded system applications.

Textbooks:

T1. Yu-Cheng Liu, Glenn A.Gibson, “Microcomputer Systems: The 8086 / 8088 Family - Architecture, Programming and Design”, Second Edition, Prentice Hall of India, 2007

T2. Mohamed Ali Mazidi, Janice Gillispie Mazidi, Rolin McKinlay, “The 8051 Microcontroller and Embedded Systems: Using Assembly and C”, 2 nd Edition, Pearson Education, 2011

T3. Marilyn Wolf, “Computers as Components - Principles of Embedded Comping System Design”, 3rd

Edition “Morgan Kaufmann Publisher (An imprint from Elsevier), 2012

References:

R1. Doughlas V. Hall, “Microprocessors and Interfacing, Programming and Hardware”, Tata McGraw-Hill, 2012

R2. Jonathan W. Valvano, “Embedded Microcomputer Systems Real Time Interfacing”, 3 rd Edition, Cengage Learning, 2012

R3. David. E. Simon, “An Embedded Software Primer”, 1st Edition, Fifth Impression, Addison-Wesley Professional, 2007

Web links and Video Lectures (e-Resources):

W1. Microelectronics: Devices To Circuits: https://onlinecourses.nptel.ac.in/noc21ee86

W2. Microelectronics: Devices To Circuits: https://nptel.ac.in/courses/108107142

W3. Basics of software defined Radios: https://onlinecourses.nptel.ac.in/noc22 ee78

CO-PO MAPPING : MICROPROCESSOR AND MICROCONTROLLER

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CO1	3	2	1	1	2	-	-	-	-	-	-	-	-
CO2	3	2	1	1	2	-	-	-	-	-	-	-	-
CO3	3	2	1	1	2	-	-	-	-	-	1	-	-
CO4	3	2	1	1	2	-	-	-	-	-	1	-	-
CO5	3	2	1	1	2	-	-	-	-	-	1	-	-
AVG	**3**	**2**	**1**	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**0.6**	**-**	**-**

1 – Low, 2 – Medium, 3 – High, ‘-’ – No correlation

HUMAN RESOURCE MANAGEMENT			
Course Code:	**25UHST31**	**Course Type:**	**HS**
Teaching Periods / Week (L:T:P):	**3:0:0**	**Credits:**	**3**
Total Teaching Periods:	**45**	**CAM+ ESE Marks**	**40+60=100**
Teaching Department:	**Computer Science and Engineering**		

Course Objectives:

To understand the strategic importance of human resources, master HRM methods, and apply HR tools effectively in real-world business scenarios.

UNIT 1	**INTRODUCTION TO HRM: CONTEXT, FUNCTIONS, AND STRATEGY**	**9**

Human Resources Management - Context and Concept of People Management in a Systems Perspective - Organization and Functions of the HR and Personnel Department - HR Structure and Strategy; Role of Government and Personnel Environment including MNCs.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT
	RBT Level: Understand

UNIT 2	**HR ACQUISITION AND PERFORMANCE MANAGEMENT**	**9**

Recruitment and Selection - Human Resource Information System [HRIS] - Manpower Planning - Selection – Induction & Orientation - Performance and Potential Appraisal - Coaching and Mentoring - HRM issues and practices in the context of Outsourcing as a strategy

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT
	RBT Level: Understand

UNIT 3	**HUMAN RESOURCE DEVELOPMENT AND SEPARATION**	**9**

Human Resources Development –Training and Development Methods - Design & Evaluation of T&D Programmes - Career Development - Promotions and Transfers - Personnel Empowerment including Delegation - Retirement and Other Separation Processes.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT
	RBT Level: Interpret

UNIT 4	**COMPENSATION, MOTIVATION, AND QUALITY OF WORK LIFE**	**9**

Financial Compensation- -Productivity and Morale - Principal Compensation Issues & Management - Job Evaluation - Productivity, Employee Morale and Motivation - Stress Management - Quality of Work Life.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT

	RBT Level: Understand	
UNIT 5	**EMPLOYEE RELATIONS, CONFLICT, AND INDUSTRIAL RELATION**	**9**
Building Relationships – Facilitating Legislative Framework - Trade Unions - Managing Conflicts - Disciplinary Process - Collective Bargaining - Workers Participation in Management - Concept, Mechanisms and Experiences.		
Teaching Learning Process	Pedagogy: Chalk & Talk, PPT	
	RBT Level: Apply	
	Total Periods	**45 hrs**

Suggested Activities and Evaluation Methods:

- Tutorials, Quiz / MCQ, Case Study
- Students' performance in continuous Assessment / Student Presentations, Model Exam

Course Outcomes:

After Successful completion of this course, the student should be able to

CO1: Understand the strategic role of human resources, HRM concepts, and the organizational structure and functions of HR departments in various business environments.

CO2: Describe the processes involved in human resource acquisition and performance management, including recruitment, selection, HRIS, manpower planning, induction, appraisal systems, coaching, mentoring, and outsourcing practices.

CO3: Comprehend the methodologies and techniques involved in recruitment, selection, HRIS, manpower planning, and recognize HRM challenges within outsourcing and contemporary organizational contexts.

CO4: Explain compensation structures, interpret job evaluation methods, and discuss strategies to enhance productivity, employee morale, motivation, and quality of work life.

CO5: Utilize knowledge of labor laws to manage industrial relations, resolve workplace conflicts, and implement strategies for effective worker participation in management through communication and negotiation.

Textbooks:

T1. Decenzo and Robbins, "Human Resource management", 8th Edition, Wiley, 2007

T2. Venkata Ratnam C. S. &Srivatsava B. K.,PERSONNEL MANAGEMENT AND HUMAN RESOURCES, Tata Mc-Graw Hill, NewDelhi, 2010.

References:

R1. Aswathappa, HUMAN RESOURCE MANGEMENT, Tata McGraw Hill, NewDelhi, 2010

R2. Garry Dessler &Varkkey, HUMAN RESOURCE MANAGEMENT, Pearson, New Delhi, 2009

R3. Alan Price, HUMAN RESOURCE MANAGEMENT, Cengage Learning, NewDelhi, 2007

R4. Pravin Durai, HUMAN RESOURCE MANGEMENT, Pearson, New Delhi,2010

R5. Snell, Bohlander & Vohra, HUMAN RESOURCES MANAGEMENT, Cengage, NewDelhi, 201007.

CO-PO MAPPING : HUMAN RESOURCE MANAGEMENT

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CO1	3	2	1	-	-	-	-	-	-	-	-	-	-
CO2	3	3	2	1	-	-	-	-	-	-	-	-	-
CO3	2	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	2	3	1	-	-	-	-	-	-	-	-	-
CO5	3	3	2	2	-	-	-	-	-	-	-	-	-
AVG	**2.8**	**2.6**	**2**	**1.3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

1 – Low, 2 – Medium, 3 – High, '-' – No correlation

FUNDAMENTALS OF DATA SCIENCE			
(Common for CSE &IT)			
Course Code:	**25UCSI33**	**Course Type:**	**PC**
Teaching Periods / Week (L:T:P):	**3:0:2**	**Credits:**	**4**
Total Teaching Periods:	**75**	**CAM+ ESE Marks**	**50+50=100**
Teaching Department:	**Computer Science and Engineering**		

Course Objectives:

To provide foundational knowledge of data science, including data handling, statistical analysis, machine learning basics, and data visualization using tools such as Python and relevant libraries.

UNIT 1	**INTRODUCTION**	**9**

Data Science: Benefits and uses – facets of data - Data Science Process: Overview – Defining research goals – Retrieving data – Data preparation - Exploratory Data analysis – build the model– presenting findings and building applications - Data Mining - Data Warehousing – Basic Statistical descriptions of Data.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT
	RBT Level:Apply

UNIT 2	**DESCRIBING DATA**	**9**

Types of Data - Types of Variables -Describing Data with Tables and Graphs –Describing Data with Averages - Describing Variability - Normal Distributions and Standard (z) Scores

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT
	RBT Level: Apply

UNIT 3	**DESCRIBING RELATIONSHIPS**	**9**

Correlation –Scatter plots –correlation coefficient for quantitative data –computational formula for correlation coefficient – Regression –regression line –least squares regression line – Standard error of estimate – interpretation of r2 –multiple regression equations –regression towards the mean.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT
	RBT Level: Apply

UNIT 4	**PYTHON LIBRARIES FOR DATA WRANGLING**	**9**

Basics of Numpy arrays –aggregations –computations on arrays –comparisons, masks, Boolean logic – fancy indexing – structured arrays – Data manipulation with Pandas – data indexing and selection –

operating on data – missing data – Hierarchical indexing – combining datasets – aggregation and grouping – pivot tables.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT
	RBT Level:Analyze

UNIT 5	**DATA VISUALIZATION**	**9**

Importing Matplotlib – Line plots – Scatter plots – visualizing errors – density and contour plots – Histograms – legends – colors – subplots – text and annotation – customization – three dimensional plotting - Geographic Data with Basemap - Visualization with Seaborn.

Teaching Learning Process	Pedagogy: Chalk & Talk, PPT
	RBT Level: Analyze

LISTOFEXPERIMENTS

1. Download, install and explore the features of NumPy, SciPy, Jupyter, Statsmodels and Pandas packages.
2. Working with Numpy arrays
3. Working with Pandas data frames
4. Reading data from text files, Excel and the web and exploring various commands for doing descriptive analytics on the Iris data set.
5. Use the diabetes data set from UCI and Pima Indians Diabetes data set for performing the following:
    a. Univariate analysis: Frequency, Mean, Median, Mode, Variance, Standard Deviation, Skewness and Kurtosis.
    b. Bivariate analysis: Linear and logistic regression modeling
    c. Multiple Regression analysis
    d. Also compare the results of the above analysis for the two data sets.
6. Apply and explore various plotting functions on UCI data sets.
    a. Normal curves
    b. Density and contour plots
    c. Correlation and scatter plots
    d. Histograms
    e. Three dimensional plotting
7. Visualizing Geographic Data with Basemap

Total Periods: 30 hrs

Total Periods	**Theory 45 + Practical 30 = 75 Hrs**

Suggested Activities and Evaluation Methods:

• Tutorials and Programming Assignments, Mini Projects , Quiz / MCQ (Programming Logic, GATE-related questions)

• Case Study , Lab Record and Viva-voce, Continuous Assessment Tests (CAT),Model Exam

Course Outcomes:

After Successful completion of this course, the student should be able to

CO1. Apply the data science process to solve real-world data-driven problems.

CO2. Apply appropriate data description techniques to organize and preprocess data for the data science process.

CO3. Apply knowledge of relationships among data using suitable analytical techniques.

CO4. Analyze data by applying Python libraries for data wrangling and preprocessing.

CO5. Analyze and interpret data using Python visualization libraries to derive meaningful insights and support decision-making.

Textbooks:

T1. David Cielen, Arno D. B. Meysman, and Mohamed Ali, "Introducing Data Science", Manning Publications, 2016. (Unit I)

T2. 2. Robert S. Witte and John S. Witte, "Statistics", Eleventh Edition, Wiley Publications, 2017. (Units II and III)

T3. 3. Jake VanderPlas, "Python Data Science Handbook", O'Reilly, 2016. (Units IV and V)

References:

R1. Aurélien Géron, Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow, Wes McKinney, Python for Data Analysis, O'Reilly.

R2. Allen B. Downey, "Think Stats: Exploratory Data Analysis in Python", Green Tea Press,2014. O'Reilly.

Web links and Video Lectures (e-Resources):

W1. https://www.kaggle.com/learn

W2. https://www.coursera.org/specializations/data-science-python

W3. https://www.geeksforgeeks.org/data-science-tutorial

CO-PO Mapping : FUNDAMENTALS OF DATA SCIENCE

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CO1	2	2	1	1	1	-	-	-	-	-	2	2	2
CO2	2	3	1	1	1	-	-	-	-	-	2	2	2
CO3	2	3	2	2	2	-	-	-	-	-	2	2	2
CO4	2	3	2	2	2	-	-	-	-	-	2	2	2
CO5	3	3	3	2	2	-	-	-	-	-	3	3	3
AVG	**2.2**	**2.8**	**1.8**	**1.6**	**1.6**	**-**	**-**	**-**	**-**	**-**	**2.2**	**2.2**	**2.2**

1 – Low, 2 – Medium, 3 – High, '-' – No correlation

DATA STRUCTURES AND ALGORITHMS LAB			
(Common for CSE &IT)			
Course Code:	**25UCSP31**	**Course Type:**	**PC**
Teaching Periods / Week (L:T:P):	**0:0:2**	**Credits:**	**1**
Total Teaching Periods:	**30**	**IAM + ESE Marks:**	**60+40=100**
Teaching Department:	**Computer Science and Engineering**		

Course Objectives:

To enable students write programs using various data structures, analyze and understand the benefits of choosing the right data structure.

Practical Exercises:	**Periods : 30 Hrs**

LIST OF EXPERIMENTS

1. Searching Algorithms (With the Number of Key Comparisons) - Sequential, Binary and Fibonacci Search Algorithms on an Ordered List
2. Sorting Algorithms: Insertion Sort, Selection Sort, Bubble Sort, Quick Sort, Heap Sort and Merge Sort.
3. Implementation of Stack and Its Operations.
4. Application of Stack for Converting an Arithmetic Expression into Postfix Form and Evaluation of Postfix Expression.
5. Implementation of Queue, Circular Queue, Priority Queue, Dequeue and Their Operations.
6. Implementation of Singly Linked List, Doubly Linked List, Circular Linked List.
7. Implementation of Binary Tree and Binary Traversal Techniques.
8. Implementation of Graph Traversal Techniques.
9. Implement Dijkstra’s Algorithm to Obtain the Shortest Paths.
10. Implementation of Hash Tables and its Operations.

Course Outcomes:

After Successful completion of this course, the student should be able to

CO1. Explain the concepts and working principles of searching and sorting algorithms and compare their performance based on key comparisons and time complexity.

CO2. Describe the operations and applications of linear and non-linear data structures, including stacks, queues, linked lists, trees, graphs, and hash tables.

CO3.Implement stack, queue, linked list, and hash table operations to solve data storage, retrieval, and expression evaluation problems.

CO4. Apply tree and graph traversal techniques, along with shortest path algorithms, to solve computational problems efficiently.

CO5.Analyze the efficiency and suitability of different data structures and algorithms for solving various computational problems based on performance and application requirements.

CO-PO MAPPING :DATA STRUCTURES AND ALGORITHMS LAB

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CO1	3	2	1	1	2	-	-	-	-	-	-	1	1
CO2	3	2	1	1	2	-	-	-	-	-	-	1	1
CO3	3	2	1	1	2	-	-	-	-	-	-	1	1
CO4	3	2	1	1	2	-	-	-	-	-	-	1	1
CO5	3	2	1	1	2	-	-	-	-	-	-	1	1
AVG	**3**	**2**	**1**	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**1**

1–Low, 2–Medium, 3–High, ‘-’ –No correlation

OBJECT ORIENTED PROGRAMMING USING JAVA LAB			
Course Code:	**25UCSP32**	**Course Type:**	**PC**
Teaching Periods / Week (L:T:P):	**0:0:2**	**Credits:**	**1**
Total Teaching Periods:	**30**	**IAM + ESE Marks:**	**60+40=100**
Teaching Department:	Computer Science and Engineering		

Course Objectives:

To write program for implementing constructors and destructors and develop applications using database connectivity.

Practical Exercises:	**Periods : 30 Hrs**

LIST OF EXPERIMENTS

1. Program to implement constructors and destructors with array of objects.
2. Program to demonstrate function overloading.
3. Program to implement different types of inheritances like multiple, Multilevel and hybrid.
4. I/O Program to demonstrate the use of abstract classes.
5. Program to demonstrate I/O streams and functions.
6. Program to perform all possible type conversions.
7. Program to demonstrate exception handling technique.
8. Program to design and implement JDBC.
9. Program to design an event handling event for simulating a simple calculator.
10. Build GUI based application development using JavaFX.

Course Outcomes:

After Successful completion of this course, the student should be able to

CO1. Demonstrating object-oriented concepts such as constructors, destructors, function overloading, and inheritance.

CO2. Construct the program for abstract classes, I/O streams, and stream handling techniques.

CO3. Analyze type conversion techniques and exception handling mechanisms to develop reliable and robust Java applications.

CO4. Design and develop database-driven and network-based applications using JDBC and Java networking concepts.

CO5. Design and implement event-driven and GUI-based applications using JavaFX.

After Successful completion of this course, the student should be able to

CO-PO MAPPING :OBJECT ORIENTED PROGRAMMING USING JAVA LAB

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	-	-	-	-	-	-	-	-	1	1	2
CO2	3	2	1	1	-	-	-	-	-	-	2	2	2
CO3	3	3	2	2	2	-	-	-	-	-	2	2	3
CO4	2	1	1	3	3	-	-	-	-	-	3	2	3
CO5	2	2	1	3	3	-	-	-	-	-	3	2	3
AVG	**2.6**	**2**	**1.25**	**2.25**	**2.67**	**-**	**-**	**-**	**-**	**-**	**2.2**	**1.8**	**2.6**
1–Low, 2–Medium, 3–High, '-' –No correlation													

MICROPROCESSOR AND MICROCONTROLLER LAB			
Course Code:	**25UCSP33**	**Course Type:**	**ES**
Teaching Periods / Week (L:T:P):	**0:0:2**	**Credits:**	**1**
Total Teaching Periods:	**30**	**IAM + ESE Marks:**	**60+40=100**
Teaching Department:	**Computer Science and Engineering**		

Course Objectives: To enrich assembly language programming knowledge using 8086,8051 microprocessor and microcontroller.

Practical Exercises:	**Periods : 30 Hrs**

LIST OF EXPERIMENTS

8086 Microprocessor kit experiments

1. Study of 8086 microprocessor Trainer kit.
2. To perform basic arithmetic operations using 8086 microprocessor kit.
3. To perform logical operations using 8086 microprocessor kit.
4. String manipulation, searching and sorting.
5. Interrupt programming using 8086 microprocessor kit.
6. Interfacing traffic light control using 8086 microprocessor kit.

8051 microcontroller kit experiments

7. Basic arithmetic and logical operations using 8051 microcontroller.
8. Unpacked BCD to ASCII.
9. Interfacing stepper motor with 8051 microcontroller.

ARM Processor experiments

10. Develop ARM-based Embedded C programs for GPIO interfacing, delay generation and interrupt handling using an ARM development board.
11. Design and implement a simple embedded system application (such as a traffic light controller, Digital temperature monitor or Home automation system) and analyze its memory usage and performance optimization.

Course Outcomes:

After Successful completion of this course, the student should be able to

CO1: Explain the architecture, addressing modes, instruction set, and internal organization of the 8086 microprocessor and 8051 microcontroller.

CO2: Develop and execute 8086 assembly language programs using arithmetic, logical, data transfer, string manipulation, stack, and interrupt instructions to solve computational problems.

CO3: Analyze the operation of the 8086 system bus, memory organization, interrupts, and peripheral interfacing techniques for microprocessor-based systems.

CO4: Develop and implement embedded applications using the 8051 microcontroller by employing timers, serial communication, interrupts, LCD, keyboard, and stepper motor interfacing.

CO5: Design and implement embedded system applications using ARM processors and I/O interfacing techniques while evaluating program performance and optimization.

CO-PO MAPPING : MICROPROCESSOR AND MICROCONTROLLER LAB

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CO1	3	2	1	1	-	-	-	-	-	-	-	-	-
CO2	3	2	1	1	-	-	-	-	-	-	-	-	-
CO3	3	2	1	1	-	-	-	-	-	-	1	-	-
CO4	3	2	1	1	-	-	-	-	-	-	1	-	-
CO5	3	2	1	1	-	-	-	-	-	-	1	-	-
AVG	**3**	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**0.6**	**-**	**-**

1–Low, 2–Medium, 3–High, '-' –No correlation

PERSONALITY DEVELOPMENT SKILLS			
Common to all Branches			
Course Code:	**25UPCE31**	**Course Type:**	**EEC**
L : T : P:	**0:0:2**	**Credits:**	**0 (Zero Credit)**
Total Periods:	**30 Hours**	**Evaluation:**	**Internal Assessment**
Teaching Department:	**Placement and Training Cell**		
Prerequisite:	Basic proficiency in English communication, Fundamental understanding of self–awareness and personal behavior.		

Course Objectives:

Enable students to develop a well-rounded personality by enhancing essential personal and professional skills. The course aims to foster self-awareness, effective communication, interpersonal abilities, emotional intelligence, confidence, leadership, and goal-setting strategies.

UNIT 1	**6**

Workplace and Email Etiquette: Professional Behavior and Dress Code – Email and Meeting Etiquette

Microsoft office suite: MS Word(Document Creation and Formatting) - MS Excel (Data Analysis and Functions) - MS PowerPoint (Creating Effective Presentations)

UNIT 2	**6**

Business Communication: Verbal and Non - Verbal Communication – Written Communication in Business.

Sales and Negotiations: Sales Techniques and Strategies – Negotiation Tactics and Styles.

Customer Service: Effective Communication Skills- Customer support channels and Tools

UNIT 3	**6**

Decision Making: Types of Decision Making – Decision Making models and Techniques –Cognitive Biases and Risk Assessment

Problem Solving: Problem Identification and Analysis – Creative and Critical Thinking techniques – Implementation and Evaluation techniques

UNIT 4	**6**

Interview Skills: Preparation and Research – Effective Communication and Presentation

Resume Building: Resume Formats and Structure – Tailoring Resumes for Specific Jobs

Mannerism: Body Language – Respect and Courtesy in Interactions

Behavioral skills: Emotional Intelligence – Adaptability and flexibility.

UNIT 5	**6**

Group Discussion: Effective communication and Active Listening – Leadership and Participation skills – Critical Thinking and Topic Analysis

Monk Interview: Common Interview Questions and Ideal Responses – Feedback and Self Assessment

Total Periods : 30

Course Outcomes:

After successful completion of this course, the student should be able to:

CO1: Apply workplace etiquette and use Microsoft Office tools effectively for professional communication and documentation.

CO2: Demonstrate effective communication skills in business contexts, including sales, negotiation, and customer service scenarios.

CO3: Apply structured decision-making and problem-solving techniques in professional and organizational settings.

CO4: Prepare for interviews and present oneself professionally with an effective resume, proper mannerisms, and behavioral skills.

CO5: Demonstrate confidence and clarity in group discussions and interviews through guided practice and feedback.

Textbooks:

T1. Personal Development and Soft Skills By BARUNKMITRA, Oxford Higher Education.

T2.Seven Habits of Highly Effective People by STEPHENCOVEY.

References:

R1. Communication Skills by SANJAY KUMAR, PUSHP , Oxford Higher Education

R2.Communication Skills for Professionals by NIRAKONAR, PHI learning Pvt. Ltd.

CO/PO Mapping – PERSONALITYDEVELOPMENT SKILLS

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1:	-	-	-	-	2	-	-	-	2	2	-	-	-
CO2:	-	-	-	-	-	-	-	2	2	2	-	-	-
CO3:	2	-	-	2	-	-	-	-	-	-	2	-	-
CO4:	-	-	-	-	-	-	-	-	2	2	2	-	-
CO5:	-	-	-	-	-	-	-	-	2	2	2	-	-
AVG	**0.4**	-	-	**0.4**	**0.4**	-	-	**0.4**	**1.6**	**1.6**	**1.2**	-	-

INDIAN CONSTITUTION AND HUMAN RIGHTS			
(Common to All Branches of UG Engineering Programs)			
Course Code:	**25UMCC31**	**Course Type:**	**Mandatory Course (Audit)**
Teaching Periods / Week (L:T:P):	**2:0:0**	**Credits:**	**0 (Zero)**
Total Teaching Periods:	**30**	**Evaluation:**	**Internal Assessment**
Teaching Department:	**General Engineering**		

Course Objectives:

To impart knowledge on:

1. Historical background, Preamble, and salient features of the Indian Constitution
2. Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties
3. Structure and functioning of Union, State, and Local Self Governments
4. Universal Human Rights principles and international protection frameworks
5. Contemporary human rights issues and remedial mechanisms in India

UNIT 1	INTRODUCTION TO INDIAN CONSTITUTION	6

Historical Background: Making of the Constitution - Constituent Assembly and its key members - Draft Committee. Preamble: Philosophy and Core Values - Sovereign, Socialist, Secular, Democratic, Republic - Justice, Liberty, Equality, Fraternity. Salient Features of Indian Constitution: Written Constitution - Lengthy document - Blend of Rigidity and Flexibility - Federal Structure with Unitary Bias - Parliamentary System.

Instructional Activity

Timeline Activity on Constitutional History (or) Preamble Analysis Worksheet

Teaching Learning Process	Pedagogy: Interactive Lecture, Think-Pair-Share, Video-based Learning (Documentary on Constituent Assembly), Group Discussion
	RBT Level: Apply

UNIT 2	FUNDAMENTAL RIGHTS AND DUTIES	6

Fundamental Rights (Articles 12-35): Right to Equality (Art. 14-18) - Right to Freedom (Art. 19-22) - Right Against Exploitation (Art. 23-24) - Right to Freedom of Religion (Art. 25-28) - Cultural and Educational Rights (Art. 29-30) - Right to Constitutional Remedies (Art. 32): Writs - Habeas Corpus, Mandamus, Prohibition, Certiorari, Quo Warranto. Directive Principles of State Policy (Articles 36-51): Classification - Socialistic, Gandhian, Liberal-Intellectual Principles. Fundamental Duties (Article 51A): Citizen Responsibilities - 11 Duties. Relationship and Conflict between Fundamental Rights and

Directive Principles.		
Instructional Activity		
Case Study Analysis on Landmark Supreme Court Judgments (or) Mock PIL Filing Exercise (or) Rights Violation Scenario Analysis		
Teaching Learning Process	Pedagogy: Case Study Method, Role Play (Mock Court), Jigsaw Activity, Debate Session (FR vs DPSP), Scenario-based Learning, Problem-Based Learning	
	RBT Level: Apply	
UNIT 3	**UNION AND STATE GOVERNMENT STRUCTURE**	**6**
Union Executive: President - Election, Powers, Position - Vice-President - Prime Minister and Council of Ministers - Cabinet Committees. Union Legislature: Parliament - Lok Sabha and Rajya Sabha - Composition, Functions - Legislative Process - Bill to Act. State Executive: Governor - Chief Minister - State Council of Ministers. State Legislature: Legislative Assembly and Council - State Law-making Process. Centre-State Relations: Legislative, Administrative, and Financial Relations - Role of Finance Commission. Local Self Government: 73rd Amendment (Panchayati Raj) - 74th Amendment (Urban Local Bodies) - Three-tier System.		
Instructional Activity		
Flowchart Creation (Bill to Law) (or) Field Visit Report on Local Panchayat/Municipality		
Teaching Learning Process	Pedagogy: Simulation Exercise, Collaborative Learning, Comparative Analysis (Venn Diagrams), Field Visit/Virtual Tour, Guest Lecture by Government Official	
	RBT Level: Apply	
UNIT 4	**HUMAN RIGHTS: CONCEPTS AND FRAMEWORKS**	**6**
Evolution of Human Rights: Historical Development - Natural Rights Theory - Magna Carta - French Declaration - American Bill of Rights. Universal Declaration of Human Rights (UDHR) 1948: 30 Articles - Civil, Political, Economic, Social, Cultural Rights. International Human Rights Instruments: ICCPR - ICESCR - CEDAW - CRC - CAT - CERD. Human Rights in Indian Constitution: Part III and Part IV Provisions. National Human Rights Commission (NHRC): Composition - Functions - Powers - Procedure. State Human Rights Commissions - National Commission for Women, SC, ST, Minorities.		
Instructional activities		

NHRC Case Study Analysis		
Teaching Learning Process	Pedagogy: Video Case Study, Seminar Presentation	
	RBT Level: Apply	
UNIT 5	**CONTEMPORARY HUMAN RIGHTS ISSUES**	**6**
Rights of Vulnerable Groups: Women (POSH Act, Domestic Violence Act) - Children (POCSO, JJ Act) - Elderly (Maintenance Act) - Persons with Disabilities (RPWD Act 2016). Rights of Marginalized Communities: SC/ST (Prevention of Atrocities Act) - Minorities - LGBTQ+ (Navtej Singh Johar Case). Right to Information (RTI Act 2005): Provisions and Application. Right to Education (RTE Act 2009). Environmental Rights: Right to Clean Environment - Sustainable Development - PIL on Environmental Issues. Digital Rights: Right to Privacy (Puttaswamy Case) - Data Protection - Cyber Rights. Human Rights Violations and Remedies: Legal Aid - Grievance Redressal Mechanisms.		
Instructional activities		
RTI Application Drafting Workshop (or) Case Study on HR Violations		
Teaching Learning Process	Pedagogy: Problem-Based Learning, Panel Discussion, RTI Workshop	
	RBT Level: Apply	
Total Periods: 30		
Suggested Activities and Evaluation Methods:		
Active Learning: Case Studies, Role Play, Mock Court/Parliament, Group Discussions, Debates, Panel Discussions Practical Activities: RTI Application Drafting, Field Visits to Panchayat/Municipal Offices, Digital Tools: Kahoot Quizzes, Mentimeter Polls, Online Discussion Forums, Digital Portfolios Assessment Methods: Entry/Exit Tickets, One-Minute Papers, Peer Review, Reflective Journals, Group Presentations Evaluation: CAT, Model Exam, Continuous Assessment through Formative Activities, End-Semester Viva-voce/Written Test		
Course Outcomes:		

After successful completion of this course, the student should be able to:

CO1 Understand the historical background of the Indian Constitution, the role of the Constituent Assembly and Drafting Committee, the philosophy and core values of the Preamble, and the salient features of the Indian Constitution.

CO2 Describe the Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties, including constitutional remedies and writs, and explain their relationship through judicial interpretations.

CO3 Understand the structure, powers, and functions of the Union, State, and Local Self Governments, including legislative processes and Centre–State relations under the Indian Constitution.

CO4 Apply the concepts and principles of human rights to identify international human rights frameworks and analyze the role of constitutional and statutory bodies in human rights protection in India.

CO5 Apply constitutional provisions, laws, and remedial mechanisms to analyze contemporary human rights issues, including those related to vulnerable groups, digital rights, environmental rights, and grievance redressal systems.

Textbooks:

T1: D.D. Basu, "Introduction to the Constitution of India", 24th Edition, LexisNexis, 2020.

T3: S.K. Kapoor, "Human Rights Under International Law and Indian Law", Central Law Agency, 2018.

References:

R1: Granville Austin, "The Indian Constitution: Cornerstone of a Nation", Oxford University Press, 2019.

R2: J.N. Pandey, "Constitutional Law of India", 57th Edition, Central Law Agency, 2020.

R3: P.M. Bakshi, "The Constitution of India", Universal Law Publishing, 2020.

Web Links and Video Lectures (e-Resources):

1. Constitution of India - https://legislative.gov.in/constitution-of-india
2. National Human Rights Commission - https://nhrc.nic.in
3. SWAYAM Course on Indian Constitution - https://swayam.gov.in
4. NPTEL Course on Constitution of India - https://nptel.ac.in

CO-PO & PSO Mapping - INDIAN CONSTITUTION AND HUMAN RIGHTS

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2

CO1	-	-	-	-	-	2	2	-	-	-	1	-	-
CO2	-	-	-	-	-	3	3	1	1	-	2	-	-
CO3	-	-	-	-	-	2	2	1	-	-	1	-	-
CO4	-	-	-	-	-	3	2		2	-	2	-	-
CO5	-	-	-	-	-	3	3	2	2	-	2	-	-
AVG	-	-	-	-	-	**2.6**	**2.4**	**1.3**	**1.7**	-	**1.6**	-	-
1 - Low, 2 - Medium, 3 - High													