School of Engineering and Technology

Program:

Batchelor of Technology – CSE (Four Years Course)

2018-22

Programme Educational Objective (PEO)

Programme Outcomes (POs)

Programme Specific Outcomes (PSOs)

Course Outcomes (COs)

and

Lesson Plans

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RNB
GLOBAL UNIVERSITY
Educating stars for tomorrow

RNB GLOBAL UNIVERSITY

RNB Global City, Ganganagar Road,

Bikaner, Rajasthan 334601

Batchelor of Technology – CSE (Four Years Course)

1. Vision

To deliver a high-quality education that will produce engineers of the highest caliber, equipped with the newest information and cutting-edge concepts in computer science engineering to fulfil the demands of industry and society.

2. Mission

- To create an academic setting for the growth of professionals equipped with the knowledge, abilities, values, and self-assurance to assume leadership positions in the field of computer science and engineering.

- To promote a culture of research that produces knowledge and cutting-edge technologies that aid in the society's sustainable development.

- To improve academic collaborations for international exposure.

3. PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1: To produce studentswith strong foundation of knowledge and skills in the field of computer science and engineering.

PEO2: To produce students who are employable in private/public sector/research organizations or work as an entrepreneur.

PEO3: To produce students who can provide solutions to problems in their profession by applying computer engineering theory and practices.

PEO4: To produce graduates who can provide leadership and are effective in multidisciplinary environment.

4. PROGRAMME OUTCOMES (POs)

Engineering Graduates will be able to:

PO1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

PO3: Design/Development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitation.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

5. **PROGRAMME SPECIFIC OUTCOMES (PSOs)**

PSO1: The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics and networking for efficient design of computer-based systems of varying complexity.

PSO2: The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur and a zest for higher studies/employability in the field of Computer Science & Engineering.

PSO3: Cultivate the field of computing and its latest trends, to pursue teaching, research & development activities and to work effectively in a team.

COURSE OUTCOMES

6.1 Semester - I		
Course	**Course Outcomes: - After completion of these courses' students should be able to**	
19002200 – Introduction to Programming with C	**CO1:**	Illustrate the programming tasks using techniques learned and write pseudo-code.
	CO2:	Identify situations where computational methods and computers would be useful.
	CO3:	Given a computational problem, identify and abstract the programming task involved.
	CO4:	Analyse the right data representation formats based on the requirements of the problem.
	CO5:	Create the logics for the programs.
19002300 - Programming with C Lab	**CO1:**	Illustrate the knowledge on various parts of a computer.
	CO2:	Design a flowchart and Apply algorithms for every C program.
	CO3:	Develop C program solving skills.
	CO4:	Analyse the tracing and debugging of a program.
	CO5:	Create the programs and identify the outcomes.
19000800 - Electronics and Electrical Technology	**CO1:**	Illustrate the knowledge of basic electrical and electronics technology.
	CO2:	Demonstration on general structure of power /Supply System.
	CO3:	Utilize knowledge about battery technology.
	CO4:	Make use of knowledge about the single phase and three base electrical circuits.
	CO5:	Evaluate the outcomes with the actual outcomes.
19000900- Electronics and Electrical Technology Lab	**CO1:**	Choose meters and instruments for measurement of quantities.
	CO2:	Illustrate and experiment potential divider circuits.
	CO3:	Experimentally verify the basic circuit theorems.
	CO4:	Contrast power and power factor using AC circuits.
	CO5:	Perform the experiments based on the evaluations.
19000600- Manufacturing Processes	**CO1:**	Find fluid mechanics concepts design notches, flow measuring devices.
	CO2:	Demonstrate various thermodynamics concepts and Contrast real life engineering problems (engines compressor).
	CO3:	Make use of various fluid machineries to design pumps turbines.
	CO4:	Design and Build of various power plants.
	CO5:	Evaluate the outcomes with the actual outcomes.
19000700-	**CO1:**	Define the tools for welding, carpentry and plumbing operations.

Manufacturing Process/Workshop Lab	**CO2:**	Make use of basic fabrication techniques and apply for carpentry and plumbing practices.
	CO3:	Make use of basic fabrication techniques of different types of welding and basic machining practices.
	CO4:	Design and Build of various fabrication techniques.
	CO5:	Perform the experiments based on the evaluations.
19000100-Applied Mathematics- I	**CO1:**	Illustrate vector calculus and to Demonstrate the electromagnetic field.
	CO2:	Make use of the physical interpretation of the gradient, divergence, and curl.
	CO3:	Discover the ideas and techniques of linear algebra, and to illustrate some of their applications in engineering.
	CO4:	Prepare to evaluate multiple integrals in rectangular, polar, spherical and cylindrical coordinates.
	CO5:	Justify the polar theory techniques to solve real world problems.
19000200-Applied Physics-I	**CO1:**	Define the structure and various planes in a crystals, study its properties and use for applications.
	CO2:	Illustrate of fee electron theory to study the material properties and understand its use in engineering applications and studies.
	CO3:	Build the knowledge of modern physics and quantum mechanics; solve the engineering problems using the concept of wave particle dualism in modern day applications.
	CO4:	Elaborate the basic principle and concepts of light to construct lasers and optical fibers, impart the knowledge and develop skills to use modern instruments.
	CO5:	Justify the quantum mechanics theory techniques to solve real world problems.
19000300-Applied Physics-I Lab	**CO1:**	Illustrate the concepts of diffraction and interference of light by using diffraction grating and Newton's ring.
	CO2:	Identify the characteristics of Zener diode, photo diode, transistor by utilizing the concepts of semiconductors physics.
	CO3:	Discover the ability to use various passive electrical components, determine Dielectric constant and electrical resonance.
	CO4:	Evaluate the concepts of quantum mechanics to verify the Stefan's law and understand Fermi energy in metals.
	CO5:	Create a experiment on newton's rings
19001100-Ability & Skill Enhancement - I	**CO1:**	Understand the relevance and method of writing impactful and structured resume.
	CO2:	Explain the need for right etiquettes to be followed in the professional world.
	CO3:	Develop confidence in public speaking and expressing their opinions and

		ideas clearly and effectively.
	CO4:	Buildemployability skills like critical thinking, team work, conflict management and leadership skills.
	CO5:	Communicate effectively in English.
99002200-Business Communication	**CO1:**	Explain historicalbackground and the development of communication; Importance and role of communication in everyday life.
	CO2:	Understand Mechanics behind the communication process, difficulties experienced in communication. Different types of communication, impedance due to extraneous factors called "barriers"
	CO3:	Apply different types of communication, impedance due to extraneous factors called "barriers".
	CO4:	Analyse the Important non-verbal parameters in communication. So to make communication effective and attractive
	CO5:	Apply the appropriate body language for making presentation more effective
99002800-Workshops & Seminars	**CO1:**	Relate to the concept of cognitive development and Big Five personality characteristics.
	CO2:	Explain the basic fundamentals of Emotional Intelligence.
	CO3:	Develop ability to practice new problem-solving skills in a group and use these skills in personal life.
	CO4:	Build coping strategies and adapt balanced self- determined behaviour.
	CO5:	Create leadership skills to be effective as a manager.
99002700-Human Values & Social Service/NCC/NSS	**CO1:**	Find about the working and mechanism of human nature.
	CO2:	Classify and explain group behavior at organizational level and individual level.
	CO3:	Organize and plan organizational change and stress management practices.
	CO4:	Discover various human values and their importance in real world.
	CO5:	Evaluate the hierarchy of human values.

19002200	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2					3	2		3
CO2	3	3	2	3	3	3	3	2	3		2	3
CO3	3	3	3	2	3	3	3	2	3	3	3	3
CO4	2	2	3	2	3	3	3	3	3	3	3	3
CO5	3	3	2	2		2			3	2	2	3

19002300	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		3	3	3	3	3	3	3
CO2	2	2	3	2	3	3	3	3	3	3	3	3
CO3	2	2	2	3	3				3	3	3	3
CO4	3	3	2	2	3				3	3	3	3
CO5	3		2	2	3				3	2	2	3

19000800	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2			3	3	3	3	2	3
CO2	3	3	3	3	2		3	3	2	3	3	3
CO3	2	2	2	3	3	3			3		3	3
CO4		2	3	3	3	3	3	3	3	2	3	3

19000900	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		3	3	3	3	3	3	3
CO2	2	2	3	2	3	3	3	3	3	3	3	3
CO3	2	2	2	3	3				3	3	3	3
CO4	3	3	2	2	3				3	3	3	3
CO5	3		3	2					2	3	2	3

19000600	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2			3	3	3	3	2	3
CO2	2	3	2	3	2		3	3	2	3	2	3
CO3	3	2	2	3	2	3			3		3	3
CO4		2	3	2	3	3	3	3	3	2	3	3
CO5	3		3		2	2	3	3	2	2		3

19000700	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		3	3	3	3	3	2	3
CO2	2	3	3	2	3	2	2	3	3	2	3	3
CO3	2	2	2	2	3				2	3	3	3
CO4	2	3	3	2	3				3	3	3	3
CO5	3		2		3				2			3

19000100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2			3	3	3	3	2	3
CO2	3	2	3	3	2		3	3	2	3	3	3
CO3	2	2	2	2	3	3			3		3	3
CO4		2	3	2	2	2	3	2	3	2	3	3
CO5	2				2	3	3			3	2		2

19000200	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2			3	3	3	3	2	3
CO2	2	3	3	3	3		3	3	2	3	3	3
CO3	2	2	2	2	2	3			3		3	3
CO4		2	3	2	2	2	3	2	3	2	3	3
CO5	2		3	3	3	3		3				2

19000300	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		3	3	3	3	3	2	3
CO2	3	3	3	2	3	2	2	3	3	2	3	3
CO3	2	2	2	2	3				2	3	3	3
CO4	2	2	3	2	3				3	3	3	3
CO5	3		3		3				3		2	3

19001100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	3	3	2	2	3		2	-	3
CO2	-	2	3	3	2		-	-	2	2	-	3
CO3	2	-		3	3	2	-	3	2	-	2	3
CO4	2		2	2		-	-	-	-	2	2	1
CO5	3	2	3	2	3	-	-	2	-	2	2	2

99002200	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	2			2	2		2	2	2
CO2		3	2	2	2	2		2	2	3	2	3
CO3		3	2	3	3	2	2	3	3	3	3	2
CO4			2	3	3	2	3	3	2	2		3
CO5	3	2	3	2	3		3	2	2	2	2	2

99002800	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	-	3	-	2	3	2	-	3	3
CO2	2	3	3	3	-	2	2	2	3	2	-	3
CO3	2	3	2	3		-	-	-	2	3	2	
CO4	2		3	2	3	-	-	2	3	-	3	2
CO5	3	3	3	3	3	3	3	3	3	3	3	3

99002700	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	2	3	-	3	2	3	2	-	3	3
CO2	2	3	-	3	2	3	-	3	2	3	2	3
CO3	3	2	3	2	-	3	2	3	3	3	3	3
CO4	2	3	2	2	3	2	2	-	2	3	2	3
CO5	2	3	2	2	3	2	3	3	-	-	2	3

6.3 Lesson Plan: Semester - I

19002200 – Introduction to Programming with C

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Introduction to Computer and Programming language	C1	Lecture
Unit I	Concept of algorithms, Flow Charts, Data Flow diagrams etc.,	C2	Lecture
Unit I	Introduction to the Editing tools such as vi or MS-VC editors,	C3	Lecture
Unit I	Concepts of the finite storage, bits bytes, kilo, mega and gigabytes.	C4	Lecture
Unit I	Concepts of character representation, Number Systems & Binary Arithmetic.	C5	Lecture
Unit I	Number Systems & Binary Arithmetic.	C6	Lecture
Unit I	Number Systems & Binary Arithmetic.	C7	Lecture
Unit I	Introduction to C History of C Overview of Procedural Programming	C8	Lecture
Unit I	Clarification Class 1	C9	Clarification Class
Unit II	Data Types, Variables, Constants,	C10	Lecture
Unit II	Operators and Basic I/O: Declaring, Defining and Initializing Variables, Scope of Variables, Using Named Constants,	C11	Lecture
Unit II	Keywords, C Data Types: int, char, float, etc, Casting of Data Types, C expressions,	C12	Lecture
Unit II	arithmetic operation, relational and logic operations,	C13	Lecture
Unit II	Using Comments in programs, Character I/O (getc, getchar, putc, putcharetc),	C14	Lecture
Unit II	Formatted and Console I/O (printf(), scanf()), Using Basic Header Files (stdio.h, iostream.h, conio.hetc), Using main() function, Example of some simple C program.	C15	Lecture
Unit II	C – Operators- Arithmetic Operators, Relational Operators, Logical Operators, Bitwise Operators, Assignment Operators	C16	Lecture
Unit II	Clarification Class 2	C17	Clarification Class
Unit II	Presentation	C18	Presentation
Unit III	Expressions, Conditional Statements and Iterative Statements:	C19	Lecture
Unit III	C - Decision Making Statements, conditional executing using if, else.	C20	Lecture
Unit III	Understanding syntax and utility of Iterative Statements (while, do-while, and for loops),	C21	Lecture
Unit III	Use of break and continue in Loops, Using Nested Statements (Conditional as well as Iterative)	C22	Lecture
Unit III	Programming Example	C23	Lecture
Unit III	Clarification Class 3	C24	Clarification Class
Unit IV	Functions and Arrays	C25	Lecture
Unit IV	Utility of functions, call by Value, call by Reference,	C26	Lecture

Unit IV	Functions returning value, Functions with variable number of Arguments.	C27	Lecture
Unit IV	Programming Example	C28	Lecture
Unit IV	Creating and Using One Dimensional Arrays (Declaring and Defining an Array, initializing an Array, accessing individual elements in an Array, manipulating array elements using loops),	C29	Lecture
Unit IV	Two dimensional Arrays (Declaring, Defining and Initializing Two Dimensional Array, Working with Rows and Columns),	C30	Lecture
Unit IV	Programming of 2D Array	C31	Lecture
Unit IV	Introduction to Multi-dimensional arrays.	C32	Lecture
Unit IV	Clarification Class 4	C33	Clarification Class
Unit IV	Class Room Assignment 1	C34	Class Assignment
Unit IV	Webinar 1	C35	Webinar
Unit IV	Guest lecture 1	C36	Guest lecture
Unit V	Pointers Understanding a Pointer Variable, Simple use of Pointers (Declaring and Dereferencing Pointers to simple variables),	C37	Lecture
Unit V	Pointers Understanding a Pointer Variable, Simple use of Pointers (Declaring and Dereferencing Pointers to simple variables),	C38	Lecture
Unit V	Programming Example	C39	Lecture
Unit V	Pointers to Pointers, Passing pointers as function arguments,	C40	Lecture
Unit V	Returning a pointer from a function, using arrays as pointers, Passing arrays to functions,	C41	Lecture
Unit V	Structures and Unions,	C42	Lecture
	Clarification Class 5	C43	Clarification Class
	Webinar 2	C44	Webinar
	Guest lecture 2	C45	Guest lecture
	Take Home Assignments		Home Assignments

19002300 – Programming with C Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Write a program sum of two numbers	P1-P2	Practical
2	Write a program to check either the number is even or odd	P3-P4	Practical
3	Write a program calculate simple interest.	P5-P6	Practical
4	Write a program to calculate the marks of four subject and percentage.	P7-P8	Practical
5	Write a program to check either the year is leap year or not.	P9-P10	Practical
6	Write a program to find out the grade using if/else if statement.	P11-P12	Practical
7	Write a program to find out the greater number between two number.	P13-P14	Practical
8	WAP to read base and height of a triangle, calculate the area using formula: Area =1/2* base*height	P15-P16	Practical
9	WAP to read marks obtained and maximum marks of a student and calculate its percentage and display it.	P17-P18	Practical
10	Write a program to print even number up to n.	P19-P20	Practical
11	Write a program to print odd number up to n.	P21-P22	Practical
12	Write a program to print table.	P23-P24	Practical
13	Presentation	P25-P26	
14	Quiz	P27-P28	
15	Workshop	P29-P30	

19000800 – Electronics and Electrical Technology

Unit	Particulars	Class No.	Pedagogy of Class
UNIT 1	Introduction of Subjects	C1	Lecture
UNIT 1	Difference between Electrical and Electronics, Application of Electrical and Electronics	C2	Lecture
UNIT 1	Charge, Properties of charge, application of charge	C3	Lecture
UNIT 1	AC Supply System, DC Supply System, Their application and comparison	C4	Lecture
UNIT 1	KCL and KVL	C5	Lecture
UNIT 1	Parallel and Series Circuit	C6	Lecture
UNIT 1	Current Divider and Voltage divider	C7	Lecture
UNIT 1	Nodal Analysis, Superposition theorem	C8	Lecture
UNIT 1	Presentation -1	C9	Presentation
UNIT 1	Thevnin Theorem	C10	Lecture
UNIT 1	Norton Theorem, Maximum Power Transfer theorem	C11	Lecture
UNIT 1	Step Voltage Response of RL and RC Series	C12	Lecture
UNIT 1	Step Voltage Response of RL and RC Series	C13	Lecture
UNIT 1	Clarification Class -I	C14	Clarification Class
UNIT 2	SINUSOIDAL STEADY STATE RESPONSE OF CIRCUITS		
UNIT 2	Sinusoidal Steady State Response of Circuits, Phasor representation of circuit elements,	C15	Lecture
UNIT 2	Phasor Diagram	C16	Lecture
UNIT 2	Series and Parallel circuits, Power and Power Factor	C17	Lecture
UNIT 2	Amplitude of AC wave form	C18	Lecture
UNIT 2	Sine Wave Generation, Amplitude of AC waveform	C19	Lecture
UNIT 2	Phase Shift	C20	Lecture
UNIT 2	Class Assignment - 1	C21	Class Assignment
UNIT 2	Phasor Diagram-II	C22	Lecture
UNIT 2	Phasor Algebra	C23	Lecture
UNIT 2	Clarification Class -2	C24	Clarification Class
UNIT 3	MAGNETIC CIRCUITS		
UNIT 3	3 Phase Power Measurement	C25	Lecture
UNIT 3	Class Assignment -II	C26	Class Assignment
UNIT 3	Concepts of Magnetic Circuits	C27	Lecture
UNIT 3	BH Curve, Calculation of Magnetic Circuits	C28	Lecture
UNIT 3	Iron Losses	C29	Lecture
UNIT 3	Constructional Features of Transformer	C30	Lecture
UNIT 3	EMF Equations, Ideal transformer	C31	Lecture
UNIT 3	Clarification Class -3	C32	Clarification Class
UNIT 4	ROTATING ELECTRIC MACHINES		
UNIT 4	Voltage Regulation and Efficiency	C33	Lecture
UNIT 4	Guest Lecture	C34	Guest lecture
UNIT 4	Construction, Operating Principle and Application	C35	Lecture
UNIT 4	DC Motor and 3 Phase DC Motor	C36	Lecture
UNIT 4	Clarification Class - 4	C37	Lecture
UNIT 5	ENERGY MANAGEMENT		
UNIT 5	Electrical Safety and Standard	C38	Lecture
UNIT 5	Home Assignment - I		Home Assignments
UNIT 5	Seminar	C39	Seminar

UNIT 5	P-N diode, BJT	C40	Lecture
UNIT 5	SCR, FET, MOSFET	C41	Lecture
UNIT 5	V-I Characteristics	C42	Lecture
UNIT 5	Rectifier	C43	Lecture
UNIT 5	Clarification Class -5	C44	Clarification Class
UNIT 5	Webinar	C45	Webinar

19000900– Electronics and Electrical Technology Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	To get familiar with following instruments CRO, Multimeter, Function Generator and Power Supply	P1-P2	Practical
2	Verification of Superposition Theorem, Thevenin Theorem	P3-P4	Practical
3	Resistor Color Coding	P5-P6	Practical
4	Verification of Logic Gates, Superposition Theorem	P7-P8	Practical
5	Universal gates	P9-P10	Practical
6	Resistor Color Coding Revision	P11-P12	Practical
7	V-I Properties of Diode	P13-P14	Practical
8	V-I Properties of Zener Diode	P15-P16	Practical
9	Fluorescent Lamp	P17-P18	Practical
10	Half wave Rectifier	P19-P20	Practical
11	Presentation	P21-P22	Practical
12	Activity	P23-P24	Activity
13	Quiz	P25-P26	Practical
14	Class Room Assignment	P27-P28	Class Assignment
15	Group Discussion	P29-P30	Group discussions

19000600– Manufacturing Processes

Unit	Particulars	Class No.	Pedagogy of Class
unit-1	INTRODUCTION		
unit-1	Introduction: Common Engineering Materials and their important Mechanical and Manufacturing Properties	C1	Lecture
unit-1	General classification of manufacturing processes. Metal casting, principle of metal casting	C2	Lecture
unit-1	patterns, their functions, types, material and pattern allowances	C3	Lecture
unit-1	characteristics of molding sand,	C4	Lecture
unit-1	types of cores. chaplets and chills; their material and functions	C5	Lecture
unit-1	Mould and their types.	C6	Lecture
unit-1	Requisites of a sound casting. Introduction to die casting.	C7	Lecture
unit-1	Clarification Class-1	C8	Clarification Class
unit-1	Class Room assignment-1	C9	Class Assignment
unit-2	METAL FORMING AND SHEARING		
unit-2	Metal forming and shearing: forging rolling, drawing, extrusion	C10	Lecture
unit-2	Bending, spinning, stretching, embossing and coining	C11	Lecture
unit-2	Die and punch operation in press work shearing piercing and blanking, notching and lancing	C12	Lecture
unit-2	clarification Class-2	C13	Clarification Class
unit-3	MACHINING PROCESSES		
unit-3	Machining Processes: principle of metal cutting, cutting tool their material and application	C14	Lecture
unit-3	Geometry of Single Point Cutting Tool	C15	Lecture
unit-3	cutting fluid and their functions basics machine tools and their application	C16	Lecture
unit-3	Introduction to Non-traditional Machining Processes: EDM, USM, CHM	C17	Lecture
unit-3	Introduction to Non-traditional Machining Processes: ECM, LBM	C18	Lecture
unit-3	clarification Class-3	C19	Clarification Class
unit-3	class Room assignment-2	C20	Class Assignment
unit-3	presentaion-1	C21	Presentation
	workshop	C22	Workshop
	Home Assignment -1		Home Assignments
unit-4	JOINING PROCESSES		
unit-4	Joining Processes: Electric Arc and Gas welding Resistance and Thermit welding	C23	Lecture
unit-4	soldering, Brazing and Braze welding	C24	Lecture
unit-4	Adhesive Bonding Mechanical Fastening (riviting, Screwing, Metal Stiching, Crimping)	C25	Lecture
unit-4	clarification Class-4	C26	Clarification Class

	Quiz	C27	Quiz
	Seminar	C28	Seminar
	Guest Lecture	C29	Guest lecture
	Activity	C30	Activity

19000700– Manufacturing Process/Workshop Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Materials: Spectrography method for finding composition of materials.	P1-P2	Practical
2	Wood/Carpentry Working Shop: Making of various joints, Pattern making.	P3-P4	Practical
3	Foundary Shop: Bench moulding with single piece pattern and two piece pattern. Floor moulding – Making of bend	P5-P6	Practical
4	Machine moulding – Making of mould using Match-plate pattern. Core making- Making and baking of dry sand cores.	P7-P8	Practical
5	Learning use of fitting hand tools, marking tools, marking gauge. Jobs made out of MS Flats, making saw.	P9-P10	Practical
6	cut filling V-cut taper at the corners, circular cut, fitting square in square, triangle in square.	P11-P12	Practical
7	Welding Shop: Electric arc welding, Edge preparations, Exercises making of various joints. Bead formation diff. posit.	P13-P14	Practical
8	Gas Welding: Oxy-Acetylene welding and cutting of ferrous metals.	P15-P16	Practical
9	Soldering: Dip soldering. Brazing: With Oxy-Acetylene gas.	P17-P18	Practical
10	Sheet Metal Shop: Learning use of sheet-metal tools,	P19-P20	Practical
11	Exercises: Making jobs out of GI sheet metal. Cylindrical, Conical and Prismatic shapes.	P21-P22	Practical
12	Black smithy Shop Aim: To make an S-hook from a given round rod, by following hand forging operation.	P23-P24	Practical
13	To make an S-hook from a given round rod, by following hand forging operation.	P25-P26	Practical
14	To make a Square rod from a given round rod, by following hand forging operation.	P27-P28	Practical
15	Project Shop: Extrusion of soft metals, Plastic coating of copper wires, Plastic moulding.	P29-P30	Practical

19000100– Applied Mathematics- I

Unit	Particulars	Class No.	Pedagogy of Class
I	Successive differentiation: a) Introduction b) Calculation of 1st, 2nd, 3rd & higher order derivatives	C1-C2	Lecture
I	Calculation of nth derivative: some standard results Application of successive differentiation Leibnitz's theorem: Introduction, statement	C3-C5	Lecture
	Assignment - I		Home-Assignment
I	Clarification Class	C6	Clarification Class
I	Cartesian Graphing with First and Second Derivatives	C7 - C8	Lecture
	Assignment - II		Home Assignments
I	Asymptotes and Dominant terms Graphing of Polar curves Polar Equations for Conic Sections.	C9 - C12	Home Assignments
II	Introduction to Sequences, Infinite Series	C13	Lecture
II	Tests for Convergence/Divergence: Limit Comparison Test	C14-C15	Lecture
	Assignment - III		
II	Ratio Test		Home Assignments
II	Root Test	C18-C19	Lecture
II	Integral Test	C20-C21	Lecture
	Assignment - IV		
II	Cauchy Condensation Test		Class Assignment
III	Alternating series: Absolute Convergence and Conditional Convergence.	C24-C25	Lecture
III	Series Expansions: a) Power Series b) Taylor Series	C26-C28	Lecture
III	Integration, Differentiation, Multiplication and Division Process in Power Series	C29-C30	Lecture
	Assignment - V		
III	Partial Differentiation: a) Functions of Several variable b) Limits and Continuity		Class Assignment
III	Chain Rules Change of Variables Partial Differentiation of implicit Functions	C33-C34	Lecture
III	Taylor Series of Two Variables	C35-C36	Lecture
III	Directional Derivatives and its Properties Jacobian of Transformation	C37-C38	Lecture
	Assignment - VI		
IV	Maxima and Minima by Using Second Order Derivatives.		Home Assignments
IV	Vector Calculus: Rules for Differentiations	C40-C41	Lecture
IV	Tangent Vector	C42-C43	Lecture
IV	Velocity and Acceleration Vectors, Normal Vector	C44-C45	Lecture
	Assignment - VII	C46-C47	Class Assignment
IV	Double Integrals		Take Home Assignments
IV	Change of Order of Integration, Change of Variables	C48-C49	Lecture

V	Triple Integrals, Application of Multiple Integrals to Areas and Volumes.	C50-C53	Lecture
V	Gradient, Divergence	C54	Lecture
V	Curl, Line Integrals	C55	Lecture
V	Green's Theorem in Plane	C56	Lecture
V	Assignment - VIII	C57	Class Assignment
V	Classification and Construction of Differential Equations		Home Assignments
V	Exact Differential Equations	C58	Lecture
V	Riccati Equation	C59	Lecture
V	Claiurat Form	C60	Lecture

19000200– Applied Physics-I

Unit	Particulars	Class No.	Pedagogy of Class
I	Sound Waves:		
I	Introduction to sound waves, Reverberation.	C1	Lecture
I	Eyring's Formula, Absorption coefficient	C2	Lecture
I	Conditions for good acoustical design	C3	Lecture
I	Production and detection of ultrasonic waves	C4	Lecture
I	Numericals	C5	Lecture
I	Applications of ultrasonic waves	C6	Lecture
I	Clarification Class I	C7	Clarification Class
II	Electromagnetic Waves:		
II	Introduction to EMW; Maxwell's equations in differential and integral forms,	C8	Lecture
II	Introduction to EMW; Maxwell's equations in differential and integral forms,	C9	Lecture
II	Class Room Assignment I	C10	Class Assignment
II	Concept of displacement current, Conduction current	C11	Lecture
II	Electromagnetic wave equations for free space,	C12	Lecture
II	Electromagnetic wave equations for free space,	C13	Lecture
II	Electromagnetic wave equations for Conducting medium,	C14	Lecture
II	Electromagnetic wave equations for dielectric medium,	C15	Lecture
II	Poynting theorem.	C16	Lecture
II	Poynting theorem.	C17	Lecture
II	Concept of wave guides.	C18	Lecture
	Concept of wave guides.	C19	Lecture
	Workshop	C20	Workshop
II	Take Home Assignment-I		Home Assignments
II	Clarification Class II	C21	Clarification Class
III	Light: Interference:		
III	Interference in thin films, wedge-shaped films, non-reflecting films,	C22	Lecture
III	Interference in thin films, wedge-shaped films, non-reflecting films,	C23	Lecture
III	Interference in thin films, wedge-shaped films, non-reflecting films,	C24	Lecture
III	Newton rings.	C25	Lecture
III	Newton rings.	C26	Lecture
	Activity I	C27	Activity
III	Michelson interferometer,	C28	Lecture
III	Michelson interferometer,	C29	Lecture
III	Diffraction: single, double and multiple slits, Dispersive and resolving powers.	C30	Lecture
III	Polarization, its production, and detection	C31	Lecture
III	Polarization, its production, and detection	C32	Lecture
III	Clarification Class III	C33	Clarification Class

	Activity II	C34	Activity
IV	Quantum Mechanics:		
IV	Origin of quantum hypothesis,	C35	Lecture
IV	de-Broglie hypothesis of matter waves,	C36	Lecture
IV	Numericals	C37	Lecture
IV	Uncertainty principle,	C38	Lecture
IV	Wave function and wave mechanics,	C39	Lecture
IV	Schrodinger equation: steady state form,	C40	Lecture
IV	Quantum mechanical operators,	C41	Lecture
IV	Expectation value,	C42	Lecture
IV	One dimensional solutions: zero potential, potential step	C43	Lecture
IV	Potential Barrier	C44	Lecture
	Class Room Assignment II	C45	Class Assignment
IV	Potential Well	C46	Lecture
IV	Potential Well	C47	Lecture
IV	Presentation	C48	Presentation
IV	Clarification Class IV	C49	Clarification Class
V	Lasers:		
V	Basic concepts,	C50	Lecture
V	Laser properties	C51	Lecture
V	Laser systems: Ruby laser	C52	Lecture
V	Nd:YAG laser	C53	Lecture
	Quiz	C54	Quiz
V	He-Ne Laser	C55	Lecture
V	Excimer	C56	Lecture
V	Excimer	C57	Lecture
V	Semiconductor lasers	C58	Lecture
V	Semiconductor lasers	C59	Lecture
V	Clarification Class V	C60	Clarification Class

19000300– Applied Physics-I Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Introduction to Physics Lab	P1-P2	Practical
2	To find the refractive index and Cauchy's constant of a prism using spectrometer	P3-P4	Practical
2	To find the refractive index and Cauchy's constant of a prism using spectrometer	P5-P6	Practical
3	To determine the wavelength of Sodium light by Newton's ring	P7-P8	Practical
4	To compare the capacitances of two condensers by De-Sauty's bridge method using Head Phone	P9-P10	Practical
5	To study the characteristics of a PN diode	P11-P12	Practical
5	To determine the Resolving Power of a Telescope	P13-P14	Practical
	To find unknown capacitence by the help of De Sauty's bridge	P15-P16	Practical
7	To find the acceleration due to gravity by simple Pendulum.	P17-P18	Practical
8	To determine the characteristics of Zener diode	P19-P20	Practical
9	To determine the Moment of Inertia of a fly wheel about its own axis of rotation	P21-P22	Practical
10	To determine the band gap of a semiconductor	P23-P24	Practical
11	To determine the frequency of electrically maintained tuning fork by Melde's method	P25-P26	Practical
12	Charging and discharging of a capacitor	P27-P28	Practical
13	To study the V-I characteristics using a solar cell	P29-P30	Practical

19001100– Ability & Skill Enhancement – I

Unit	Particulars	Class No.	Pedagogy of Class
UNIT I	Sentence and its types	C-1	Lecture
UNIT I	Story Writing	C-2	Activity
UNIT I	Ice Breaking Session: Introduction to ASE, Introduction and overview of the course	C-3,4	Lecture
UNIT I	Word Classes (Parts of Speech) , Phrases Clauses	C-5	Lecture
UNIT II	Tenses - Present Tense	C-6	Lecture
UNIT II	Present Tenses: Written & spoken exercise	C-7	Activity
UNIT II	Tenses – Past Tense	C-8	Lecture
UNIT II	Past Tenses: Written & spoken exercise	C-9	Activity
UNIT II	Tenses – Future Tense	C-10	Lecture
UNIT II	Future Tenses: Written & spoken exercise	C-11	Activity
	Class Room Assignment	C-12	Class Assignment
UNIT II	Modals & Exercises	C-13	Lecture
UNIT II	Articles	C-14	Lecture
UNIT II	Articles: Exercise	C-15	Activity
	Presentation	C-16	Presentation
	Clarification Class	C-17	Clarification Class
UNIT III	Reading Skills: Reading Process, Importance & Types of Reading, Techniques of Reading, and Strategies to Improve Reading Abilities	C-18	Lecture
UNIT III	Reading aloud, Reading News	C-19	Class Assignment
UNIT III	Reading Comprehension	C-20	Lecture
UNIT IV	Writing Skills: Generating ideas/gathering data, organizing ideas, Note taking, Outlining, drafting, Editing, and Proof Reading,	C-21	Lecture
UNIT IV	Story Writing (through pictures/videos)	C-22	Class Assignment
UNIT IV	Email Writing	C-23	Lecture
UNIT IV	Dialogue Writing	C-24	Lecture
UNIT IV	News Writing	C-25	Activity
	Presentation	C-26	Presentation
UNIT V	Types and Essentials of good listening, Listening Process, Barriers to Listening and Strategies to improve Listening	C-27	Lecture
UNIT V	Listening to Inspirational Movies/Clips	C-28	Activity
UNIT V	Listening News	C-29	Activity
UNIT V	Techniques of Effective Speaking	C-30	Lecture
UNIT V	Introducing Oneself and others	C-31	Activity
UNIT V	Situational Conversations (Practicing Short Dialogues)	C-32	Class Assignment
UNIT V	Public Speaking	C-33	Lecture
UNIT V	Extempore	C-34	Lecture
UNIT V	Extempore	C-35	Class Assignment
	Webinar	C-36	Webinar
	Guest Lecture	C-37	Guest lecture

99002200– Business Communication

Unit	Particulars	Class No.	Pedagogy of Class
UNIT I	Process of Communication (What is communication)	C1	Lecture
UNIT I	Importance of Communication	C2	Lecture
UNIT I	Seven C's of Communication	C3	Lecture
UNIT I	Types of Communication - Verbal	C4	Lecture
UNIT I	Types of Communication- Non Verbal	C5	Lecture
UNIT I	Types of Communication (Formal & Informal)	C6	Lecture
UNIT I	Types of Communication (Interpersonal & Interapersonal)	C7	Lecture
UNIT I	Different forms of Communication Barriers to Communication Causes, Linguistic Barriers, Psychological Barriers	C8	Lecture
UNIT I	Interpersonal Barriers, Cultural Barriers	C9	Lecture
UNIT I	Physical Barriers, Organizational Barriers	C10	Lecture
	Classroom Assignment on JAM	C11-C13	Class Assignment
	Clarification Class	C14	Clarification Class
Unit II	Preparing the Resume	C15	Lecture
Unit II	Job Application Letter	C16	Lecture
	Classroom Exercise	C17	Activity
Unit II	Letter Writing	C18-20	Lecture
Unit II	Inviting quotations, Sending quotations, Placing orders	C21	Lecture
Unit II	CV Preparation	C22	Lecture
Unit II	Claim & Adjustment letters, Inviting tenders, Sales letters	C23	Lecture
Unit II	Social Correspondence	C24	Lecture
Unit II	Memorandum, Inter -office Memo,	C25	Lecture
Unit II	Notices	C26	Lecture
Unit II	Agenda	C27	Lecture
Unit II	Minutes	C28	Lecture
	Group Discussion	C29	Group Discussion
	Class Presentation	C30-C33	Presentation
	Clarification Class	C34	Clarification Class
	Home Assignment		Home Assignment
	Quiz	C35	Quiz
	Classroom Exercise	C36-C37	Activity
Unit III	Business reports	C38	Lecture
Unit III	Business Reports: Types, Characteristics	C39	Lecture
Unit III	Business Reports: Importance	C40	Lecture
Unit III	Business Reports: Elements of structure	C41	Lecture
Unit III	Business Reports: Process of writing, Order of writing	C42	Lecture
Unit III	Business Reports: the final draft	C43	Lecture
Unit III	check lists for reports	C44	Lecture
	Classroom Assignment	C45	Class Assignment
	Clarification Class	C46	Clarification Class
Unit IV	Words often confused	C47	Lecture

Unit IV	Words often misspelt	C48	Lecture
Unit IV	Common errors in English	C49	Lecture
	Classroom Exercise	C50	Activity
	Group Discussion	C51	Group Discussion
	Clarification Class	C52	Clarification Class
Unit V	Oral Presentation: Importance, Characteristics, Presentation Plan	C53	Activity
Unit V	Power point Presentation Slide Preparation	C54	Lecture
Unit V	Visual aids	C55	Lecture
	Classroom Exercise	C56	Activity
	Clarification Class	C57	Clarification Class
	Guest Lecture	C58	Guest Lecture
	Webinar	C59	Webinar
	Seminar	C60	Seminar

7.1 Semester – II		
Course	**Course Outcomes: - After completion of these courses' students should be able to**	
19001800-Applied Mathematics-II	**CO1:**	Define the basic definition and properties of partial differentiation of functions of several variables and to learn to use this to solve problems related to maxima and minima.
	CO2:	Define and find the solution of constant coefficient differential equations.
	CO3:	Explain the notion of convergence of numerical sequences and series and learn ways of testing convergence.
	CO4:	Make use of the basic results about the properties of Fourier transform and Fourier series and its convergence.
	CO5:	Apply coefficient differential equations to solve various problems.
19001900-Applied Physics-II	**CO1:**	Define Fiber Optics and Holography Technology.
	CO2:	Explain the basic definition and properties of Insulators, Semiconductors and Conductors.
	CO3:	Make use of the properties of superconducting materials and super-conductor with Josephson theory.
	CO4:	Distinguish the Atomic & Nuclear Physics.
	CO5:	Create experiment on Holography Technology.
19002000-Applied Physics Lab-II	**CO1:**	Explain the Newton's Ring principles.
	CO2:	Illustrate the nature of experimental errors and practical means to estimate errors in acquired data.
	CO3:	Apply theoretical principles of modern physics to analysis and measurements performed in the laboratory.
	CO4:	Plan the experiments related to the subject and apply the practical knowledge in industrial applications and for developing or modifying methods.
	CO5:	Create experiment on Holography Technology.
19002100-Engineering Graphics	**CO1:**	Explain the writing skills, use ability in legible writing letters and numbers.
	CO2:	Make use of basic sketching techniques and instrumental drawing.
	CO3:	Apply orthographic projections of different objects irrespective of number of dimensions and to develop pictorial views.
	CO4:	Analyse the practice and standards in technical drawing.
	CO5:	Able to create instrumental drawing.
19002500-Engineering	**CO1:**	Classify an engineering artifact.
	CO2:	Build the design idea/concept graphically.

Graphics Lab	**CO3:**	Explain and interpret 2D drawings.
	CO4:	Develop parametric design and the conventions of formal engineering drawing.
	CO5:	Able to create instrumental drawing.
19000400-Applied Chemistry	**CO1:**	Illustrate basic knowledge in water analysis and suitable water treatment method.
	CO2:	Identify an idea on the type of polymers to be used in engineering applications.
	CO3:	Build the awareness about new materials.
	CO4:	Create the knowledge on the effects of corrosion and protection methods will help the young minds to choose proper metal / alloys and also to create a design that has good corrosion control.
	CO5:	Evaluate the water quality by using water treatment method.
19000500-Applied Chemistry Lab	**CO1:**	Explain the EDTA method.
	CO2:	Plan to get some good training in accurate and precise data collection.
	CO3:	Apply the experiments related to the subject and applies the practical knowledge in industrial applications and for developing or modifying methods.
	CO4:	Create methodology to control the corrosion.
	CO5:	Evaluate the water quality by using water treatment method.
19002400-Basic Mechanical Engineering	**CO1:**	Illustrate the scope of engineering, especially Mechanical Engineering and its impact on society.
	CO2:	Explain the different fields of applications of Mechanical Engineering and its interrelationship with other fields of science and engineering.
	CO3:	Identify heat, work, internal energy, enthalpy for flow & non flow process using Firstand Second Law of Thermodynamics.
	CO4:	Interpret behavior of pure substances and its applications to practical problems.
	CO5:	Evaluate the pure substance by the different applications.
99001900-Environmental Studies	**CO1:**	Tell different ecosystems, natural resources and environmental pollution.
	CO2:	Summarize biodiversity and its conservation.
	CO3:	Apply the values, feelings and participation of society in protection activities of the environment.
	CO4:	Discover the use of skills in identification of natural resources and their management practices.
	CO5:	Explain different Environmental laws and policies.
19001100-Ability	**CO1:**	Select the correct phonetic symbols for improving language

& Skill Enhancement – II	**CO2:**	Operate reading and writing skills in English
	CO3:	Prepare listening and speaking skills in English
	CO4:	Focus in understanding the ethics, virtues and values
	CO5:	Aware about etiquettes and personal branding

19001800	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2		2	3	2	2	2		2	2	3
CO2	3		3	2	2	3	2	3			3	3
CO3	3	2	3	3	3	2	3	2		2	2	3
CO4	3		2			3	2	2			3	3
CO5		3		2	3				2	2	3	3

19001900	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	3	2	2	2		2	2	3
CO2	3		3	2	2	3	3	3	2		3	3
CO3	3	2	3	3	3	2	3	3	3	2	2	3
CO4	2		2	2		3	2	2	3	3	3	3
CO5	3		3	3		2	3	3	2	2	2	2

19002000	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	3	2	2	2		2	2	3
CO2	3	2	3	2	2	3	3	3	2		3	3
CO3	2	2	2	2	3	2	3	3	3	2	2	3
CO4	2		2	2		3		2	3	3	3	3
CO5	3		3	3		2		3	2	2	2	2

19002100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		2		2		2	2		2	3
CO2	3	2	3	3	2	3	2		2	3	3	3
CO3	2		2	2		3	2	2	3	2	2	3
CO4		2	2	2	2	2			2		2	3
CO5	3	3	2	2	3	3		2	3		2	2

19002500	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3		2	2	3	3		3		2		3
CO2	2	2	2		3	2		2		2	3	3
CO3	2	2	3	2	2	3		2	2	2	2	3
CO4	2		2		2			2		3	3	3
CO5	3		3		3			3		2	2	2

19000400	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		2		2			2	2		3
CO2	2	3	3		2			2		2	3	3
CO3	2					2			3	3		3
CO4	2	2		2		3			3	2		3
CO5	3	3		3		2			2	3		2

19000500	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		2		3			3	2		3
CO2	3	2	2	3		3				2		3
CO3	2	2		3	2				2		2	3
CO4		2		2		3			3	2		3
CO5	3	2	3		3		3	3	2	3	3	

19002400	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3			2	3	3		3				3
CO2	3	2	3		3					2	3	3
CO3	2	2	3	2		3			2		2	3
CO4			2			3				2	3	3
CO5	2	3	2		2		2	2	3	3	2	2

99001900	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		3	2	3	2	2	2			2	3	
CO2	2	2		3	3						3	2
CO3		2		2	2			2			3	
CO4	2	2	2		3			2			3	2
CO5	3	3	3		2	2	2		3	3	2	3

19001100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3		3	3		3		3	3	2
CO2	3		2	3	2	2		2		3		2
CO3	3	3			2			3	3	3		2
CO4	3	3	3	2	2	2		2		3	2	2
CO5	3	3		3		3	3	3	2		2	2

7.3 Lesson Plan: Semester - II

19001800– Applied Mathematics-II

Unit	Particulars	Class No.	Pedagogy of Class
I	Ordinary Differential Equations and Applications Exact differential equations	C1	Lecture
I	Equations reducible to exact differential equations	C2	Lecture
I	Equations reducible to exact differential equations: CASE I & CASE II	C3	Lecture
I	Equations reducible to exact differential equations: CASE III & CASE IV	C4	Lecture
I	Equations reducible to exact differential equations: CASE V	C5	Lecture
I	Questions Based on Non - Exact Differential Equations reducible to exact differential equations	C6	Lecture
I	Applications of differential equations of first order & first degree to simple electric circuits	C7	Lecture
I	Application of Differential Equation: Newton's law of cooling; heat flow	C8	Lecture
I	Clarification Class I	C9	Clarification Class
I	Home Assignment I		Home Assignments
I	Application of differential: Orthogonal trajectories	C10	Lecture
I	Linear differential equations of second and higher order	C11	Lecture
I	Complete solution, complementary function and particular integral	C12	Lecture
I	Complete solution, complementary function and particular integral	C13	Lecture
	Clarification Class II	C14	Clarification Class
I	Solutions of Problems related to earlier topics	C15	Lecture
I	Complete solution, complementary function and particular integral	C16	Lecture
I	Method of variation of parameters to find particular integral	C17	Lecture
I	Cauchy's and Legendre's linear equations	C18	Lecture
I	Simultaneous linear equations with constant coefficients	C19	Lecture
I	Applications of linear differential equations to simple pendulum, Oscillatory electric Circuits	C20	Lecture
II	Clarification Class III	C21	Clarification Class
II	Laplace Transform: Definition, existence theorem (statement only); Laplace transform of derivatives	C22	Lecture
II	Laplace transform of derivatives	C23	Lecture
II	Laplace transform of integrals and periodic functions	C24	Lecture
II	Laplace transform of integrals and periodic functions; Unit step (Heaviside)	C25	Lecture
II	Classroom Assignment I	C26	Class Assignment
	Home Assignment		Home Assignments

II	impulse (Dirac – Delta) functions	C26	Lecture
II	Inverse Laplace Transform	C27	Lecture
II	Inverse Laplace Transform	C28	Lecture
II	Inverse Laplace Transform	C29	Lecture
	Clarification Class	C30	Clarification Class
II	Solutions of Problems related to earlier topics	C31	Lecture
II	Inverse Laplace Transform	C32	Lecture
II	Convolution – theorem	C33	Lecture
II	Questions Based on Convolution - theorem	C34	Lecture
II	Applications to solution of simple linear and simultaneous differential equations with constant coefficients and application to integral equations	C35,C36	Lecture
III	Partial Differential Equations & its applications: Formation of partial differential equations	C37	Lecture
III	Lagrange's linear partial differential equation	C38	Lecture
III	Clarification Class IV	C39	Clarification Class
III	Solutions of Problems related to earlier topics	C40	Lecture
III	First order non-linear partial differential equation	C41	Lecture
	Home Assignment		Home Assignments
III	First order non-linear partial differential equation	C41	Lecture
III	Charpit's method: Introduction, questions based on Charpit's Method	C42	Lecture
III	Some typical question based on Charpit's method	C43	Lecture
III	Method of separation of variables	C44	Lecture
III	Application of Method of separation of variables to Wave equation	C45	Lecture
III	One dimensional heat equation and two-dimensional heat flow (steady state solutions only)	C46	Lecture
IV	Matrices & its Applications: Rank of a matrix	C47	Lecture
IV	Elementary transformations	C48	Lecture
IV	Solutions of Problems related to earlier topics	C49	Lecture
IV	Elementary matrices	C50	Lecture
IV	Normal form of a matrix	C51	Lecture
	Clarification Class	C52	Clarification Class
IV	Linear dependence and independence of vectors	C53	Lecture
IV	Consistency of linear system of equations, linear and orthogonal transformations	C53	Lecture
IV	Eigenvalues and eigenvectors,	C53	Lecture
IV	Properties of eigenvalues	C54	Lecture
IV	Cayley - Hamilton theorem and its applications	C55	Lecture
IV	diagonalization of matrices	C56	Lecture
IV	Presentation I	C57	Presentation
IV	Similar matrices, quadratic forms; Similar matrices; quadratic forms of matrices; Solutions of Problems related to earlier topics	C58	Lecture
IV	Clarification Class V	C59	Clarification Class
IV	Classroom Assignment II	C60	Clarification Class

19001900– Applied Physics-II

Unit	Particulars	Class No.	Pedagogy of Class
UNIT-I	FIBER OPTICS AND HOLOGRAPHY		
UNIT-I	Spatial and temporal coherence	C-1	Lecture
UNIT-I	Coherence length, Coherence time	C-2	Lecture
UNIT-I	'Q' factor for light Fundamental ideas about optical fiber	C-3	Lecture
UNIT-I	Propagation mechanism	C-4	Lecture
UNIT-I	Acceptance angle and cone, Numerical aperture	C-5	Lecture
UNIT-I	Single and Multi Mode Fibers	C-6	Lecture
UNIT-I	Dispersion and Attenuation	C-7	Lecture
UNIT-I	Holography: Basic Principle of Holography	C-8	Lecture
UNIT-I	Construction and reconstruction of Image on hologram and applications of holography	C-9	Lecture
UNIT-I	Clarification Class	C-10	Clarification Class
UNIT-I	Take home assignment		home assignment
UNIT-II	ELEMENTS OF MATERIAL SCIENCE		
UNIT-II	Bonding in Solids: Covalent bonding and Metallic bonding.	C-11	Lecture
UNIT-II	Classification of Solids as Insulators, Semiconductors and Conductors	C-12	Lecture
UNIT-II	Semiconductors: Conductivity in Semiconductors	C-13	Lecture
UNIT-II	Determination of Energy gap of Semiconductor	C-14	Lecture
UNIT-II	X-Ray diffraction and Bragg's Law	C-15	Lecture
UNIT-II	Hall Effect: Theory	C-16	Lecture
UNIT-II	Hall Coefficient and applications	C-17	Lecture
UNIT-II	Clarification Class	C-18	Clarification Class
UNIT-II	Classroom Assignment	C-19	Class Assignment
UNIT-II	Presentation	C-20	Presentation
UNIT-III	SUPERCONDUCTORS		
UNIT-III	Temperature dependence of resistivity in superconducting materials	C-21	Lecture
UNIT-III	Effect of magnetic field (Meissner effect)	C-22	Lecture
UNIT-III	Temperature dependence of critical field	C-23	Lecture
UNIT-III	London equations	C-24	Lecture
UNIT-III	Josephson theory, persistent currents	C-25	Lecture
UNIT-III	Type I and Type II superconductors	C-26	Lecture
UNIT-III	BCS theory (Qualitative)	C-27	Lecture
UNIT-III	High temperature superconductors and Applications of Super-conductors	C-28	Lecture
UNIT-III	Clarification Class	C-29	Clarification Class
UNIT-III	Classroom Assignment	C-30	Class Assignment
UNIT-III	Take home assignment		Home Assignments
UNIT-IV	ATOMIC AND NUCLEAR PHYSICS		
UNIT-IV	Bohr's atomic model and energy level diagram	C-31	Lecture
UNIT-IV	Sommerfeld relativistic atomic model, general properties of nucleus	C-32	Lecture

UNIT-IV	Mass defect and packing fraction, nuclear binding energy,	C-33	Lecture
UNIT-IV	Semi-empirical mass formula	C-34	Lecture
UNIT-IV	Clarification Class	C-35	Clarification Class
UNIT-IV	Classroom Assignment	C-36	Class Assignment
UNIT-IV	Quiz	C-37	Quiz
UNIT-IV	Webinar	C-38	Webinar
UNIT-IV	Seminar	C-39	Seminar
UNIT-IV	Guest Lecture	C-40	Guest lecture
UNIT-IV	Take home assignment		Home Assignments
UNIT-V	NUCLEAR RADIATION DETECTORS		
UNIT-V	Characteristics of gas filled detectors: general considerations, Constructions	C-41	Lecture
UNIT-V	Working and properties of: Ionization chamber, proportional counter	C-42	Lecture
UNIT-V	G. M. Counter and Scintillation Counter	C-43	Lecture
UNIT-V	Clarification Class	C-44	Clarification Class
UNIT-V	Classroom Assignment	C-45	Class Assignment

19002000– Applied Physics Lab-II

S. No.	Particulars	Class No.	Pedagogy of Class
1	To determine the wavelength of monochromatic light by Newton's ring.	P1-P2	Practical
2	To find the wavelength of various colours of white light with the help of a plane transmission diffraction grating.	P3-P4	Practical
3	To determine the specific resistance of a given wire using Carey Foster's bridge.	P5-P6	Practical
4	To find the wavelength of sodium light by Michelson interferometer	P7-P8	Practical
5	To find the resolving power of a telescope.	P9-P10	Practical
6	To convert a Galvanometer in to an ammeter of given range and calibrate it.	P11-P12	Practical
7	To convert a Galvanometer in to a voltmeter of given range and calibrate it.	P13-P14	Practical
8	To determine the dispersive power of material of a Prism for Violet Red and yellow colours of Mercury light with the help of a spectrometer.	P15-P16	Practical
9	To study the Charge & Discharge of a condenser and hence determine time constant (Both current and voltage graphs are to be plotted.	P17-P18	Practical
10	To find the value of Planck's constant by using a solar cell / photo electric cell.	P19-P20	Practical

19002100– Engineering Graphics

Unit	Particulars	Class No.	Pedagogy of Class
unit-1	INTRODUCTION		
unit-1	Fundamentals Drawing standard - BIS, dimensioning,	C1	Lecture
unit-1	lettering,	C2	Lecture
unit-1	type of lines, scaling conventions.	C3	Lecture
unit-1	Geometrical constructions Dividing a given straight line into any number of	C4	Lecture
unit-1	bisecting a given angle,	C5	Lecture
unit-1	drawing a regular polygon given one side,	C6	Lecture
unit-1	methods of constructing a pentagon and hexagon	C7	Lecture
unit-1	conic sections – ellipse – parabola	C8	Lecture
unit-1	hyperbola - cycloid – trochoid.	C9	Lecture
	Clarification class 1	C10	Clarification Class
unit-2	ORTHOGRAPHIC PROJECTIONS		
unit-2	Orthographic projection Introduction to orthographic projection,	C11	Lecture
unit-2	drawing orthographic views of objects from their isometric views	C12	Lecture
unit-2	Orthographic projections of points lying in four quadrants,	C13	Lecture
unit-2	Orthographic projection of lines parallel and inclined to one or both planes	C14	Lecture
unit-2	Orthographic projection of planes inclined to one or both planes.	C15	Lecture
unit-2	Problems on Orthographic Projection	C15	Lecture
	Clarification class 2	C16	Clarification Class
	Guest Lecture	C17	Guest lecture
	Class room Assignment 1	C18	Class Assignment
	Home Assignment -1		Home Assignments
unit-3	PROJECTIONS OF SOLIDS		
unit-3	Projections of simple solids - axis perpendicular to HP,	C19	Lecture
unit-3	axis perpendicular to VP	C20	Lecture
unit-3	and axis inclined to one or both planes.	C21	Lecture
unit-3	Sectioning of solids Section planes perpendicular to one plane	C22	Lecture
unit-3	and parallel or inclined to other plane.	C23	Lecture
unit-3	Problems on projection of solid	C24	Lecture
	clarification class 3	C25	Clarification Class
	Activity	C26	Activity
	presentation 1	C27	Presentation
Unit-4	INTERSECTION OF SURFACES		
Unit-4	Intersection of surfaces Intersection of cylinder & cylinder,	C28	Lecture
Unit-4	intersection of cylinder & cone,	C29	Lecture
Unit-4	and intersection of prisms.	C30	Lecture
Unit-4	problems on prisms	C31	Lecture

Unit-4	Development of surfaces Development of prisms,	C32	Lecture
Unit-4	pyramids and cylindrical	C33	Lecture
Unit-4	conical surfaces.	C34	Lecture
Unit-4	Problems on pyramid and cylindrical	C35	Lecture
Unit-4	Isometric and perspective projection Isometric projection	C36	Lecture
Unit-4	isometric views of different planes and simple solids,	C37	Lecture
Unit-4	introduction to perspective projection.	C38	Lecture
Unit-4	Computer aided drafting Introduction to computer aided drafting package to make 2-D drawings.	C39	Lecture
Unit-4	Problems on isometric view	C40	Lecture
	clarification Class 4	C41	Clarification Class
	class room Assignment 2	C42	Class Assignment
	workshop	C43	Workshop
	Quiz	C44	Quiz
	Seminar	C45	Seminar

19002500– Engineering Graphics Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	One Sheet on Lettering, Types of Lines, Symbols used	P1	Practical
2	One Sheet on Conic Sections like- Ellipse, Parabola	P2	Practical
3	One Sheet on Conic Sections like- Hyperbola	P3	Practical
4	One Sheet on Conic Sections like- Cycloid.	P4	Practical
5	Two Sheet on Simple Scale, Diagonal Scale and Scale of Chord	P5	Practical
6	Two Sheet on Simple Scale, Diagonal Scale and Scale of Chord	P6	Practical
7	One Sheet on Orthographic Projections of Points.	P7	Practical
8	One Sheets on Orthographic Projections of Lines	P8	Practical
9	One Sheet on Orthographic Projections of Planes	P9	Practical
10	Two Sheets on Projections of Simple Solids.	P10	Practical
11	Two Sheets on Projections of Simple Solids.	P11	Practical
12	One Sheet on Sectioning of Solids.	P12	Practical
13	One Sheet on Intersection of Surfaces.	P13	Practical
14	One Sheet on development of Surfaces.	P14	Practical
15	One Sheet on development of Surfaces.	P15	Practical

19000400– Applied Chemistry

Unit	Particulars	Class No.	Pedagogy of Class
UNIT I	LUBRICATION AND LUBRICANTS		
UNIT I	Lubrication and Lubricants, Functions	C1	Lecture
UNIT I	Mechanism of Lubrication, Thick Film, Thin Film	C2	Lecture
UNIT I	Extreme pressure Lubrication, Classification of Lubricants	C3	Lecture
UNIT I	Properties of Lubricants, Viscosity & Viscosity index	C4	Lecture
UNIT I	Flash Point, Fire Point, cloud point, pour point	C5	Lecture
UNIT I	Saponification value, Acid Value, Iodine value, Numericals	C6	Lecture
UNIT I	Consistency, Drop point	C7	Lecture
UNIT I	Synthetic lubricants, additives	C8	Lecture
UNIT II	Clarification Class	C9	Clarification Class
UNIT II	PHASE RULE		
UNIT II	Phase rule, components	C10	Lecture
UNIT II	Phase, components, degree of freedom	C11	Lecture
UNIT II	Criteria of Equilibrium	C12	Lecture
UNIT II	Derivation of Gibbs phase rule	C13	Lecture
UNIT II	Derivation of Clausius Clayperon equation and its importance	C14	Lecture
UNIT II	One Component- Water and Sulphur Systems	C15	Lecture
UNIT II	Two component Pb-Ag system. Pattinsons process	C16	Lecture
UNIT II	System having congruent melting points (Zinc-Magnesium system)	C17	Lecture
UNIT II	System having incongruent melting points (Na-K system)	C18	Lecture
UNIT II	Applications of Phase rule: Freeze drying, safety plugs, solders, freezing mixtures	C19	Lecture
	Presentation	C20	Presentation
	Clarification Class	C21	Clarification Class
	Class Assignment	C22	Class Assignment
UNIT III	WATER		
UNIT III	Introduction and specification of water	C23	Lecture
UNIT III	Hardness and its determination by EDTA method	C24	Lecture
UNIT III	Numericals based on hardness and EDTA	C25	Lecture
UNIT III	Alkalinity and its determination (Numericals)	C26	Lecture
	Take Home Assignments		Home Assignments
UNIT III	Boiler feed water, Boiler problems, Scale sludge formation	C27	Lecture
UNIT III	Priming and foaming, caustic embrittlement causes and prevention	C28	Lecture
UNIT III	Boiler corrosion causes and prevention	C29	Lecture
UNIT III	Desalination by Reverse Osmosis and Electrodialysis	C30	Lecture
UNIT III	Disinfection by break-point chlorination.	C31	Lecture
UNIT III	Water Softening by Internal Treatment: carbonate & phosphate conditioning, colloidal conditioning & calgon treatment	C32	Lecture
UNIT III	Water Softening by External Treatment: Lime-Soda	C33	Lecture

	Process Numericals		
UNIT III	Zeolite process	C34	Lecture
UNIT III	Ion-Exchange Process.	C35	Lecture
	Clarification Class	C36	Clarification Class
	Webinar	C37	Webinar
	Class Assignment	C38	Class Assignment
UNIT IV	CORROSION & ITS CONTROL		
UNIT IV	Corrosion causes, effects & consequences	C39	Lecture
UNIT IV	Chemical or Dry corrosion & its mechanism (Pilling Bedworth rule)	C40	Lecture
UNIT IV	Electrochemical or Wet corrosion & its mechanism	C41	Lecture
UNIT IV	Rusting of Iron, Passivity, Galvanic Series, Galvanic Corrosion	C42	Lecture
	Guest Lecture	C43	Guest Lecture
UNIT IV	Soil Corrosion Pitting Corrosion, Concentration Cell or Differential Aeration Corrosion, Stress Corrosion	C44	Lecture
	Quiz	C45	Quiz
UNIT IV	Factors Influencing Corrosion: Nature of metal and nature of corroding environment;	C46	Lecture
UNIT IV	Protective measures: Galvanization, Tinning Cathodic Protection,	C47	Lecture
UNIT IV	Sacrificial Anodic protection, Prevention of Corrosion by Material selection & Design.	C48	Lecture
	Clarification Class	C49	Clarification Class
	Take Home Assignments		Home Assignments
UNIT V	POLYMERS AND POLYMERISATION		
UNIT V	Organic polymers and its classification	C50	Lecture
UNIT V	Mechanism of polymerization: free radical, cationic	C51	Lecture
UNIT V	anionic and coordination polymerization	C52	Lecture
UNIT V	effect of structure on properties of polymers	C53	Lecture
UNIT V	preparation, properties and technical applications of thermo-plastic (PVC, PVA),	C54	Lecture
UNIT V	thermosets (PF, UF),	C55	Lecture
UNIT V	elastomers (SBR, GR-N), Inorganic polymer: silicones,	C56	Lecture
UNIT V	elastomers (SBR, GR-N), Inorganic polymer: silicones,	C57	Lecture
	introduction to polymeric composites	C58	Lecture
	Clarification Class	C59	Clarification Class
	Quiz	C60	Quiz

19000500– Applied Chemistry Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	General instructions, precautions	P1-P2	Practical
2	Determination of the total hardness of the water by EDTA method.	P3-P4	Practical
3	Determine of temporary and permanent hardness of water by EDTA method	P5-P6	Practical
4	Determination of alkalinity of water sample.	P7-P8	Practical
5	Determination of Dissolve Oxygen (D.O.) in the given water sample.	P9-P10	Practical
6	Determine of Calcium and Magnesium hardness of water using EDTA solution.	P11-P12	Practical
7	To find the Melting and Eutectic point for a two component system by cooling curve method.	P13-P14	Practical
8	Determination of viscosity of lubricant by Redwood Viscometer (No.1 & No.2).	P15-P16	Practical
9	Determination of flash point and fire point of oil by Pensky-Marten's flash point apparatus.	P17-P18	Practical
10	To find out Saponification Number of an Oil.	P19-P20	Practical
11	Determination of acid value of an oil	P21-P22	Practical
12	Determination of iodine value of an oil	P23-P24	Practical
13	Estimation of total iron in a iron alloy.	P25-P26	Practical
14	Preparation of copper pigment. And Preparation of Phenol-Formaldehyde resin.	P27-P28	Practical
15	Preparation of Aspirin	P29-P30	Practical

19002400– Basic Mechanical Engineering

Unit	Particulars	Class No.	Pedagogy of Class
UNIT 2	Fluids: Fluid and continuum, Physical properties of fluids	C1	Lecture
UNIT 2	Rheology of fluids, Types of fluid flows: Continuum & free molecular flows. Steady and unsteady, uniform and non uniform flow	C2	Lecture
UNIT 2	one, two and three dimensional flows streamlines, uniform and non uniform flow	C3	Lecture
UNIT 2	subsonic, sonic and supersonic flows, sub-critical, critical and supercritical flows,	C4	Lecture
UNIT 2	laminar and turbulent flows rotational and irrotational flows, compressible and incompressible flows	C5	Lecture
UNIT 2	continuity equation, Bernauli's equation for incompressible fluids.	C6	Lecture
UNIT 2	working principle of fluid coupling, pumps, compressors, turbines.	C7	Lecture
UNIT 2	working principle of fluid coupling, pumps, compressors, turbines.	C8	Lecture
	Clarification Class	C9	Clarification Class
Unit-3	Normal and shear stresses	C10.	Lecture
Unit-3	One Dimensional Loading: members of varying cross section, bars in series	C11	Lecture
Unit-3	Elastic constants, Modulas of Elasticity, Strain energy	C12	Lecture
Unit-3	Bending (Flexural) Stresses: theory of pure bending	C13	Lecture
Unit-3	Bending (Flexural) Stresses: neutral surface and neutral axis	C14	Lecture
UNIT 3	Bending Equation, stresses in beams of different cross sections.	C15	Lecture
UNIT 3	Torsion: Torsion Equation, combined bending & torsion of solid shaft	C16	Lecture
UNIT 3	Torsion: Torsion Equation, combined bending & torsion of hollow shafts	C17	Lecture
UNIT 3	Clarification Class	C18	Clarification Class
UNIT 4	Static and Kinetic friction, laws of dry friction,	C19	Lecture
UNIT 4	co-efficient of friction, angle of friction, angle of repose, cone of friction	C20	Lecture
UNIT 3	Guest Lecture	C21	Guest Lecture
UNIT 3	Guest Lecture	C22	Guest Lecture
UNIT 4	Belt drives- derivation of equation open belt	C23	Lecture
UNIT 4	Belt drives- derivation of equation close belt	C24	Lecture
UNIT 4	Internal Combustion Engines: Classification of I.C. Engines and their parts	C25	Lecture
UNIT 4	working principle of 2 Stroke SI and CI engine	C26	Lecture
UNIT 4	working principle of 4 stroke engine, SI and CI engine	C27	Lecture
UNIT 4	comparison between 2 Stroke and 4 stroke	C28	Lecture

	engine and difference between SI and CI engines		
UNIT 4	Pv and T-s diagrams of Otto and Diesel cycles	C29	Lecture
UNIT 4	clarification Class	C30	clarification Class
UNIT 4	quiz	C31	quiz
UNIT 4	presentation 1	C32	presentation 1
UNIT 4	presentation 2	C33	presentation 2
UNIT 4	presentation 3	C34	presentation 3
UNIT 4	research work	C35	Activity
UNIT 4	research work	C36	Activity
	research work	C37	Activity
	CLARIFICATION CLASS	C38	Clarification Class
UNIT 1	Engineering Materials: Materials and Civilization, their socio economic impact. Classification of engineering material	C39	Lecture
UNIT 1	composition of cast iron and carbon steels, wrought iron and their mechanical properties,	C40	Lecture
UNIT 1	composition of cast iron and carbon steels, wrought iron and their mechanical properties,	C41	Lecture
UNIT 1	stress-strain diagram	C42	Lecture
UNIT 1	Alloy steels: stainless steel, tool steel. Alloys of Non Ferrous Metals	C43	Lecture
UNIT 1	Common uses of various non-ferrous metals (Copper, Zinc, Tin, Magnesium, Lead, Aluminum etc.) & alloys and its composition such as Cu-alloys: Brass, Bronze, Al-alloys.	C44	Lecture
UNIT 1	Common uses of various non-ferrous metals (Copper, Zinc, Tin, Magnesium, Lead, Aluminum etc.) & alloys and its composition such as Cu-alloys: Brass, Bronze, Al-alloys.	C45	Lecture
UNIT 1	CLARIFICATION CLASS	C45	CLARIFICATION CLASS

99001900– Environmental Studies

Unit	Particulars	Class No.	Pedagogy of Class
I	Introduction to environmental studies	C1	Lecture
I	Multidisciplinary nature of environmental studies	C2	Lecture
I	Scope and importance; Concept of sustainability and sustainable development.	C3	Lecture
I	Clarification Class	C4	Clarification Class
II	What is an ecosystem?	C5	Lecture
II	Structure and function of ecosystem	C6	Lecture
II	Energy flow in an ecosystem: food chains, food webs and ecological succession	C7	Lecture
II	Forest ecosystem	C8	Lecture
II	Grassland ecosystem	C9	Lecture
II	Desert ecosystem	C10	Lecture
II	Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	C11	Lecture
II	Clarification Class	C12	Clarification Class
III	Natural Resources: Renewable and Non-renewable Resources	C13	Lecture
III	Land resources and land use change; Land degradation, soil erosion and desertification.	C14	Lecture
III	Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations	C15	Lecture
III	Water: Use and overexploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).	C16	Lecture
III	Energy resources: Renewable and non renewable energy sources	C17	Lecture
III	use of alternate energy sources, growing energy needs, case studies.	C18	Lecture
III	Clarification Class	C19	Clarification Class
IV	Levels of biological diversity: genetic, species and ecosystem diversity	C20	Lecture
IV	Biogeographic zone of India; Biodiversity patterns and global biodiversity hot spots.	C21	Lecture
IV	India as a mega biodiversity nation; Endangered and endemic species of India	C22	Lecture
IV	Threats to biodiversity: Habitat loss, poaching of wildlife, man wildlife conflicts, biological invasions;	C23	Lecture
IV	Conservation of biodiversity: Insitu and Exsitu conservation of biodiversity	C24	Lecture
IV	Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.	C25	Lecture
IV	Clarification Class	C26	Clarification Class
V	Environmental Pollution	C27	Lecture
V	Environmental pollution: types, causes, effects and controls	C28	Lecture

V	Air pollution	C29	Lecture
V	Water pollution	C30	Lecture
V	Soil and noise pollution	C31	Lecture
V	Nuclear hazards and human health risks	C32	Lecture
V	Solid waste management	C33	Lecture
V	Control measures of urban and industrial waste.	C34	Lecture
V	Pollution case studies.	C35	Lecture
V	Clarification Class	C36	Clarification Class
VI	Climate change, global warming, ozone layer depletion, acid rain and impacts on human Communities and agriculture	C37	Lecture
VI	Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act	C38	Lecture
VI	Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).	C39	Lecture
VI	Nature reserves, tribal populations and rights	C40	Lecture
VI	human wildlife conflicts in Indian context.	C41	Lecture
VI	Clarification Class	C42	Clarification Class
VII	Human population growth: Impacts on environment, human health and welfare.	C43	Lecture
VII	Resettlement and rehabilitation of project affected persons; case studies	C44	Lecture
VII	Disaster management: floods, earthquake, cyclones and landslides	C45	Lecture
VII	Disaster management: floods, earthquake, cyclones and landslides	C46	Lecture
VII	Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan	C47	Lecture
VII	Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.	C48	Lecture
VII	Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).	C49	Lecture
VII	Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).	C50	Lecture
VII	Clarification Class	C51	Clarification Class
VIII	Visit to an area to document environmental assets: river/ forest/ flora/fauna,	C52	Activity
VIII	Visit to a local polluted site-Urban/ Rural/ Industrial/Agricultural.	C53	Activity
VIII	Study of common plants, insects, birds and basic principles of identification.	C54	Lecture
VIII	Study of common plants, insects, birds and basic principles of identification.	C55	Lecture
VIII	Study of simple ecosystems-pond, river, Delhi Ridge, etc.	C56	Lecture
	Class Room Assignment	C57	Class Room Assignment
	Activity	C58	Activity

	Presentation	C59	Presentation
	Activity	C60	Activity

19001100– Ability & Skill Enhancement – II

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Phonetic symbols and the International Phonetic Alphabets (IPA)	C1	Lecture
Unit I	The Description and Classification of Vowels (Monophthongs & Diphthong)	C2	Lecture
Unit I	Consonants	C3	Lecture
Unit I	Phonetic Transcription & Phonology	C4	Lecture
Unit I	Syllable	C5	Lecture
Unit I	Stress & Intonations	C6	Lecture
	Reading aloud, recording audio clips	C7	Class Assignment
Unit II	Idioms and Phrases	C8	Lecture
Unit II	Words Often Confused	C9	Lecture
Unit II	One word Substitution	C10	Lecture
Unit II	Word Formation: Prefix & Suffix	C11	Lecture
	Home Assignment		Home Assignments
Unit III	What are ethics, what are values, difference between ethics and morals	C12	Lecture
Unit III	Business ethics, workplace ethics,	C13	Lecture
Unit III	what are virtues for e.g. civic virtues, etc. Human ethics and values- 5 core human values are: right conduct, living in peace, speaking the truth, loving and care, and helping others.	C14	Lecture
Unit III	Etiquette awareness	C15	Lecture
Unit III	Importance of First Impression, Personal Appearance & Professional presence, Personal Branding	C16	Lecture
Unit III	Dressing Etiquette	C17	Lecture
Unit III	Dining Etiquette	C18	Lecture
Unit III	Presentation	C19	Presentation
Unit III	Clarification Class	C20	
Unit IV	Reading Comprehension	C21	Activity
Unit IV	News Reading	C22	Activity
Unit IV	Picture Description	C23	Activity
Unit IV	Paragraph Writing	C24	Lecture
Unit IV	Paragraph Writing	C25	Activity
Unit IV	News Writing	C26	Lecture
Unit IV	Clarification Class	C27	Lecture
Unit V	Public Speaking/Debate	C28	Lecture
Unit V	Debate	C29	Class Assignment
Unit V	Inspirational Movie Screening	C30	Activity
Unit V	Skit Performance	C31	Activity
	Workshop		Workshop

8.1 Semester – III		
Course	**Course Outcomes: - After completion of these courses' students should be able to**	
19002600-Applied Mathematics-III	**CO1:**	Demonstrate the statistical hypotheses tests.
	CO2:	Make use of probability theory on discrete and continuous random variables to obtainthe solution of problems on different distributions and joint probability distribution.
	CO3:	Identify the problems on statistical parameter estimation.
	CO4:	Classify the regression and correlation analysis.
	CO5:	Create a solution of a problem by using probability theory.
19003400- Analysis and Design of Information Systems	**CO1:**	Illustrate the knowledge about important probability distributions and their properties.
	CO2:	Explain statistical parameter estimation.
	CO3:	Make use of statistical hypotheses tests.
	CO4:	Compare the regression and correlation analysis.
	CO5:	Develop Algorithms for real time scenarios
19003500-Data Structures	**CO1:**	Find the time complexity of algorithms.
	CO2:	Demonstrate the stacks and queues for various applications.
	CO3:	Experiment with tree data structure for different applications.
	CO4:	Apply the concepts of graph for computing shortest path and construct MST.
	CO5:	Design programs using a variety of data structures, including hash tables, binary and general tree structures, search trees, tries, heaps, graphs, and AVL-trees.
19003600-Data Structures Lab	**CO1:**	Find solutions for a range of problems using objects and classes.
	CO2:	Demonstrate the implementation of constructors, destructors and operator overloading.
	CO3:	Apply fundamental algorithmic problems including type casting, inheritance, and polymorphism.
	CO4:	Solve the programs using generic programming, exception handling, templates, file Handling.
	CO5:	Able to identify and use a suitable data structure and algorithm to solve a real world problem.
19008600-Object Oriented Programming with C/C++	**CO1:**	Explain the object-oriented programming features in C++.
	CO2:	Apply these features to program design and implementation.
	CO3:	Develop applications using Object Oriented Programming Concepts.
	CO4:	Design features of objectoriented programming to solve real world

		problems.
	CO5:	Handle exceptions in programming
19008700-Object Oriented Programming with C/C++ Lab	**CO1:**	Explain the language environment.
	CO2:	Apply object oriented concepts to solve problems.
	CO3:	Develop applications using object oriented concepts.
	CO4:	Design features of object oriented programming to solve real world problems.
	CO5:	Solve different type of problems using object-oriented programming Techniques
19003800- Operating Systems	**CO1:**	Explain the role and responsibilities of OS in the computer system.
	CO2:	Illustrate how the OS deals with process management, memory management and secondary storage management.
	CO3:	Analyze process synchronization and deadlocks.
	CO4:	Apply the knowledge about OS, for the Linux operating system case study.
	CO5:	Able to analyze sharing of resources among multiple processes in order to detect, prevent and avoid a deadlock
19003900- Operating Functions Lab	**CO1:**	Define the principles of resource management [Processor, Memory].
	CO2:	Explain use operating systems with an understanding of professional, ethical and social issues. [Windows, Linux etc.,].
	CO3:	Identify the lifelong need and engage in upgradation of operating system
	CO4:	Make use of shell commends and execute.
	CO5:	Create a program to analyze sharing of resources among multiple processes in order to detect, prevent and avoid a deadlock
19004000-Digital Electronic Circuits	**CO1:**	Define the fundamental concepts and techniques used in digital electronics.
	CO2:	Show the ability to understand, analyze and design various combinational and sequential circuits.
	CO3:	Plan for basic requirements of a design application and propose a cost-effective solution.
	CO4:	Analyseand prevent various hazards and timing problems in a digital design.
	CO5:	Design the logic gates using different Logic families.
19004100-Digital Electronic Circuits Lab	**CO1:**	Illustrate linear and digital electronic circuits.
	CO2:	Apply computing platform and software for engineering problems.
	CO3:	Design and implement interfacing.
	CO4:	Develop projects using microprocessor

	CO5:	Realize the logic gates using different Logic families and verify the functionality.
11012200-Human Values, Business & Managerial Ethics	**CO1:**	Explain the sustained happiness through identifying the essentials of human values and skills.
	CO2:	Compare profession and happiness.
	CO3:	Understand practically the importance of trust, mutually satisfying human behavior and enriching interaction with nature.
	CO4:	Ability to develop appropriate technologies and management patterns to create harmony in professional and personal life.
	CO5:	Support the employer organization with valuable inputs on corporate governance.
19004200-Ability and Skill Enhancement –III	**CO1:**	Classify the different types of reviews i.e. book review, movie review etc.
	CO2:	Express his/ her feeling at pressor situation or emotional situation
	CO3:	Explain his/her thoughts in group discussion and also build leadership quality
	CO4:	Enhance creativity in making documentary etc.
	CO5:	Manage negative emotions keeping balance of mental stability, stress and distress.

8.2 Mapping: Semester – III

19002600	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3		3	2	3	2	2	2			2	3
CO2	3	2	2		3	3						3
CO3			2		2	2			2			3
CO4	2	2	2	2		3			2			3
CO5	3	3	3	3		2	2	2	3	3	3	2

19003400	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3			2	3	3		3				3
CO2	3	2	3		3					2	3	3
CO3	2	2	3	2		3			2		2	3
CO4			2			3				2	3	3
CO5	2	3		3	2		3	3	3	2	2	

19003500	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		2		3			3	2		3
CO2	3	2	2	3		3				2		3
CO3	2	2		3	2				2		2	3
CO4		2		2		3			3	2		3
CO5	3		3		3		3	3	2		2	

19003600	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		2		2			2	2		3
CO2	2	3	3		2			2		2	3	3
CO3	2					2			3	3		3
CO4	2	2		2		3			3	2		3
CO5	3	3	2		3		3	3			3	

19008600	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3		2	2	3	3		3		2		3
CO2	2	2	2		3	2		2		2	3	3
CO3	2	2	3	2	2	3		2	2	2	2	3
CO4	2		2		2			2		3	3	3
CO5		3		3		2	3		3		2	2

19008700	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		2		2		2	2		2	3
CO2	3	2	3	3	2	3	2		2	3	3	3
CO3	2		2	2		3	2	2	3	2	2	3
CO4		2	2	2	2	2			2		2	3
CO5	2		3		3		3	3		2	2	

19003800	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	3	2	2	2		2	2	3
CO2	3	2	3	2	2	3	3	3	2		3	3
CO3	2	2	2	2	3	2	3	3	3	2	2	3
CO4	2		2	2		3		2	3	3	3	3
CO5		3			2		3	3	2		2	2

19003900	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	3	2	2	2		2	2	3
CO2	3		3	2	2	3	3	3	2		3	3
CO3	3	2	3	3	3	2	3	3	3	2	2	3
CO4	2		2	2		3	2	2	3	3	3	3
CO5		3			2				3	3	2	2

19004000	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2		2	3	2	2	2		2	2	3
CO2	3		3	2	2	3	2	3			3	3
CO3	3	2	3	3	3	2	3	2		2	2	3
CO4	3		2			3	2	2			3	3
CO5	2	3		2	2				3	3		

19004100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2					3	2		3
CO2	3	3	2	3	3	3	3	2	3		2	3
CO3	3	3	3	2	3	3	3	2	3	3	3	3
CO4	2	2	3	2	3	3	3	3	3	3	3	3
CO5		2		2	2	3	2	3	2		3	3

11012200	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2		3	2			3	3	3	3	3
CO2		3			3	3	3		3			3
CO3	3		2	3		2		3			3	3
CO4	3	2	3		3	3	3		3	3		3
CO5		3	3	2	2	3		3	3	2	3	3

19004200	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	3		3		2	2	3	3	2
CO2	2	2	3	3		2		2		3	2	2
CO3	2				3	2		3	2	3	2	2
CO4	2		2		2			2		3		2
CO5	3	3	2	2	2	2	3	3	2	2	3	2

8.3 Lesson Plan: Semester – III

19002600– Applied Mathematics-III

Unit	Particulars	Class No.	Pedagogy of Class
I	Fourier Series and Fourier Transforms: Periodic Functions, Euler's formulas	C1 - C2	Lecture
I	Application of Fourier Series, Conditions for a Fourier expansion; Questions for obtaining the Fourier Series	C3 - C4	Lecture
I	Fourier expansion of odd and even functions, Change of interval	C5 - C6	Lecture
I	Fourier expansion of square wave, rectangular wave, saw-toothed wave	C7 - C8	Lecture
I	Half and full rectified wave, half range sine and cosine series	C9 - C10	Lecture
I	Fourier integrals	C9 - C11	Lecture
I	Fourier transforms, Shifting theorem	C12 - C13	Lecture
I	Fourier transforms of derivatives, Fourier transforms of integrals	C14- C15	Lecture
I	Convolution theorem, Fourier transform of Dirac-delta function.	C16 -C17	Lecture
	Clarification Class -I	C18	Clarification Class
	Classroom Assignment - I	C19	Class Assignment
	Home Assignment - I		Home Assignments
II	Functions of Complex Variable: Definition, Exponential function	C20 - C21	Lecture
II	Trigonometric and Hyperbolic functions, Logarithmic functions	C22-C23	Lecture
II	Limit and Continuity of a function	C24-C25	Lecture
II	Differentiability and Analyticity of function.	C26-C27	Lecture
II	Cauchy-Riemann equations, necessary and sufficient conditions for a function to be analytic	C28-C30	Lecture
II	Polar form of the Cauchy-Riemann equations	C31	Lecture
II	Harmonic functions, application to flow problems	C32-C33	Lecture
II	Integration of complex functions. Cauchy-Integral theorem and formula	C34-C35	Lecture
	Clarification Class -II	C36	Clarification Class
	Classroom Assignment - II	C37	Class Assignment
	Home Assignment - II		Home Assignments
III	Power series, radius and circle of convergence	C38-C39	Lecture
III	Taylor's, Maclaurin's and Laurent's series	C40-C41	Lecture
III	Zeroes and singularities of complex functions	C42-C43	Lecture
III	Residues Evaluation of real integrals using residues (around unit and semi-circle only)	C44-C45	Lecture
III	Linear Programming: Linear programming problems formulation	C46-C47	Lecture
III	Solving linear programming problems using (i)	C48-C52	Lecture

	Graphical method (ii) Simplex method (iii) Dual simplex method.		
	Clarification Class -III	C53	Clarification Class
	Classroom Assignment - III	C54	Class Assignment
	Home Assignment - III		Home Assignments
IV	Probability Distributions and Hypothesis Testing: Conditional probability	C55	Lecture
IV	Bayes theorem and its applications	C56	Lecture
IV	Expected value of a random variable	C57	Lecture
IV	Properties and application of Binomial, Poisson and Normal distributions	C58	Lecture
IV	Testing of a hypothesis	C59	Lecture
IV	Tests of significance for large samples, Student's t-distribution (Applications only), Chi-square test of goodness of fit	C60	Lecture
	Clarification Class -IV		Clarification Class
	Classroom Assignment - IV		Class Assignment
	Home Assignment - IV		Home Assignments
	PPT Presentation		Presentation
	Webinar		Webinar
	Revision		Tutorial

19003400– Analysis and Design of Information Systems

Unit	Particulars	Class No.	Pedagogy of Class
UNIT I	Introduction to System Development		
UNIT I	Categories of Information Systems, Structured analysis method	C1	Lecture
UNIT I	System prototype method, succeeding as system analyst	C2	Lecture
UNIT I	Analysis: Feasibility study, Feasibility considerations	C3	Lecture
UNIT I	Steps in feasibility analysis, Cost and Benefit analysis	C4	Lecture
UNIT I	Procedure for cost and benefit determination	C5	Lecture
	Activity	C6	Activity
	Assignment		Home Assignments
	Clarification Class	C7	Clarification Class
UNIT II	Requirement Analysis		
UNIT II	Problem definition, Identification and Investigation of system	C8	Lecture
UNIT II	Fact finding techniques, Tools for documenting procedures and decisions	C9	Lecture
UNIT II	Webinar	C10	Webinar
UNIT II	Design: System design considerations	C11	Lecture
UNIT II	Process and stages of system design	C12	Lecture
UNIT II	Logical and Physical, Selection of best alternate design strategy	C13	Lecture
	Assignment	C14	Class Assignment
	Activity	C15	Activity
UNIT II	Capturing data for input	C16	Lecture
UNIT II	Capturing data for input	C17	Lecture
UNIT II	Input validation design of output	C18	Lecture
UNIT II	Input validation design of output	C19	Lecture
UNIT II	Output objectives	C20	Lecture
UNIT II	Types of output, Presentation format of output	C21	Lecture
UNIT II	Design of software: Top Down Structure, Coupling	C22	Lecture
UNIT II	Design of software: Top Down Structure, Coupling	C23	Lecture
	Assignment		Home Assignments
	Seminar	C24	Seminar
UNIT II	Cohesion, Span of control	C25	Lecture
UNIT II	Module size, Shared modules.	C26	Lecture
	Clarification Class	C27	Clarification Class
	Guest Lecture	C28	Guest lecture
UNIT III	Tools for Structured Design Object Oriented Analysis and Modeling		
UNIT III	Object technology basics	C29	Lecture
UNIT III	OOAD methods, Introduction to object modeling	C30	Lecture
UNIT III	UML Diagrams, Process of object modeling.	C31	Lecture
	Webinar	C32	Webinar
UNIT III	Object Oriented Design and Modeling: Introduction to object oriented design	C33	Lecture
UNIT III	Designing Object responsibilities, Object reusability	C34	Lecture

	Presentation	C35	Presentation
	Clarification Class	C36	Clarification Class
	Assignment	C37	Class Assignment
UNIT IV	Management Information Systems (MIS)		
UNIT IV	Overview of analysis and design of Management Information Systems	C38	Lecture
UNIT IV	Case Study of Some Common Systems: Inventory control	C39	Lecture
	Class Room Assignment	C40	Class Assignment
	Guest Lecture	C41	Guest lecture
UNIT IV	Hotel reception system,	C42	Lecture
UNIT IV	Hospital management system etc.	C43	Lecture
UNIT IV	Seminar on State-of the-art technology	C44	Lecture
	Clarification Class	C45	Clarification Class

19003500– Data Structures

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Introduction to Data Structures		
Unit I	Algorithm complexity and Big O notation	C1	Lecture
Unit I	Recursion and its importance	C2	Lecture
Unit I	Tower of Hanoi problem	C3	Lecture
Unit I	Stacks: Concept, Operations and representation	C4	Lecture
Unit I	Application to evaluation of postfix expressions	C5	Lecture
Unit I	Conversion from infix to postfix representation	C6	Lecture
	Clarification Class	C7	Clarification Class
	Take Home Assignment 1		Home Assignments
Unit II	Queues & Linked Lists		
Unit II	Queues: Sequential representation, Queue Operations	C8	Lecture
Unit II	Priority queues, and Array implementation	C9	Lecture
Unit II	Linked Lists: Concept, Operations	C10	Lecture
Unit II	Stacks and queues as lists	C11	Lecture
Unit II	Circular linked lists	C12	Lecture
Unit II	Doubly linked lists, Josephus problem	C13	Lecture
	Webinar	C14	Webinar
Unit II	Array and dynamic representation Circular lists	C15	Lecture
	Clarification Class	C16	Clarification Class
	Class Room Assignment 1	C17	Class Assignment
	Activity	C18	Activity
Unit III	Trees, Graphs & Sorting		
Unit III	Trees: Definition, Array and dynamic representations,	C19	Lecture
Unit III	Operations, Lists as trees, Almost Complete binary trees, Threaded binary trees	C20	Lecture
	Seminar	C21	Seminar
Unit III	AVL trees	C22	Lecture
Unit III	AVL trees, Heaps	C23	Lecture
Unit III	Graphs: Applications of graphs	C24	Lecture
Unit III	Sorting: Efficiency considerations, O notation, Bubble sort, Quicksort	C25	Lecture
	Class Room Assignment 2	C26	Class Room Assignment
Unit III	Selection sort, Binary Tree sort heap	C27	Lecture
Unit III	Heapsort, Heap as a priority queue	C28	Lecture
	Guest Lecture	C29	Guest lecture
Unit III	Insertion sort, Merge sort	C30	Lecture
Unit III	Shell sort, Radix sort	C31	Lecture
	Presentation	C32	Presentation
	Quiz	C33	Quiz
Unit III	Clarification Class	C34	Clarification Class
Unit III	Take Home Assignment		Home Assignments
Unit IV	Searching: Sequential searching, Indexed sequential searching	C35	Lecture
	Webinar	C36	Webinar

Unit IV	Binary search, Interpolation search	C37	Lecture
Unit IV	Binary tree searching, Insertion and deletion, Optimum search trees	C38	Lecture
Unit IV	Height balanced trees, Single and double rotations, Multi way, Search trees	C39	Lecture
	Guest Lecture	C40	Guest lecture
	Class Room Assignment	C41	Class Assignment
Unit IV	B-trees, B+-trees	C42	Lecture
Unit IV	Hashing methods of resolving clashes,	C43	Lecture
Unit IV	Methods of choosing Hash functions	C44	Lecture
	Clarification Class	C45	Clarification Class
	Take Home Assignment		Home Assignments

19003600– Data Structures Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Implementation of Single Dimension Array, Implementation of Multi Dimension Array	P1-P2	Practical
2	Recursion, Stack Operations	P3-P4	Practical
3	Stack Operations	P5-P6	Practical
4	Queue Operations	P7-P8	Practical
5	Linked List Implementation	P9-P10	Practical
6	Linked List Implementation, Binary Trees	P11-12	Practical
7	Binary Trees, Quick Sort	P13-P14	Practical
8	Quick Sort	P15-P16	Practical
9	Insertion Sort	P17-P18	Practical
10	Merge Sort	P19-P20	Practical
11	Merge Sort	P21-P22	Practical
12	Linear Search	P23-P24	Practical
13	Binary Search	P25-P26	Practical
14	Clarification Class	P27-P28	Clarification Class
15	Quiz	P29-P30	Quiz

19008600– Object Oriented Programming with C/C++

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Basic concept of OOPS	C1	Lecture
Unit I	Review of basic concepts of object-oriented programming	C2	Lecture
Unit I	Comparison between procedural programming paradigm and object-oriented programming paradigm	C3	Lecture
Unit I	Classes and Objects: Specifying a class	C4	Lecture
Unit I	Creating class objects, Accessing class members	C5	Lecture
Unit I	Access specifiers – public, private, and protected	C6	Lecture
Unit I	Classes, Objects and memory	C7	Lecture
Unit I	Static members, The const keyword and classes	C8	Lecture
Unit I	Static objects, Friends of a class	C9	Lecture
Unit I	Empty classes	C10	Lecture
Unit I	Nested classes, Local classes	C11	Lecture
Unit I	Abstract classes, Container classes, Bit fields	C12	Lecture
Unit I	Presentation	C13	Presentation
	Home Assignment		Home Assignment
	Clarification Class	C14	Clarification Class
	Class Room Assignment	C15	Class Assignment
Unit II	Console Based I/O		
Unit II	Concept of streams, Console Based I/O	C16	Lecture
Unit II	Hierarchy of console stream classes,	C17	Lecture
Unit II	Input/output using Overloaded operators >> and << and Member functions of I/O stream classes	C18	Lecture
Unit II	Formatting Output	C19	Lecture
Unit II	Formatting using ios class functions and flags	C20	Lecture
Unit II	Formatting using manipulators	C21	Lecture
Unit II	Constructors and Destructors: Need for constructors and destructors	C22	Lecture
	Class Room Assignment	C23	Class Assignment
Unit II	Copy constructor	C24	Lecture
Unit II	Dynamic constructors	C25	Lecture
Unit II	Destructors	C26	Lecture
	Clarification Class 2	C27	Clarification Class
	Guest Lecture 1	C28	Guest lecture
	Home Assignment	C29	Home Assignment
Unit III	Loops, Arrays & Pointers	C30	Lecture
Unit III	"for", "while" and "do – while" loops, break and continue statement	C31	Lecture
	Home Assignment		Home Assignments
	Seminar		Seminar
Unit IV	nested control statement, value returning functions	C32	Lecture
Unit IV	void functions, value versus reference Parameters	C33	Lecture
Unit IV	local and global variables, static and automatic variables	C34	Lecture
	Seminar	C35	Seminar
Unit IV	enumeration type	C36	Lecture
Unit IV	one dimensional array, two dimensional array	C37	Lecture

	Class Room Assignment	C38	Class Assignment
Unit IV	character array	C39	Lecture
Unit IV	pointer data and pointer variables	C40	Lecture
	Clarification Class	C40	Clarification Class
	Webinar	C41	Webinar
Unit IV	Object Oriented Concepts, Virtual Function & Polymorphism	C42	Lecture
Unit IV	Abstraction, encapsulation	C43	Lecture
Unit IV	Inheritance and Its types	C44	Lecture
Unit IV	Inheritance and Its types	C45	Lecture
	Home Assignment		Home Assignments
Unit IV	Static and Dynamic binding	C46	Lecture
	Guest Lecture	C47	Guest lecture
Unit IV	Overloading	C48	Lecture
Unit IV	Program Development: Object oriented analysis	C49	Lecture
Unit IV	Design, unit testing & debugging	C50	Lecture
Unit IV	system testing & integration	C51	Lecture
	Webinar	C52	Webinar
	Class Room Assignment	C53	Class Assignment
	Quiz	C54	Quiz
Unit IV	Virtual Functions and Polymorphism: Concept of Binding	C55	Lecture
Unit IV	Early binding and late binding	C56	Lecture
Unit IV	Virtual functions, Pure virtual functions	C57	Lecture
Unit IV	Abstract classes,	C58	Lecture
Unit IV	Virtual destructors & polymorphism	C59	Lecture
Unit IV	Clarification Class	C60	Clarification Class

19008700– Object Oriented Programming with C/C++ Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	sum and product of digits of an integer, reverse a number	P1-P2	Practical
2	sum of the first n terms, Prime No.	P3-P4	Practical
3	Factors, Swapping	P5-P6	Practical
4	Triangle of stars, Array: Print even-valued elements, odd-valued elements	P7-P8	Practical
5	sum and average of the elements of array, maximum and minimum element of array	P9-P10	Practical
6	Concatenation of strings-Streams input output, half triangle of stars using streams	P11-P12	Practical
7	Using operator overloading, implementation of matrix operations	P13-P14	Practical
8	Using operator overloading and function overloading for string operations	P15-P16	Practical
9	Calculate and print the sum and average of the elements of array, Print the maximum and minimum element of array, Write a program that swaps two numbers using pointers, Write a program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main function.	P17-P20	Practical
10	WAP to display Fibonacci series using iteration, WAP to calculate Factorial of a number using iteration, WAP to calculate Factorial of a number using recursion, Create Matrix class using templates	P19-P20	Practical
11	Create Matrix class using templates	P21-P22	Practical
12	Create a class Box containing length, breath and height and calculate surface area and volume.	P23-P24	Practical
13	WAP for matrix addition, Using concept of constructor and destructors, create database for students database.	P24-P25	Practical

19003800– Operating Systems

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Introduction to operating system	C1	Lecture
Unit I	need and operating system services	C2	Lecture
Unit I	operating system classification	C3	Lecture
Unit I	batch processing, Multiprogramming, Multitasking, parallel Systems,	C4	Lecture
Unit I	Distributed system, Real time system, SYSTEM CALL	C5	Lecture
Unit I	Process concept, Process scheduling,	C6	Lecture
Unit I	threads, overview of Inter process communication,	C7	Lecture
Unit I	CPU scheduling, Dead Lock, Deadlock characteristic, Prevention	C8	Lecture
	Clarification Class1	C9	Clarification Class
	Home ASSIGNMENT-1		Home Assignments
	Class Assignment-1	C10	Class Assignment
Unit 2	Memory management		
Unit 2	Memory management	C11	Lecture
Unit 2	Logical versus Physical address space	C12	Lecture
Unit 2	Swapping, Partition, Paging and segmentation	C13	Lecture
Unit 2	Virtual memory: Demand paging	C14	Lecture
Unit 2	Page replacement algorithms, Allocation algorithms	C15	Lecture
Unit 2	Thrashing	C16	Lecture
	Clarification Class 2	C17	Clarification Class
	Home ASSIGNMENT-2		Home Assignments
Unit 3	File Management		
Unit 3	File Management	C18	Lecture
	Seminar	C19	Seminar
Unit 3	File concept, access methods, and Directory structure	C20	Lecture
Unit 3	single level, two lever, tree structures	C21	Lecture
Unit 3	acrylic graph and general graph directory	C22	Lecture
Unit 3	file protection, free space management	C23	Lecture
Unit 3	Guest lecture	C24	Guest lecture
Unit 3	Clarification Class 3	C25	Clarification Class
Unit 3	MCQ Quiz Based on job oriented	C26	Quiz
	Home ASSIGNMENT-3		Home Assignments
Unit 4	Device Management: SEMAPHORE		
Unit 4	Device Management: SEMAPHORE	C27	Lecture
Unit 4	Disk Structure, Disk Scheduling	C28	Lecture
Unit 4	Webinar	C29	Webinar
Unit 4	FCFS Scheduling, SSTF Scheduling,	C30	Lecture
Unit 4	SCAN Scheduling, C-SCAN Scheduling	C31	Lecture
Unit 4	Disk Scheduling algorithm	C32	Lecture
	Presentation	C33	Presentation
	Presentation	C34	Presentation
Unit 4	Avoidance, Detection and Recovery, Critical Section	C35	Lecture
Unit 4	Synchronization, Hardware, Semaphore	C36	Lecture
Unit 4	Combined Approach to dead lock Handling	C37	Lecture
	Clarification Class 4	C38	Clarification Class
	Class Room Assignment 3	C39	Class Assignment

Unit 5	Goals of Protection, Domain of Protection, Access Matrix	C40	Lecture
Unit 5	Security and Authentication, Revocation of access Rights	C41	Lecture
Unit 5	Program Threats and System Threads	C42	Lecture
Unit 5	Clarification Class 5	C43	Clarification Class
	Guest lecture	C44	Guest lecture
	Webinar	C45	Webinar

19003900– Operating Functions Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Basic Commands in unix	P1-P2	Practical
2	VI editor	P3-P4	Practical
3	Shell Programming	P5-P6	Practical
4	File Permission	P7-P8	Practical
5	Factorial of any number	P9-P10	Practical
6	Write a program to check whether a given string is palindrome or not.	P11-P12	Practical
7	Simple Interest	P13-P14	Practical
8	Activity1	P15-P16	Activity
9	Global and Internal Variables, Extern Variables	P17-P18	Practical
10	Bitwise operators , Size of data Types , Switch Statement	P19-P20	Practical
11	Area of Circle	P23-P24	Practical
12	Nested If-else, Do while	P25-P26	Practical
13	For Loop, other scrpitng Programmes	P27-P28	Practical
14	Nano and emacs editor in linux	P29-P30	Practical

19004000– Digital Electronic Circuits

Unit	Particulars	Class No.	Pedagogy of Class
UNIT 1	NUMBER SYSTEMS: Introduction of Syllabus, Introduction of digital Electronics, Advantages of digital electronics, application of digital electronics, Modern day usage of Digital electronics	C1	Lecture
UNIT 1	Introduction of Number System, Decimal, Hexadecimal number system, Octal Number system and Binary Number System	C2	Lecture
UNIT 1	Conversion of Number System with Example	C3	Lecture
UNIT 1	Conversion of Number System with Example-II	C4	Lecture
UNIT 1	Home Assignment No. 1 - Based on Conversions		Home Assignments
UNIT 1	Arithmetic Operation, Boolean Algebra, De Morgons, Theorem	C5	Lecture
UNIT 1	Example based on Boolean Algebra	C6	Lecture
UNIT 1	Example based on Boolean Algebra	C7	Lecture
UNIT 1	Class Room Assignment No. 1	C8	Class Assignment
UNIT 1	Error detection and Corrections Codes	C9	Lecture
UNIT 1	Clarification Class-1	C10	Clarification Class
UNIT 2	COMBINATIONAL CIRCUITS		
UNIT 2	Simplification of Boolean Algebra, Introduction of K-Map	C11	Lecture
UNIT 2	Simplification of Boolean using K-Map with Example	C12	Lecture
UNIT 2	Home Assignment No- 2 based on Karnaugh Map		Home Assignments
UNIT 2	Simplification of Boolean function using Q M Method	C13	Lecture
UNIT 2	Half Adder, Full Adder, Subtractor, BCD Adder, Full Speed Adder, Multiplier, Divider, Decoder and Encoder	C14	Lecture
UNIT 2	ALU, Code Conversions, Magnitude Comparators	C15	Lecture
UNIT 2	Multiplexer, De-Multiplexer and Application of Multiplexer and De-Mux	C16	Lecture
UNIT 2	Implementation using ROM, PLA, PAL, FPGA and TTL Ics for their Application	C17	Lecture
UNIT 2	Implementation using ROM, PLA, PAL, FPGA and TTL Ics for their Application-II	C18	Lecture
UNIT 2	Class Room Assignment No. 2	C19	Class Assignment
UNIT 2	Clarification Class - 2	C20	Clarification Class
UNIT 3	SEQUENTIAL CIRCUITS		
UNIT 3	Various Types of Flip-Flops and their Conversions	C21	Lecture
UNIT 3	Various Types of Flip-Flops and their Conversions-II	C22	Lecture
UNIT 3	Seminar	C23	Seminar
UNIT 3	Counter and Its Type	C24	Lecture
UNIT 3	Presentation-I	C25	Presentation
UNIT 3	Guest Lecture -1	C26	Guest lecture
UNIT 3	Design of Synchronous and Asynvhronous Sequential Circuits-II	C27	Lecture
UNIT 3	Clarification Class -3	C28	Clarification Class
UNIT 3	Guest Lecture -2	C29	Guest lecture
UNIT 3	Class Room Assignment 3	C30	Class Assignment

UNIT 4	MEMORIES - TYPES OF ROM		
UNIT 4	Memory and Its Type	C31	Lecture
UNIT 4	Static and Dynamic Memory	C32	Lecture
UNIT 4	Representative Circuits for BJT	C33	Lecture
UNIT 4	Presentation-II	C34	Presentation
UNIT 4	Representative Circuits for BJT-II	C35	Lecture
UNIT 4	FET Transistor	C36	Lecture
UNIT 4	Webinar -2	C37	Webinar
UNIT 4	Memory Expansion using IC	C38	Lecture
UNIT 4	Flash Memory, CCD, Latest Trends in memories	C39	Lecture
UNIT 4	ECI, TTL, MOS, CMOS logic families and their comparison	C40	Lecture
UNIT 4	Home Assignment No.3		Home Assignments
UNIT 4	Activity	C41	Activity
UNIT 4	Fanout, unit load, current and voltage parameters	C42	Lecture
UNIT 4	Webinar	C43	Webinar
UNIT 4	Interfacing of TTL & CMOS Logic families	C44	Lecture
UNIT 4	Clarification Class -4	C45	Clarification Class

19004100– Digital Electronic Circuits Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Introduction of digital laboratory equipment. Digital IC Trainer	P1-P2	Practical
2	To study of basic gates and verify the truth - table	P3-P4	Practical
3	Verification of Universal loic gates with truth-table	P5-P6	Practical
4	Activity	P7-P8	Activity
5	Design and Verification of Full adder and full subtractor	P9-P10	Practical
6	Design and Verification of Full adder and full subtractor	P11 - P12	Practical
7	To design and Implement Binary to Gray Conversion	P13-P14	Practical
8	To design and Implement Gray to Binary Conversion	P15 - P16	Practical
9	To design 1-bit comparator	P17-P18	Practical
10	To design two bit comparator	P19-P20	Practical
11	To design and construct basic flip flop	P21-P22	Practical
12	Test	P23-P24	Test
13	To design asynchronous counter	P25-P26	Practical
14	To design synchronous counter	P27-P28	Practical
15	Presentation-I	P29-P30	Presentation

11012200– Human Values, Business & Managerial Ethics

Unit	Particulars	Class No.	Pedagogy of Class
I	Concept of values & its formation, Values & Behaviour	C-1	Lecture
I	Ethics Meaning, nature Scope	C-2	Lecture
I	Morality vs legality dilemma & Facts & Values & Subjectivism & Relativism	C-3	Lecture
I	Moral Development Kohalsberg 6 stage of moral development	C-4	Lecture
I	Myth of Moral Business	C-5	Presentation
I	Ethics & Business	C-6	Clarification Class
II	Decision Making (Normal Dilemma & Problems)	C-7	Lecture
II	Application of ethical theories in business Practice ie	C-8	Class Assignment
II	Utilitarianism (Bentham & J.S Mill)	C-9	Lecture
	Take Home Assignment - I		Home Assignment
II	Deontology (I. Kant)	C-10	Lecture
II	Economic Justice: Distributive justice (John Rawls) & Libertarian justice (Robest Nozick)	C-11	Presentation
II	Virtue Ethics Theory (Aristotle)	C-12	Clarification Class
III	Concept of CSR , Changing expectation of society	C-13	Lecture
III	Model's Of CSR Carolls Model, Ackerman's CSR Model	C-14	Webinar
III	Why social Responsibility of Business, Arguments in favor of social responsibility	C-15	Lecture
III	Arguments against of social responsibility	C-16	Lecture
	Take Home Assignment - II		Home Assignment
III	Consumerism & Consumer rights	C-17	Class Assignment
III	Ethical Issues in Business	C-18	Clarification Class
IV	Features of free and perfect competitive market, Monopoly & Oligopoly, Corruption & Bribery & Ethics in advertising	C-19	Lecture
IV	Corruption & Bribery & Ethics in advertising	C-20	Lecture
IV	Finance: Fairness and efficiency in financial market	C-21	Guest Lecture
IV	Insider trading & Green Mail & Golden parachute	C-22	Lecture
IV	HR: Worker Rights & duties & Work place Safety	C-23	Lecture
	Take Home Assignment - III		Home Assignment
IV	Sexual Harassment & Whistle Blowing policy	C-24	Clarification Class
V	Ethical Decision making	C-25	Lecture
V	Role of Moral philosophy in decision	C-26	Lecture
V	Argument for and against in decision making	C-27	Class Assignment
V	Challenges of ethical issues due to globalization	C-28	Lecture
V	Power & Politics in organization	C-29	Quiz
V	Hierarchism as organisation value & Indian ethos in Management	C-30	Clarification Class

19004200– Ability and Skill Enhancement -III

Unit	Particulars	Class No.	Pedagogy of Class
UNIT I	What is Book Review, Purpose & Importance of Book Review Types of Book Review, Elements & Steps of Writing Book Review	C-1	Lecture
UNIT I	Book Review Writing	C-2	Class Assignment
UNIT I	What is Movie Review, Purpose & Importance of Movie Review Types of Movie Review, Elements & Steps of Writing Movie Review	C-3	Lecture
UNIT I	Watch a movie	C-4	Activity
UNIT I	Write the review of the movie shown in the class		Home Assignments
UNIT I	Clarification Class Unit 1	C-5	Clarification Class
UNITII	Reading Comprehension	C-6	Lecture
UNITII	Debate	C-7	Class Assignment
UNITII	Rewriting Mythology/Folklore	C-8	Lecture
UNITII	Watch an international greek myth or indian folklore	C-9	Activity
UNITII	Rewriting Mythology/Folklore watched in the class		Home Assignments
UNITII	News Analysis	C-10	Activity
UNITII	Role Plays	C-11	Lecture
UNITII	Role Plays	C-12	Class Assignment
UNIT III	What is emotional intelligence, E.Q. Tests, performing under pressure, how to take right decisions under pressure keeping balance in difficult emotional situations. The science of emotional intelligence, characteristics of emotional intelligence,	C-13	Lecture
UNIT III	Emotions handling- identifying good and bad emotions	C-14	Lecture
UNIT III	how to control emotions, how to manage negative emotions keeping balance of mental stability	C-15	Lecture
UNIT III	stress and distress	C-16	Lecture
UNIT III	Activity/Case Study	C-17	Activity
UNIT III	Unit 3	C-18	Clarification Class
UNIT IV	What is GD, Types of Group Discussions	C-19	Lecture
UNIT IV	GD: Do's & Dont's, Participation,	C-20	Lecture
UNIT IV	GD: Thinking, Structuring, Group Behaviour	C-21	Lecture
UNIT IV	Leadership Skills, Interpersonal Skills, Persuasive Skills, Conceptualization Skills	C-22	Lecture
UNIT V	What is documentary, aims & objectives	C-23	Lecture
UNIT V	Documentary/Movie Screening & Reviews	C-24	Activity
UNIT V	documentary for social cause	C-25	Presentation
UNIT V	documentary for social cause: Screening and Narration	C-26	Presentation
UNIT V	preparing a documentary		Home Assignments
UNIT V	Unit 5	C-27	Clarification Class
	Webinar	C-28	Webinar
	Seminar	C-29	Seminar
	Guest Lecture	C-30	Guest lecture

9.1 Semester - IV		
Course	**Course Outcomes: - After completion of these courses' students should be able to**	
19005300- Optimization Techniques	**CO1:**	Classify the optimization problems.
	CO2:	Solve optimization problems using linear programming and apply for solving engineering optimization problems
	CO3:	Simplify optimization problems using nonlinear programming (Lagrange multipliers and Kuhn-Tuker conditions) and apply for solving engineering optimization problems
	CO4:	Determine optimization problems using Dynamic programming (CPM, PERT) Methods.
	CO5:	Classify error detection and recovery technique.
19006100- Advanced Numerical Techniques Computation Lab (ANTC)	**CO1:**	Explain Gauss elimination and Gauss- seidel methods to design linear system.
	CO2:	Develop a function using trapezoidal and Simpson's rule.
	CO3:	Solve the initial value problem using modified Euler's and Runge-kutta methods.
	CO4:	Simplify the Regression analysis using least square principle.
	CO5:	Create a solution of the complex problem using Runga-Kutta Method.
19003700- Computer Architecture	**CO1:**	Define the basic functions of a digital computer.
	CO2:	Illustrate the basic arithmetic and logic operations in the computer.
	CO3:	Explain memory organisation.
	CO4:	Identify the I/O interfacing.
	CO5:	Ability to analyze memory hierarchy and its impact on computer Cost/performance.
19006000- Software Engineering	**CO1:**	Explain the generic models of software development process.
	CO2:	Illustrate the fundamental concepts of requirements engineering and Analysis Modeling.
	CO3:	Identify the different design techniques and their implementation.
	CO4:	Apply the concepts of life cycle models to choose the appropriate model.
	CO5:	Able to develop the SRS document for project.
19005600- Computer Networks	**CO1:**	Define various components and categories of data communications, types of connections, topologies, protocols and standards, various transmission media and modems.
	CO2:	Explain various switching techniques used and implement the various routing and router protocols,
	CO3:	Illustrate multiplexing and demultiplexing, UDP, TCP protocols and Congestion Control mechanisms.

	CO4:	Identify and correct the errors using various algorithmic techniques, be aware of the various Ethernet standards and bridges.
	CO5:	Choose appropriate protocol for desired communication service
19005700-Computer Networks Lab	**CO1:**	Demonstrate the client and server concepts in Network system.
	CO2:	Apply Error correction method in data flow.
	CO3:	Categorize the different protocols.
	CO4:	Design the concept of local area networks, their topologies, protocols.
	CO5:	Ability to implement client/server communication
19005800-Principles of Programming Languages	**CO1:**	Define the semantics of a programming language using a definitional interpreter.
	CO2:	Identify semantic issues in programming languages by studying implementations in an interpreter.
	CO3:	Solve problems using a range of programming paradigms and assess the effectiveness of each paradigm for a particular problem.
	CO4:	Classify functional and logical programming concept.
	CO5:	Able to Understand and Analyze the Importance of Implementation Process
19005900-Principles of Programming Languages Lab	**CO1:**	Explain the different programming paradigms
	CO2:	Classify the major programming paradigms, and the principles and techniques involved in design and implementation of modern programming languages.
	CO3:	Apply the concepts of concurrent programming, logic programming.
	CO4:	Develop a project based on different languages/ platforms.
	CO5:	Create logics for real time programs.
19005400-Web Technologies	**CO1:**	Explain the basic concepts of Internet programming, Network Security and protocols used.
	CO2:	Build a script using CSS and Java Script.
	CO3:	Create webpages using HTML, HTML5, DHTML.
	CO4:	Develop applications using Web Programming.
	CO5:	Able to contrast server side scripting and Server side programming and develop database connectivity by make use of java and PHP.
19005500-Web Technologies Lab	**CO1:**	Illustrate scripts using CSS and Java Script.
	CO2:	Build applications using HTML, DHTML.
	CO3:	Develop solution to complex problems using appropriate method, technologies, frameworks, web services and content management.
	CO4:	Design web-based application using suitable client side and server side web technologies.

	CO5:	Able to develop Web applications by using JSP with Database Connectivity
11017100-Organizational Behavior	**CO1:**	How the organizational behavior can integrate in understanding the motivation (why) behind behavior of people in the organization.
	CO2:	Explain the applicability of the concept of organizational behavior to understand the behavior of people in the organization.
	CO3:	Demonstrate the applicability of analyzing the complexities associated with management of individual behavior in the organization.
	CO4:	Analyze the complexities associated with management of the group behavior in the organization.
	CO5:	Evaluate the behavior of the people based on the different situations.
19006200-Ability and Skill Enhancement -IV	**CO1:**	Design the resume and know about different format.
	CO2:	Know and classify the different types of interviews i.e.Mock Interview, HR Expert Mock Interview, Telephonic Interviews.
	CO3:	Examine the Company Specific Research and Presentation.
	CO4:	Build conversation skill
	CO5:	Find out Industry suitable for internship or job.

9.2 Mapping: Semester – IV

19005300	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2					3	2		3
CO2	3	3	2	3	3	3	3	2	3		2	3
CO3	3	3	3	2	3	3	3	2	3	3	3	3
CO4	2	2	3	2	3	3	3	3	3	3	3	3
CO5	3		2		2	2		2		2	3	

19006100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		3	3	3	3	3	3	3
CO2	2	2	3	2	3	3	3	3	3	3	3	3
CO3	2	2	2	3	3				3	3	3	3
CO4	3	3	2	2	3				3	3	3	3
CO5	2		2		2	3	3	3		2		2

19003700	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2			3	3	3	3	2	3
CO2	3	3	3	3	2		3	3	2	3	3	3
CO3	2	2	2	3	3	3			3		3	3
CO4		2	3	3	3	3	3	3	3	2	3	3
CO5	3		2			2	2	2		3		2

19006000	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		3	3	3	3	3	3	3
CO2	2	2	3	2	3	3	3	3	3	3	3	3
CO3	2	2	2	3	3				3	3	3	3
CO4	3	3	2	2	3				3	3	3	3
CO5	2		3		2	3		3			2	2

19005600	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2			3	3	3	3	2	3
CO2	2	3	2	3	2		3	3	2	3	2	3
CO3	3	2	2	3	2	3			3		3	3
CO4		2	3	2	3	3	3	3	3	2	3	3
CO5	2				3	3	2	2		3		3

19005700	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		3	3	3	3	3	2	3
CO2	2	3	3	2		2	2	3	3	2		3
CO3	2	2	2	2	3				2	3	3	3
CO4	2	3	3	2	3				3	3	3	3
CO5				3	3	3	2	2			2	

19005800	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2			3	3	3	3	2	3
CO2	3	2		3	2		3	3	2	3	3	3
CO3	2	2		2	3	3			3		3	3
CO4		2	3	2	2	2	3	2	3	2	3	3
CO5	2		3		2	3		2		3		

19005900	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2			3	3	3	3	2	3
CO2	2	3	3	3	3		3	3	2		3	
CO3	2	2	2		2	3			3		3	3
CO4		2	3		2	2	3	2	3	2	3	3
CO5	2			3		3				3		2

19005400	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		3	3	3	3	3	2	3
CO2	3	3	3		3	2	2	3		2	3	
CO3	2		2	2	3				2	3	3	3
CO4	2	2	3	2					3	3		3
CO5					3	2	3	2			2	2

19005500	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2		2	3	2	2	2		2	2	3
CO2	3		3	2	2	3	2	3			3	3
CO3	3	2	3	3	3	2	3	2		2	2	3
CO4	3		2			3	2	2			3	3
CO5		3		2	2				3	3		2

11017100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	3	2	2	2		2	2	
CO2			3		2	3		3	2		3	3
CO3	3	2	3	3	3	2	3		3	2		
CO4			2	2		3	2	2	3	3	3	3
CO5	3	3			2				3		3	3

19006200	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		3	2	2		3	3	3		2
CO2	3	3	3	3	3	2		2	2	3	3	2
CO3					3	2			2	3	2	2
CO4	3	3	2	3	2	2				3	3	2
CO5	3	3		3	3		3	3	2		2	2

9.3 Lesson Plan: Semester - IV

19005300– Optimization Techniques

Unit	Particulars	Class No.	Pedagogy of Class
UNIT I	Scope of Operations Research		
UNIT I	Introduction to linear and non-linear programming formulation of different models	C1	Lecture
UNIT I	Linear Programming: Geometry of linear programming, Graphical method	C2	Lecture
UNIT I	Linear programming (LP) in standard form, Solution of LP by simplex and revised simplex methods	C3	Lecture
UNIT I	Exceptional cases in LP, Duality theory	C4	Lecture
UNIT I	Dual Simple method, Sensitivity analysis	C5	Lecture
	Activity	C6	Activity
	Take Home Assignments		Home Assignments
	Clarification Class	C7	Clarification Class
UNIT II	Network Analysis		
UNIT II	Transportation problem (with transshipment)	C8	Lecture
UNIT II	Assignment problem	C9	Lecture
UNIT II	Traveling-salesman problem	C10	Lecture
UNIT II	Shortest route problem	C11	Lecture
UNIT II	Minimal spanning tree, Maximum flow problem	C12	Lecture
UNIT II	Integer Programming: Branch and bound algorithm	C13	Lecture
	Webinar	C14	Webinar
	Quiz	C15	Quiz
	Class Room Assignment	C16	Class Assignment
	Presentation	C17	Presentation
	Take Home Assignments		Home Assignments
	Seminar	C18	Seminar
	Clarification Class	C19	Clarification Class
	Guest Lecture	C20	Guest lecture
UNIT III	Dynamic programming		
UNIT III	Forward recursions	C21	Lecture
UNIT III	General problem, Reliability problem	C22	Lecture
UNIT III	Capital budgeting problem	C23	Lecture
UNIT III	Cargo-loading problem	C24	Lecture
UNIT III	CPM and PERT: Drawing of networks	C25	Lecture
UNIT III	CPM and PERT: Removal of redundancy	C26	Lecture
UNIT III	CPM and PERT: Network computations	C27	Lecture
UNIT III	CPM and PERT: Free slack	C28	Lecture
UNIT III	CPM and PERT: Total slack	C29	Lecture
UNIT III	CPM and PERT: Resource allocation	C30	Lecture
	Webinar	C31	Webinar
	Presentation	C32	Presentation
	Clarification Class	C33	Clarification Class
	Class Room Assignment	C34	Class Assignment
	Take Home Assignments		Home Assignments
UNIT IV	Non-Linear Programming		
UNIT IV	Characteristics, Concepts of convexity	C35	Lecture

UNIT IV	Maxima and minima of functions of n-variables using Lagrange multipliers	C36	Lecture
UNIT IV	Maxima and minima of functions of n-variables using Kuhn-Tukerconditions	C37	Lecture
UNIT IV	One dimensional search methods	C38	Lecture
UNIT IV	Fibonacci Method	C39	Lecture
	Class Room Assignment	C40	Class Assignment
	Guest Lecture	C41	Guest lecture
UNIT IV	Golden section method	C42	Lecture
UNIT IV	Gradient methods for unconstrained problems	C43	Lecture
UNIT IV	Software: Introduction to software for optimization techniques (TORA).	C44	Lecture
	Clarification Class	C45	Clarification Class

19006100– Advanced Numerical Techniques Computation Lab (ANTC)

S. No.	Particulars	Class No.	Pedagogy of Class
1	To detect the interval (s) which contain(s) root of equation f(x)=0 and implement bisection Method to find root of f(x)=0 in the detected interval.	P1	Lecture
2	Mathematical Programming based on Bisection Method	P2-P3	Practical
3	Mathematical problems solved through Bisection Method: solutions of questions	P4	Clarification Class
4	Mathematical problems solved through Bisection Method: solutions of questions	P5	Clarification Class
5	Activity	P6	Activity
6	Activity	P7	Activity
7	To find the root of f(x)=0 using Newton-Raphson and fixed point iteration methods.	P8	Lecture
8	Programming on Newton Raphson Method	P9	Practical
9	Programming on Newton Forward interpolation method	P10-P11	Practical
10	Problems based on Newton forward interpolation	P12	Clarification Class
11	Finding the root of polynomial using Regula falsi method	P13	Lecture
12	Programming on Regula Falsi Method	P14-P15	Practical
13	Solution of Simultaneous linear equations using Gauss Elimination Method	P16	Lecture
14	Programming on Gauss Elimination Method	P17	Practical
15	Solution of Simultaneous linear equations using Gauss Seidal Method	P18	Lecture
16	Solution of Simultaneous linear equations using Gauss Seidal Method	P19	Lecture
17	Programming on Gauss Seidal Method	P20-P21	Practical
18	Numerical Solution of ODE using Euler's method	P22	Lecture
19	Questions based on numerical solution of ODE and Solution of simultaneous equations using Gauss Seidal Method	P23	Clarification Class
20	Programming of Euler's method	P24-P25	Practical
21	Numerical solution of ODE using Runge Kutta methods	P26	Lecture
22	Runge Kutta Method Programming	P27	Practical
23	Numerical Integration	P28	Lecture
24	Trapezoidal Rule & Simpson's 1/3 Rule Regression analysis using least square principle. Correlation analysis for bivariate distribution.	P29- P30	Practical

19003700– Computer System Architecture

Unit	Particulars	Class No.	Pedagogy of Class
UNIT I	Basics of Digital Electronics		
UNIT I	Introduction to Codes, Logic gates, Flip flops, Registers, Counters	C1	Lecture
UNIT I	Multiplexer, Demultiplexer, Decoder, Encoder	C2	Lecture
UNIT I	Register Transfer and Micro operations: Register transfer Language	C3	Lecture
UNIT I	Register transfer, Bus & memory transfer	C4	Lecture
UNIT I	Logic micro operations, Shift micro operation	C5	Lecture
	Activity	C6	Activity
	Take Home Assignments		Home Assignments
UNIT I	Basic Computer Organization: Instruction codes, Computer instructions	C7	Lecture
UNIT I	Timing & control, Instruction Cycles	C8	Lecture
UNIT I	Memory reference instruction, Input/output & Interrupts	C9	Lecture
UNIT I	Complete computer description & design of basic computer	C10	Lecture
	Clarification Class	C11	Clarification Class
UNIT II	Control Unit		
UNIT II	Hardwired vs. Micro programmed control unit.	C12	Lecture
UNIT II	Hardwired vs. Micro programmed control unit.	C13	Lecture
UNIT II	Central Processing Unit: General register organization	C14	Lecture
UNIT II	Stack organization	C15	Lecture
UNIT II	Instruction format	C16	Lecture
UNIT II	Data transfer & manipulation	C17	Lecture
UNIT II	Program control, RISC, CISC	C18	Lecture
UNIT II	Addition & subtraction, Multiplication Algorithms, Division algorithms	C19	Lecture
	Webinar	C20	Webinar
	Quiz	C21	Quiz
	Class Room Assignment	C22	Class Assignment
	Presentation	C23	Presentation
	Take Home Assignments		Home Assignments
	Seminar	C24	Seminar
	Clarification Class	C25	Clarification Class
	Guest Lecture	C26	Guest lecture
UNIT III	Input-Output Organization		
UNIT III	Peripheral devices, I/O interface	C27	Lecture
UNIT III	Data transfer schemes	C28	Lecture
UNIT III	Program control, Interrupt	C29	Lecture
UNIT III	DMA transfer, I/O processor	C30	Lecture
UNIT III	Memory hierarchy, Processor vs. memory speed	C31	Lecture
UNIT III	High-speed memories, Cache memory, Associative memory	C32	Lecture
UNIT III	Interleave, Virtual memory, Memory	C33	Lecture

	management		
	Webinar	C34	Webinar
	Presentation	C35	Presentation
	Clarification Class	C36	Clarification Class
	Class Room Assignment	C37	Class Assignment
	Take Home Assignments		Home Assignments
UNIT IV	Introduction To Parallel Processing		
UNIT IV	Pipelining	C38	Lecture
UNIT IV	Characteristics of multiprocessors	C39	Lecture
UNIT IV	Interconnection structures	C40	Lecture
UNIT IV	Interprocessor arbitration	C41	Lecture
UNIT IV	Interprocessor communication & synchronization	C42	Lecture
	Class Room Assignment	C43	Class Assignment
	Guest Lecture	C44	Guest lecture
	Clarification Class	C45	Clarification Class

19006000– Software Engineering

Unit	Particulars	Class No.	Pedagogy of Class
Unit 1	Introduction to Software Engineering, Importance of Software	C1	Lecture
Unit I	The Software Evolution, Software Characteristics	C2	Lecture
Unit I	Software Applications	C3	Lecture
Unit I	Software Crisis: Problem and Causes	C4	Lecture
Unit I	Software Development Life Cycle: Waterfall model	C5	Lecture
Unit I	Incremental and Evolutionary process models	C6	Lecture
Unit I	Personal Software process (PSP) and Team Software process (TSP)	C7	Lecture
Unit I	Overview of agile process and aspect oriented programming	C8	Lecture
Unit I	Clarification Class - 1	C9	Clarification Class
	Take Home Assignments-1		Home Assignments
	Class Room Assignment-1	C10	Class Assignment
Unit II	Problem Analysis, Requirement elicitation and Validation	C11	Lecture
Unit II	Requirements modeling, Scenarios, Information and analysis classes	C12	Lecture
Unit II	Flow and behavioral modeling, documenting Software Requirement Specification (SRS)	C13	Lecture
Unit II	Design Concepts, design models for architecture, Component, data and user interfaces	C14	Lecture
Unit II	Problem Partitioning, Abstraction	C15	Lecture
Unit II	Cohesiveness, Coupling, Top Down and Bottom Up design approaches	C16	Lecture
Unit II	Functional Versus Object Oriented Approach, Design Specification, 4GL	C17	Lecture
	Clarification Class-2	C18	Clarification Class
	Home Assignment-2		Home Assignments
	Class Room Assignment-2	C19	Class Assignment
	Presentation-1	C20	Presentation
	Guest Lecture-1	C21	Guest lecture
	Quiz-1	C22	Quiz
Unit III	TOP-DOWN and BOTTOM-UP structure programming	C23	Lecture
Unit III	Information Hiding, Programming Style, and Internal Documentation, Verification	C24	Lecture
Unit III	Levels of Testing, Functional Testing, Structural Testing, Test Plan	C25	Lecture
Unit III	Test Case Specification, Software Testing Strategies, Verification & Validation	C26	Lecture
Unit III	Unit, Integration Testing, Top Down and Bottom Up Integration Testing	C27	Lecture
Unit III	Alpha & Beta Testing, White box and black box testing techniques, System Testing and Debugging	C28	Lecture
Unit III	Software Configuration Management, Overview of Software Quality Control and Quality Assurance, ISO 9000 Certification for Software Industry	C29	Lecture

Unit III	SEI Capability Maturity Model (CMM) and Comparison between ISO & SEI CMM	C30	Lecture
	Clarification Class-3	C31	Clarification Class
	Home Assignment-3		Home Assignments
	Workshop	C32	Workshop
	Class Room Assignment 1	C33	Class Assignment
	Presentation-2	C34	Presentation
	Activity 1	C35	Activity
Unit IV	A Framework for Technical Software Metrics, Metrics for the Analysis Model	C36	Lecture
Unit IV	Metrics for Design Model, Metrics for Source Code	C37	Lecture
Unit IV	Metrics for Testing, Metrics for Maintenance	C38	Lecture
Unit IV	CASE and its Scope	C39	Lecture
Unit IV	CASE support in Software Life Cycle, Documentation Support	C40	Lecture
Unit IV	Architecture of CASE Environment	C41	Lecture
Unit IV	Exposure to CASE tools like Rational Software suit	C42	Lecture
Unit IV	Turbo Analyst	C43	Lecture
Unit IV	Silk Suite	C44	Lecture
	Clarification Class-4	C45	Clarification Class

19005600– Computer Networks

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Introduction		
Unit I	Introduction To Computer Networks	C1	Lecture
Unit I	Motivation, Signals & Media, Bits Over Signals	C2	Lecture
Unit I	OSI Model : Physical , Data Link & Network Layer	C3	Lecture
Unit I	OSI Model : Transport, Session, Presentation & Application Layer	C4	Lecture
Unit I	Transmission Modes: Synchronous/Asynchronous Communication	C5	Lecture
Unit I	Modulations & Modems	C6	Lecture
Unit I	Bandwidth, Through Put & Noise	C7	Lecture
Unit I	Multiplexing : Frequency Division & Time Division & Phase Division	C8	Lecture
Unit I	Standards & Administration , Brief Introduction to IP Addressing	C9	Lecture
	Clarification Class 1	C10	Clarification Class
	Class Room Assignment 1	C11	Class Assignment
Unit II	Packet Transmission		
Unit II	Multiplexing : Frequency Division & Time Division & Phase Division	C12	Lecture
Unit II	Frames Flow Control & Error Control : Error Correction Techniques	C13	Lecture
Unit II	LAN/WAN Technologies	C14	Lecture
Unit II	Shared Media & Media Access	C15	Lecture
Unit II	Topology : Bus, Ring & Star Topology	C16	Lecture
Unit II	Wireless & CSMA/CA, CSMA/CD	C17	Lecture
Unit II	Ethernet Addressing & Wiring ,HUBS	C18	Lecture
	Clarification Class 2	C19	Clarification Class
	Class Room Assignment 2	C20	Class Assignment
	Presentation 1	C21	Presentation
	Activity 1	C22	Activity
	Webinar 1	C23	Webinar
	Guest lecture 1	C24	Guest lecture
	Take Home Assignments 1		Home Assignments
Unit III	Other LAN technologies		
Unit III	Asynchronous Transfer Mode , Ring Topology: Token Passing Rings	C25	Lecture
Unit III	STAR Topology & FDDI	C26	Lecture
Unit III	WAN technologies including frame relay	C27	Lecture
Unit III	IEEE 802.3 , IEEE 802.5	C28	Lecture
Unit III	Routing Algorithms: Distance Vector & Link State	C29	Lecture
Unit III	Shortest Path Communication, Dijkastra's Algorithm	C30	Lecture
Unit III	X.25, and ATM	C31	Lecture
	Clarification Class 3	C32	Clarification Class
	Class Room Assignment 3	C33	Class Assignment

	Presentation 2	C34	Presentation
	Take Home Assignments 2		Home Assignments
Unit IV	Internet working		
Unit IV	Internet Working Introduction	C35	Lecture
Unit IV	Concept, Goals, IP addressing	C36	Lecture
Unit IV	Address binding with ARP	C37	Lecture
Unit IV	IP Datagram, Encapsulation IP fragmentation and reassembly	C38	Lecture
Unit IV	Protocols :concept and datagrams: ICMP, TCP, UDP	C39	Lecture
Unit IV	Network Services: Electronic mail, File transfer	C40	Lecture
Unit IV	Remote login-introduction to protocol specification	C41	Lecture
Unit IV	Validation and testing	C42	Lecture
	Clarification Class 4	C43	Clarification Class
	Seminar 1	C44	Seminar
	Quiz 1	C45	Quiz
	Take Home Assignments 3		Take Home Assignments

19005700– Computer Networks Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Study of Network Topologies with Introduction to Network Lab.	P1-P2	Practical
2	Study of Network Cables & Tools.	P3-P4	Practical
3	Study of Network Straight & Cross Cables.	P5-P6	Practical
4	Study of Network Physical Equipments: (Hubs / Repeaters/Switches/Modems).	P7-P8	Practical
5	Study of Network Connecting Physical Devices: (Routers /Gateways/Multiplexers).	P9-P10	Practical
6	Study of Network IP Addressing.	P11-P12	Practical
7	Study of Network IP Addressing/ Subnetting.	P13-P14	Practical
8	Study of Basic Networking Commands.	P15-P16	Practical
9	To Assign/Practical IP Address to the PC Connected to the Internet.	P17-P18	Practical
10	To Assign/Practical IP Address to the PC Connected to the Internet.	P19-P20	Practical
11	Practical to connect computers in Local Area Network.	P21-P22	Practical
12	Presentation	P23-P24	Presentation
13	Clarification Class	P25-P26	Clarification Class
14	Activity	P27-P28	Activity
15	Clarification Class	P29-P30	Clarification Class

19005800– Principles of Programming Languages

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction of Programming Paradigms	C1	Lecture
Unit-I	Study of principles and major concepts in various programming paradigms like imperative and Functional	C2	Lecture
Unit-I	Study of principles and major concepts in various programming paradigms like Object-oriented and logic programming	C3	Lecture
Unit-I	Introduction to various phases of compilers	C4	Lecture
Unit-I	Formal translation models: BNF Grammars	C5	Lecture
Unit-I	Formal translation models: Macro processors	C6	Lecture
Unit-I	Imperative programming: Location, reference and expressions	C7	Lecture
Unit-I	Assignment and control, Data types, Blocks	C8	Lecture
Unit-I	Procedures and Modules.	C9	Lecture
	Clarification Class-1	C10	Clarification Class
	Class Assignment-1	C11	Class Assignment
	Activity-1	C12	Activity
Unit-II	Object Oriented Programming Concept of classes and objects	C13	Lecture
Unit-II	Introduction to abstraction and encapsulation	C14	Lecture
Unit-II	Inheritance and Polymorphism	C15	Lecture
Unit-II	Functional Programming: Functions as first class objects	C16	Lecture
Unit-II	Higher order functions	C17	Lecture
Unit-II	Polymorphic data types	C18	Lecture
Unit-II	Type checking	C19	Lecture
Unit-II	Type inferencing	C20	Lecture
	Take Home Assignment-1		Home Assignments
	Clarification Class-2	C21	Clarification Class
	Class Assignment-2	C22	Class Assignment
	Presentation-1	C23	Presentation
	Guest Lecture-1	C24	Guest Lecture
Unit-III	Introduction to logic Programming	C25	Lecture
Unit-III	Introduction to logic Programming	C26	Lecture
Unit-III	Unification, Backtracking	C27	Lecture
Unit-III	Unification, Backtracking	C28	Lecture
Unit-III	Introduction to storage management from programmer's view	C29	Lecture
Unit-III	Static storage management	C30	Lecture
Unit-III	Heap storage management	C31	Lecture
	Take Home Assignment-2		Home Assignments
	Clarification Class-3	C32	Clarification Class
	Class Assignment-3	C33	Class Assignment
	Presentation-2	C34	Presentation
	Webinar-1	C35	Webinar
UNIT-IV	Concept of concurrent programming	C36	Lecture
UNIT-IV	Concept of concurrent programming	C37	Lecture

UNIT-IV	Processes, and Synchronization primitives	C38	Lecture
UNIT-IV	Processes, and Synchronization primitives	C39	Lecture
UNIT-IV	Case study on State-of-the-art topics in Programming Language Mobile agent paradigm	C40	Lecture
UNIT-IV	Case study on State-of-the-art topics in Programming Language Cloud Computing	C41	Lecture
UNIT-IV	A Case Study in Concurrent Programming with Active Object	C42	Lecture
UNIT-IV	Illustration of the above concepts using representative languages: C, C++, Java, LISP and Prolog etc	C43	Lecture
	Seminar-1	C46	Seminar
	Take Home Assignment-3		Home Assignments
	Clarification Class-4	C45	Clarification Class

19005900– Principles of Programming Languages Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Implementation of object oriented concepts like inheritance	P1-P2	Practical
2	Implementation of object oriented concepts like inheritance	P3-P4	Practical
3	Implementation of object oriented concepts like Polymorphism	P5-P6	Practical
4	Implementation of object oriented concepts like Polymorphism	P7-P8	Practical
5	Programming in Markup Languages.	P9-P10	Practical
6	Programming in PHP	P11-P12	Practical
7	Implementation of concurrent programming Virtual Lab experiments	P13-P14	Practical
8	Implementation of Logic programming	P15-P16	Practical
9	First projects will be assigned on different languages/platforms	P17-P18	Practical
10	Second projects will be assigned on different languages/platforms	P19-P20	Practical
11	Third projects will be assigned on different languages/platforms	P21-P22	Practical
12	Fourth projects will be assigned on different languages/platforms	P23-P24	Practical
	Presentation	P25-P26	
	Clarification Class	P27-P28	
	Quiz	P29-P30	

19005400– Web Technologies

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	History on Internet and World wide Web	C1	Lecture
Unit I	Search Engines, ISP, Domain Name,	C2	Lecture
Unit I	URL, E-mail and All technology related to E-Mail	C3	Lecture
Unit I	What is Difference Between Static and Dynamic Web page	C4	Lecture
Unit I	Introduction of HTML, Tags Related to Text Formatting Tools	C5	Lecture
Unit I	anchor tags, adding images and sounds, Lists in HTML	C6	Lecture
Unit I	anchor tags, adding images and sounds, Lists in HTML	C7	Lecture
Unit I	Frames in HTML	C8	Lecture
Unit I	Tables in HTML	C9	Lecture
Unit I	Forms in HTML-1	C10	Lecture
Unit I	Forms in HTML-2	C11	Lecture
Unit I	global and Local Tags	C12	Lecture
Unit I	ID and Class Attributes in html, Map tag in HTML	C13	Lecture
	clarification Class1	C14	Clarification Class
	Class Room Assignment-1	C15	Class Assignment
	Home Assignment-1		Home Assignments
Unit II	Intranet Connectivity		
Unit II	FDDI	C16	Lecture
Unit II	ISDN	C17	Lecture
Unit II	ADSL	C18	Lecture
Unit II	PPP	C19	Lecture
Unit II	ATM	C20	Lecture
Unit II	Web servers and browser's	C21	Lecture
Unit II	proxy server	C22	Lecture
	Class Room Assignment-2	C23	Class Assignment
	Home Assignment-2		Home Assignments
Unit II	proxy server	C24	Lecture
	Clarification Class2	C25	Clarification Class
	Presentation 1	C26	Presentation
Unit III	Network Security		
Unit III	Network Security attacks	C27	Lecture
Unit III	Vulnerabilities of Network system	C28	Lecture
Unit III	Data Security Encryption	C29	Lecture
Unit III	key protocols	C30	Lecture
Unit III	Document signatures	C31	Lecture
Unit III	Firewalls	C32	Lecture
Unit III	Activity1	C33	Lecture
Unit III	Clarification Class3	C34	Clarification Class
	Class Room Assignment-3	C35	Class Assignment
	Home Assignment 3		Home Assignments
	Presentation 2	C36	Presentation
UNIT IV	Web Programming		
UNIT IV	Introduction to Web Pages	C37	Lecture

UNIT IV	HTML, HTTP, SHTTP	C38	Lecture
UNIT IV	XML	C39	Lecture
UNIT IV	Front Page Forms and Form Handlers	C40	Lecture
UNIT IV	Site design and Navigation, jsp, jdbc	C41	Lecture
UNIT IV	Java Programming - class design, inheritance, overloading, polymorphism, exception handling	C42	Lecture
UNIT IV	Activity2	C43	Lecture
UNIT IV	Quiz	C44	Quiz
	Clarification Class4	C45	Clarification Class

19005500– Web Technologies Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Introduction of HTML, Browser, Online and Offline editor	P1	Practical
2	Basic tags, text formatting tags	P2	Practical
3	List and Type Definition Tags, Image and Anchor tags	P3	Practical
4	Use of tables in HTML	P4	Practical
5	Use of Frames in HTML	P5	Practical
6	Introduction of JavaScript, Variables and Type Casting in HTML	P6	Practical
7	Form in HTML	P7	Practical
8	Use of DHTML and Use in HTML	P8	Practical
9	Introduction of CSS, Tags related CSS, Java Script	P9	Practical
10	Use of XML and How use in WEB Designing	P10	Practical
11	XML Syntax and Use in HTML Coding	P11	Practical
12	Clarification Class	P12	Clarification Class
13	Clarification Class	P13	Clarification Class
14	Revision	P14	Clarification Class
15	Revision	P15	Clarification Class

11017100– Organizational Behavior

Unit	Particulars	Class No.	Pedagogy of Class
UNIT I	Introduction to Organizational Behavior		
UNIT I	Today's Organizations, Challenges	C1	Lecture
UNIT I	Foundations of Organizational Behavior, Individual Behavior: Perception	C2	Lecture
UNIT I	Values, Attitudes Motivation theories	C3	Lecture
UNIT I	Employees Motivations in Organization	C4	Lecture
UNIT I	Management by Objectives Learning Processes, Reward and Punishment	C5	Lecture
	Take Home Assignments		Home Assignments
	Clarification Class	C6	Clarification Class
UNIT II	Foundations of Group Behavior		
UNIT II	Interpersonal Communication	C7	Lecture
UNIT II	Leadership, Emotional Intelligence	C8	Lecture
UNIT II	Power & Polities	C9	Lecture
UNIT II	Conflict Process	C10	Lecture
UNIT II	Negotiations	C11	Lecture
	Class Room Assignment	C12	Class Room Assignment
UNIT II	Stress and Coping	C13	Lecture
UNIT II	Inter-Group Relations, Team Working	C14	Lecture
	Presentation	C15	Presentation
	Clarification Class	C16	Clarification Class
UNIT III	A Macro Perspective of Organizational Behavior		
UNIT III	Organization Structure – Key Elements	C17	Lecture
	Quiz	C18	Quiz
	Take Home Assignments		Home Assignments
	Class Room Assignment	C19	Class Assignment
	Activity	C20	Activity
UNIT III	Types and Basic Models	C21	Lecture
UNIT III	Work Design	C22	Lecture
UNIT III	Organizational Change, and Learning Organizations	C23	Lecture
	Clarification Class	C24	Clarification Class
UNIT IV	Organizational Behavior		
UNIT IV	Future Challenges Gender Diversity at the place of work	C25	Lecture
	Presentation	C26	Presentation
	Class Room Assignment	C27	Class Assignment
	Take Home Assignments		Home Assignments
UNIT IV	Changing world Scenario, Role of External Environment	C28	Lecture
UNIT IV	Advantage Management of change, International issues in Organizational Behavior	C29	Lecture
	Clarification Class	C30	Clarification Class

19006200– Ability and Skill Enhancement -IV

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Receiving Calls, Placing a call, Ending Calls	C1	Lecture
Unit I	Transferring calls, Taking Message/ Voice Mails, Placing call on hold	C2	Lecture
Unit I	Handling Complaints	C3	Lecture
	Telephonic Conversation	C4	Class Assignment
Unit II	How to build confidence by positive thinking,	C5	Lecture
Unit II	identifying negative thoughts, how to control negative thoughts entering our mind, identifying personal talents, and its ways to improve	C6	Lecture
Unit II	how to develop good habits and having principles and follow them at all times	C7	Lecture
Unit II	Need to learn new things, ideas and skills	C8	Lecture
Unit II	what is brain storming, why do we need it,	C9	Lecture
Unit II	what are the different ways of brain storming through logics and reasoning	C10	Lecture
Unit II	Brain Storming Session - Assignment	C11	Activity
	Presentation	C12	Presentation
Unit III	What is resume	C13	Lecture
Unit III	Format of Resume, Formatting	C14	Lecture
	Resume Preparation		Home Assignments
Unit III	Covering Letter, PI Kit	C15	Lecture
Unit IV	Mastering the art of giving interviews in	C16	Lecture
Unit IV	selection or placement interviews	C17	Lecture
Unit IV	web /video conferencing	C18	Activity
Unit IV	Mock Interview (Questions)	C19	Lecture
Unit IV	Mock Interview (Questions)	C20	Lecture
	HR Expert Mock Interview	C21	Class Assignment
Unit IV	Telephonic Interviews	C22	Activity
	Class Room Assignment	C23	Class Assignment
Unit V	Identifying domain specific industries	C24	Lecture
Unit V	Identifying domain specific industries - Assignment	C25	Activity
	researching the industry		Home Assignments
Unit V	Industry analysis	C26	Lecture
	Presentation on specific industry/company	C27	Presentation
	Webinar	C28	Webinar
	Guest Lecture	C29	Guest lecture
	Home Assignment		Home Assignments
	Clarification Class	C30	Clarification Class

10.1 Semester – V		
Course	**Course Outcomes: - After completion of these courses' students should be able to**	
19007400-Micro processor	**CO1:**	Define the basics of Digital Systems.
	CO2:	Explain the working of a microprocessor/controller.
	CO3:	Build a program for processor using assembly language.
	CO4:	Classify the different peripherals in a digital system.
	CO5:	Design and analyze combinational and sequential circuits.
19007500-Micro processor Lab	**CO1:**	Define the higher processor architectures descended from ADC, DAC, 8253, Printer, UP- PC Interface.
	CO2:	Explain the architecture of the advanced processor thoroughly to use the resources for programming.
	CO3:	Apply the assembly language programming to develop small real life embedded application.
	CO4:	Construct an executable file and use it.
	CO5:	Create a model on UP-PC interface.
19007600- Analysis and Design of Algorithm	**CO1:**	Find the various methods of calculating complexity.
	CO2:	Illustrate the best method for different algorithms.
	CO3:	Make use of computational geometry, like Lower bound theory, modular arithmetic, and CRT.
	CO4:	Various Decision Problems like NP Complete, NP hard.
	CO5:	Analyse the knowledge of Graph and its algorithm.
19007700- Analysis and Design of Algorithm Lab	**CO1:**	Demonstrate the Divide and Conquer algorithm design technique for various applications.
	CO2:	Apply the dynamic programming algorithm design technique for various applications.
	CO3:	Design a Greedy algorithm technique for various applications.
	CO4:	Develop the backtracking algorithm technique for various applications.
	CO5:	Create a program to find the Time & Space Complexity.
19007800- Database Management Systems	**CO1:**	Explain the database management basics and different models and use for database design.
	CO2:	Apply the different form of normalization on the Database.
	CO3:	Analyse the concepts of transaction, concurrency, and recovery systems.
	CO4:	Design and architecture of relational model, relational algebra, and SQL queries.
	CO5:	Ability to compare different storage structures

19007900-Database Management Systems Lab	**CO1:**	Explain the use advanced database Programming concepts.
	CO2:	Develop the ability to handle databases of varying complexities.
	CO3:	Compare the types of normalization by using a database.
	CO4:	Design software solutions by evaluating alternate architectural patterns.
	CO5:	Able to create triggers, cursors for given problem
19008000-Computer Graphics	**CO1:**	Explain the structure of modern computer graphics system.
	CO2:	Identify the basic principles of implementing computer graphics primitives.
	CO3:	Classify key algorithms for modeling and rendering graphical data.
	CO4:	Develop design and problem-solving skills with application to computer graphics.
	CO5:	Able to Create animation scenes
19008100-Computer Graphics Lab	**CO1:**	Demonstrate the competency to understand the concepts related to Computer Vision and Virtual reality.
	CO2:	Develop scientific and strategic approach to solve complex problems Computer in the domain of Computer Graphics.
	CO3:	Apply mathematics and logic to develop Computer programs for elementary graphic operations.
	CO4:	Create the logic to develop animation and gaming programs.
	CO5:	Create programs for animation scenes
19008200-Core Java	**CO1:**	Explain the use of packages and interfaces in java.
	CO2:	Make use of user-defined and inbuilt exceptions Create multi-threaded Applications.
	CO3:	Classify all types of Character and Byte Streams.
	CO4:	Create GUI based trivial applications.
	CO5:	Analyse and Design GUI based applications using swings and applets
19008300-Core Java Lab	**CO1:**	Explain inheritance, polymorphism and object relationship in java.
	CO2:	Apply decision and iteration control structures to implement algorithms in Java.
	CO3:	Compare String and string buffer methods.
	CO4:	Build the implement Packages.
	CO5:	Able to create GUI based applications using swings and applets
19008400-PHP & My SQL	**CO1:**	Explain the differences between typical scripting languages and typical system and application programming languages.
	CO2:	Apply your knowledge of the strengths and weaknesses of scripting languages to select an implementation language.

	CO3:	Analyse server-side scripts. File uploads and Database Connections.
	CO4:	Create software systems using scripting languages like VB Script and JavaScript.
	CO5:	Able to contrast server side scripting and Server side programming and develop database connectivity by make use of java and PHP.
19008500-PHP & My SQL Lab	**CO1:**	Define PHP programming language.
	CO2:	Demonstrate the basics of PHP object-oriented programming concepts.
	CO3:	Build of Array concepts.
	CO4:	Create some real time software modules.
	CO5:	Able to develop Web applications by using JSP with Database Connectivity.
19006300-Ability and Skill Enhancement -V	**CO1:**	Express and build leadership quality
	CO2:	Recall the traits of Successful Entrepreneurs, and Entrepreneurial qualities
	CO3:	Classify the differences between organizational decision making process, entrepreneurial decision making process
	CO4:	Create work related skills and prepare effective interview questions to conduct effective interviews.
	CO5:	Enhance employability skills
19007300- Summer Internship and Report	**CO1:**	Encouraged to take internship program during their semester break.
	CO2:	Give guidelines, suggestions, and scope regarding companies.
	CO3:	Provide the interacting lectures with the industrial experts.
	CO4:	Improve the skills for choose best company for internship and make a report on internship.
	CO5:	Create competency and skills to take decisions during crisis and conflict situations.

10.2 Mapping: Semester – V

19007400	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3		3	2	3	2	2	2			2	3
CO2	3	2	2		3	3						3
CO3			2		2				2			
CO4	2	2	2	2		3			2			3
CO5	3		3		3		3	3		3	3	2

19007500	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2					3	2		3
CO2	3	3	2	3	3	3	3	2	3		2	3
CO3	3	3		2	3		3	2		3	3	3
CO4	2		3	2	3		3	3		3	3	
CO5		2			2	3		2	3	2		2

19007600	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3			2	3	3		3				3
CO2	3	2	3		3					2	3	3
CO3	2	2	3	2		3			2		2	
CO4			2			3				2	3	3
CO5	2			3				2	3	3		2

19007700	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		3	3	3	3	3	3	3
CO2	2	2	3		3	3		3		3	3	
CO3			2		3					3		3
CO4	3	3	2	2	3				3	3		
CO5	2			3		3	3	3			3	2

19007800	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		2		3			3	2		3
CO2	3	2	2	3		3				2		3
CO3	2	2		3	2				2		2	
CO4		2		2		3			3	2		3
CO5	2		3		3		3	3			3	2

19007900	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2			3	3	3	3	2	3
CO2	3	3	3		2		3	3		3	3	3
CO3	2		2	3	3	3			3		3	3
CO4		2	3		3	3		3		2	3	
CO5	2			3			3		3			2

19008000	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		2		2			2	2		3
CO2	2	3	3		2			2		2	3	3
CO3	2				2				3			3
CO4	2	2		2		3			3	2		3
CO5		2	3		3		3	3			3	2

19008100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		3	3		3	3		3
CO2	2	2		2	3	3		3	3	3	3	
CO3		2	2						3		3	3
CO4	3		2	2	3				3	3	3	2
CO5	2	3			3	2	2	2				3

11018200	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3		2	2	3	3		3		2		3
CO2	2	2	2		3	2				2	3	3
CO3	2	2	3	2	2	3			2	2	2	3
CO4			2		2			2		3	3	3
CO5	3	3		3		2		3	3		2	

19008300	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3		3	2			3	3	3	3	2	
CO2	2	3	2	3	2		3	3	2	3		3
CO3	3				2	3						
CO4		2	3		3	3	3	3	3	2	3	3
CO5	3	3		3	3				3	2	3	2

19008400	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		2				2	2		2	3
CO2	3	2	3	3	2	3	2		2	3	3	
CO3	2		2			3	2	2	3	2		3
CO4		2	2	2	2	2					2	3
CO5	2			3			3	3	2	3		2

19008500	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		3	3	3	3	3	2	3
CO2	2	3		2	3	2	2	3		2		
CO3		2		2					2		3	
CO4	2	3	3	2	3				3	3	3	3
CO5			3			3	3	2			2	2

19006300	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	2	2					3	2	2
CO2	2			3	2	2		2		3		2
CO3	3	3				2		3	2	3	3	2
CO4		2	3	3	2	3		3	2	3		2
CO5	3	3	2	2	3	2	3	2	3	2	3	2

19007300	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	3	3	3		2	2			3
CO2		2	3		2	2	2		3	3	3	3
CO3	2			3		2		3	2			3
CO4	3	3	2	2	2			2		3	2	2
CO5	3	3	3	3	3	3	3	3	3	3	3	3

10.3 Lesson Plan: Semester - V

19007400– Micro processor

Unit	Particulars	Class No.	Pedagogy of Class
UNIT 1	INTRODUCTION TO MICROPROCESSOR		
UNIT 1	Introduction of Syllabus, Introduction of Microprocessor, Evolution of Microprocessor	C1	Lecture
UNIT 1	Generic Architecture of Microprocessor, Application of Microprocessor	C2	Lecture
UNIT 1	Introduction of 8085 Microprocessor, Pin diagram of Microprocessor, Architecture of microprocessor	C3	Lecture
UNIT 1	Addressing Modes of Microprocessor, Introduction of Instruction, Instruction Type	C4	Lecture
UNIT 1	Home Assignment No. 1 - Based on Computer Evolution		Take Home Assignments
UNIT 1	Instruction Set - I - Data Transfer Instructions	C5	Lecture
UNIT 1	Instruction Set - I - Arithmetic Instructions	C6	Lecture
UNIT 1	Instruction Set - I - Logical Instruction	C7	Lecture
UNIT 1	Instruction Set - I - Branch Instruction	C8	Lecture
UNIT 1	Class Room Assignment No. 1 - Based on Instruction	C9	Class Room Assignment
UNIT 1	Timing Diagram and Interrupt	C10	Lecture
UNIT 1	Programming Examples -II	C11	Lecture
UNIT 1	Programming Examples -II	C12	Lecture
UNIT 1	Home Assignment No. 2 - Based on Programming		Take Home Assignments
UNIT 1	Clarification Class - 1	C13	Clarification Class
UNIT 2	BASIC INPUT/OUTPUT TECHNIQUES		
UNIT 2	Programmed I/O, Interrupt Driven I/O, DMA	C14	Lecture
UNIT 2	Class Room Assignment No. 2 - Based on Programming	C15	Class Room Assignment
UNIT 2	Peripheral Controller, USART, RS-232 C	C16	Lecture
UNIT 2	8255, 8259,8253/8254	C17	Lecture
UNIT 2	DMA Controller 8237/8257	C18	Lecture
UNIT 2	Home Assignment - 3 - Based on Interfacing		Take Home Assignments
UNIT 2	Presentation No-1	C19	Presentation
UNIT 2	Clarification Class - 2	C20	Clarification Class
UNIT 2	Programmable Keyboard and Display Interface	C21	Lecture
UNIT 3	INTEL MICROPROCESSOR 8086		
UNIT 3	Introduction of 8086, Difference between 8085 and 8086, Architecture of 8086	C22	Lecture
UNIT 3	Class Room Assignment No. 3	C23	Class Room Assignment
UNIT 3	Introduction of 8086, Difference between 8085 and 8086, Architecture of 8086	C24	Lecture
UNIT 3	Pin Diagram of 8086, Features, Addressing modes, segmented Memory	C25	Lecture
UNIT 3	Presentation No. 2	C26	Presentation

UNIT 3	Instruction Set - II	C27	Lecture
UNIT 3	Instruction Set - II	C28	Lecture
UNIT 3	Seminar	C29	Seminar
UNIT 3	Class Room Assignment No. 4	C30	Class Room Assignment
UNIT 3	Clock Generator 8284	C31	Lecture
UNIT 3	Bus Controller	C32	Lecture
UNIT 3	Guest Lecture-I	C33	Guest lecture
UNIT 3	Presentation No. 3	C34	Presentation
UNIT 3	Clarification Class - 3	C35	Clarification Class
UNIT 4	INTERFACING WITH 8086 MICROPROCESSOR		
UNIT 4	Types of Main Memory, Memory Organization	C36	Lecture
UNIT 4	Interfacing with RAM, ROMs	C37	Lecture
UNIT 4	Webinar	C38	Webinar
UNIT 4	Presentation No. 4	C39	Presentation
UNIT 4	Types of Main Memory, Memory Organization	C40	Lecture
UNIT 4	CPU Timing Diagram, RAM/ROM Interface Requirements	C41	Lecture
UNIT 4	Guest Lecture-II	C42	Guest lecture
UNIT 4	Clarification Class 4	C43	Clarification Class
UNIT 4	DRAM Controller	C44	Lecture
UNIT 4	Webinar-2	C45	Webinar

19007500– Micro processor Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Introduction of Assembly Language Programming	P1-P2	Practical
2	WAP to add two number using Registers	P3-P4	Practical
3	WAP to add two 8-bit number using Memory location with Carry and Without Carry	P5-P6	Practical
4	WAP to add two 16-bit number using Memory location with Carry and Without Carry	P7-P8	Practical
5	WAP to multiply two number using register and Memory location	P9-P10	Practical
6	WAP to transfer a Block of Data from one location to other location	P11-P12	Practical
7	WAP a find larger number and smallest number	P13	Practical
8	WAP to find negative and positive number	P14	Practical
9	WAP to find odd number and even number	P15	Practical
10	WAP to find largest number and smallest number	P16	Practical

19007600– Analysis and Design of Algorithm

Unit	Particulars	Class No.	Pedagogy of Class
UNIT I	Basic of Algorithm Analysis & Design, Algorithm Design Techniques		
UNIT I	Algorithm Definition, Analyzing algorithms	C1	Lecture
UNIT I	Order arithmetic, time and space complexity	C2	Lecture
UNIT I	Stacks, Queues	C3	Lecture
UNIT I	Trees, heaps, Sets and graphs	C4	Lecture
UNIT I	Algorithm Design Techniques: Divide and Conquer: general method	C5	Lecture
UNIT I	Merge sort	C6	Lecture
	Home Assignment 1		Take Home Assignments
UNIT I	Recurrences, Solving Recurrences by Substitution method	C7	Lecture
UNIT I	Recursive Tree Method.	C8	Lecture
	Clarification Class	C9	Clarification Class
	Presentation 1	C10	Presentation
Unit II	Greedy Method		
Unit II	Job Sequencing with Deadlines	C11	Lecture
	Guest Lecture	C12	Guest lecture
	Class Room Assignment 1	C13	Class Room Assignment
UNIT II	Knapsack problem	C14	Lecture
UNIT II	Optimal merge patterns, Optimal Storage on tapes	C15	Lecture
UNIT II	Minimum spanning trees	C16	Lecture
UNIT II	Huffman Encoding	C17	Lecture
Unit II	Dynamic Programming, Use of table instead of recursion, All pair shortest Path	C18	Lecture
	Home Assignment 2		Take Home Assignments
	Class Assignment 2	C19	Class Room Assignment
	Presentation 2	C20	Presentation
Unit II	0/1 knapsack	C21	Lecture
	Webinar	C22	Webinar
Unit II	Matrix Chain Multiplication	C23	Lecture
	Guest Lecture	C24	Guest lecture
	Home Assignment 3		Take Home Assignments
Unit II	Optimal binary search tree	C25	Lecture
Unit II	Longest Common Subsequence	C26	Lecture
Unit II	Traveling salesperson problem	C27	Lecture
	Clarification Class	C28	Clarification Class
	Quiz	C29	Quiz
	Seminar	C30	Seminar
	Activity	C31	Activity
UNIT III	Search & Traversal, Backtracking		
UNIT III	Search techniques: breadth first search, depth first	C32	Lecture

	search, code optimization		
	Presentation 3	C33	Presentation
UNIT III	Insertion, Quick, Selection Sort	C34	Lecture
UNIT III	Binary Search & Linear Search	C35	Lecture
UNIT III	Backtracking: 8 queens problem	C36	Lecture
UNIT III	sum of subsets, graph coloring	C37	Lecture
	Class Room Assignment 3	C38	Class Room Assignment
	Webinar	C39	Webinar
	Clarification Class	C40	Clarification Class
UNIT IV	Problem Clauses		
UNIT IV	P, NP, NP- Hard, NP-complete, Proving NP Complete Problems	C41	Lecture
	Presentation 4	C42	Presentation
UNIT IV	algorithm for NP complete problems- TSP	C43	Lecture
	Class Room Assignment 4	C44	Class Room Assignment
	Clarification Class	C45	Clarification Class

19007700– Analysis and Design of Algorithm Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Introduction to Algorithms & Analysis Lab , Linear Search & Its Time Complexity Computation.	P1-P2	Practical
2	Binary Search & Its Time Complexity Computation.	P3-P4	Practical
3	Insertion Sort & Its Time Complexity Computation	P5-P6	Practical
4	BFS & DFS- Its Time Complexity Computation	P7-P8	Practical
5	Merge Sort & Its Time Complexity Computation	P9-P10	Practical
6	Activity/Webinar	P11-P12	Webinar
7	Quick Sort & Its Time Complexity Computation	P13-P14	Practical
8	Quick Sort & Its Time Complexity Computation	P15-P16	Practical
9	Selection Sort & Its Time Complexity Computation	P17-P18	Practical
10	Heap Sort & Its Time Complexity Computation	P19-P20	Practical
11	Heap Sort & Its Time Complexity Computation	P21-P22	Practical
12	LCS in two given sequence	P23-P24	Practical
13	LCS in two given sequence	P25-P26	Practical
14	Clarification Class	P27-P28	Clarification Class
15	Clarification Class	P29-P30	Clarification Class

19007800– Database Management Systems

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Introduction		
Unit I	Introduction Of DBMS	C1	Lecture
Unit I	Data, data processing requirement, desirable characteristics of an ideal data processing system,	C2	Lecture
Unit I	traditional file based system, its drawback, concept of data dependency, Def of database, database management system,	C3	Lecture
Unit I	traditional file based system, its drawback, concept of data dependency, Def of database, database management system,	C4	Lecture
Unit I	3-schema architecture, database terminology,	C5	Lecture
Unit I	3-schema architecture, database terminology,	C6	Lecture
Unit I	benefits of DBMS, Database development process - conceptual data modeling,	C7	Lecture
Unit I	logical database design,	C8	Lecture
Unit I	physical database design,	C9	Lecture
Unit I	database implementation, database maintenance.	C10	Lecture
Unit I	Class Room Assignment 1	C11	Class Room Assignment
Unit I	Clarification Class 1	C12	Clarification Class
	Presentation	C13	Presentation
	Take Home Assignments 1		Take Home Assignments
Unit II	Database Analysis		
Unit II	Conceptual data modeling using E-R data model -entities, attributes,	C14	Lecture
Unit II	relationships, generalization, specialization, specifying constraints.	C15	Lecture
Unit II	practical problems based on E-R data model.	C16	Lecture
	Activity	C17	Activity
Unit II	Database Design: Logical database design and relational data model	C18	Lecture
Unit II	Introduction to relational database theory: def of relation, relational model operators,	C19	Lecture
Unit II	relational model integrity rules, Normalization- 1NF, 2NF, 3NF, 4NF, BCNF & practical problems based on these forms. Denormalization	C20	Lecture
Unit II	Class Room Assignment 2	C21	Class Room Assignment
Unit II	Clarification Class 2	C22	Clarification Class
	Presentation 2	C23	Presentation
	Take Home Assignments 2		Take Home Assignments
Unit III	Database Implementation		

Unit III	Database Implementation: Introduction to SQL	C24	Lecture
Unit III	DDL aspect of SQL, DML aspect of SQL – update,	C25	Lecture
Unit III	insert, delete & various form of SELECT- simple, using special operators,	C26	Lecture
Unit III	aggregate functions, group by clause, sub query,	C27	Lecture
Unit III	joins, co-related sub query, union clause, exist operator,	C28	Lecture
Unit III	Constrains, PL/SQL - cursor, stored function, stored procedure, triggers,	C29	Lecture
Unit III	Webinar 1	C30	Webinar
Unit III	Guest Lecture	C31	Guest lecture
Unit III	Class Room Assignment 3	C32	Class Room Assignment
Unit III	Clarification Class 3	C33	Clarification Class
	Presentation 3	C34	Presentation
	Take Home Assignments 3		Take Home Assignments
Unit IV	Transaction processing		
Unit IV	Transaction processing - introduction, concurrency control techniques, database recovery,	C35	Lecture
	Seminar	C36	Seminar
Unit IV	Overview of: client-server database environment,	C37	Lecture
Unit IV	distributed databases, Object-relational database, object-oriented database,	C38	Lecture
Unit IV	Webinar 2	C39	Webinar
Unit IV	web technology and database,	C40	Lecture
Unit IV	Guest lecture	C41	Guest lecture
Unit IV	Comparative study of various DBMS products.	C42	Lecture
Unit IV	Class Room Assignment 4	C43	Class Room Assignment
Unit IV	Clarification Class 4	C44	Clarification Class
Unit IV	Presentation 4	C45	Presentation

19007900– Database Management Systems Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Installation of database, Introduction of SQL server Management studio	P1-P2	Practical
2	Create Database, Drop Database, Create Table, Insertion of data	P3-P4	Practical
3	Working with Select Statement, Insert, Delete and Update	P5-P6	Practical
4	Order By, Group By, Like Operations	P7-P8	Practical
5	MIN, MAX, AVG, COUNT	P9-P10	Practical
6	All Join operations	P11-P12	Practical
7	Working with Sub Queries	P13-P14	Practical
8	Creating Views, Creating Column Aliases Query - views	P15-P16	Practical
9	Seminar	P17-P18	Seminar
10	DML DDL COMMAND	P19-P20	Practical
11	Query related to create table, SQL Constraints	P21-P22	Practical
12	Query related to Insert, Select, update, drop table or database and Alter	P23-P24	Practical
13	Activity	P25-P26	Activity
14	Quiz ,	P27-P28	Quiz
15	Activity	P29-P30	Activity

19008000– Computer Graphics

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Introduction		
Unit I	Introduction of Computer Graphics, The advantages of Interactive Graphics, Representative Uses of Computer Graphics	C1	Lecture
Unit I	Classification of Application Development of Hardware and Software for Computer Graphics, Conceptual Framework for Interactive Graphics	C2	Lecture
Unit I	Algorithm for Horizontal, Vertical & Diagonal Line Drawing	C3	Lecture
Unit I	Direct Method for Line Drawing	C4	Lecture
Unit I	DDA Algorithm for Line Drawing	C5	Lecture
Unit I	Bresenham's Line Drawing Algorithm	C6	Lecture
Unit I	Algorithms for drawing circle	C7	Lecture
Unit I	Algorithms for drawing ellipse	C8	Lecture
	Clarification Class	C9	Clarification Class
	Presentation	C10	Presentation
	Class Room Assignment	C11	Class Room Assignment
	Guest lecture	C12	Guest lecture
Unit II	Hardcopy		
Unit II	Display Technologies: Raster Scan Display & Random Scan Display	C13	Lecture
Unit II	Video Controller, Input Device for Operator Interaction, Image Scanners	C14	Lecture
Unit II	Working Exposure on graphic tools: Dream Weaver	C15	Lecture
Unit II	Dream Weaver	C16	Lecture
Unit II	Dream Weaver	C17	Lecture
Unit II	Clipping Algorithm: Southland-Cohen Algorithm	C18	Lecture
Unit II	Cyrus-Beck-Algorithm	C19	Lecture
Unit II	Midpoint Subdivision Algorithm	C20	Lecture
	Presentation	C21	Presentation
	Clarification Class	C22	Clarification Class
	Class Room Assignment	C23	Class Room Assignment
	Webinar	C24	Webinar
	Take Home Assignment		Take Home Assignments
Unit III	Geometrical Transformation		
Unit III	2D Transformation: Homogeneous Coordinates	C25	Lecture
Unit III	Matrix Representation of 2D	C26	Lecture
Unit III	2D Transformation	C27	Lecture
Unit III	Composition of 2D Transformation	C28	Lecture
Unit III	Window-to-Viewport Transformation	C29	Lecture
Unit III	Introduction to 3D Transformation Matrix	C30	Lecture
Unit III	3D Transformation Matrix	C31	Lecture
	Presentation	C32	Presentation

	Clarification Class	C33	Clarification Class
	Class Room Assignment	C34	Class Room Assignment
	Guest lecture	C35	Guest lecture
	Take Home Assignment		Take Home Assignments
Unit IV	Introductory Concepts		
Unit IV	Multimedia Definition, CD-ROM and the multimedia highway	C36	Lecture
Unit IV	Computer Animation (Design, types of animation), Different Functions of Animations, Uses of Multimedia	C37	Lecture
Unit IV	Introduction to making multimedia: The stage of Project, Hardware & Software Requirements to make good multimedia	C38	Lecture
Unit IV	Skills and Training opportunity in Multimedia Motivation for Multimedia usage	C39	Lecture
	Presentation	C40	Presentation
	Clarification Class	C41	Clarification Class
	Class Room Assignment	C42	Class Room Assignment
	Webinar	C43	Webinar
	Quiz	C44	Quiz
	Seminar	C45	Seminar
	Take Home Assignment		Take Home Assignments

19008100– Computer Graphics Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Basic Graphics Function	P1-P2	Practical
2	Wap to Draw a Line Using Mid-Point Algorithm or Bresenham's Algorithm	P3-P4	Practical
3	Wap to Draw a Line Using DDA Algorithm	P5-P6	Practical
4	Wap to Draw a Circle Using Bresenham's Algorithm	P7-P8	Practical
5	Wap to Draw an Ellipse Using Mid-Point Ellipse Drawing Algorithm	P9-P10	Practical
6	Wap to Show Line Clipping	P11-P12	Practical
7	Wap to Rotate a Triangle about Origin, Program to Scale the Triangle Program to Translate a Triangle	P13-P14	Practical
8	Program to Rotate a Point about a Point	P15-P16	Practical
9	Program to Rotate a Point about Origin	P17-P18	Practical
10	Program to Reflect a Triangle	P19-P20	Practical
11	Program to Draw a Hut Using Simple Graphic Functions	P21-P22	Practical
12	Program to Fill a Polygon	P23-P24	Practical
13	Presentation	P25-P26	Presentation
14	Clarification Class	P27-P28	Clarification Class
15	Quiz	P29-P30	Quiz

19008200– Core Java

Unit	Particulars	Class No.	Pedagogy of Class
Unit 1	Object oriented programming, characteristics of object orientated languages, classes,	C1	Lecture
Unit I	Java Programming: Introduction, Data types, access specifiers	C2	Lecture
Unit I	operators, control statements, arrays	C3	Lecture
Unit I	Classes: Fundamentals, objects, methods, constructors	C4	Lecture
Unit I	Inheritance: Super class, sub class	C5	Lecture
Unit I	this and super operator, method overriding	C6	Lecture
Unit I	use of final, packages, abstract class, interface	C7	Lecture
Unit I	Polymorphism: Method overloading, constructor overloading	C8	Lecture
Unit I	Clarification Class - 1	C9	Clarification Class
	Take Home Assignments-1		Take Home Assignments
	Class Room Assignment-1	C10	Class Room Assignment
	Presentation-1	C11	Presentation
Unit II	Exception Class, built in checked and unchecked exceptions, user defined exceptions	C12	Lecture
Unit II	use of try, catch, throw, throws, finally	C13	Lecture
Unit II	Overview, comparison with multiprocessing, Thread class and runnable interface	C14	Lecture
Unit II	life cycle, creation of single and multiple threads	C15	Lecture
Unit II	thread priorities, overview of Synchronization	C16	Lecture
Unit II	String handling (only main functions), String Buffer class	C17	Lecture
Unit II	byte and character streams, System.in and System. out, print and println	C18	Lecture
Unit II	reading from a file and writing in a file	C19	Lecture
	Clarification Class-2	C20	Clarification Class
	Home Assignment-2		Take Home Assignments
	Class Room Assignment-2	C21	Class Room Assignment
	Presentation-2	C22	Presentation
	Guest Lecture	C23	Guest lecture
	Workshop	C24	Workshop
	Quiz	C25	Quiz
Unit III	Introduction, Life cycle, creation and implementation	C26	Lecture
Unit III	AWT controls: Button, Label, Text Field, Text Area,	C27	Lecture
Unit III	Choice lists, list, scrollbars, check boxes	C28	Lecture
Unit III	Layout managers	C29	Lecture
Unit III	Delegation Event Model, Event classes and listeners	C30	Lecture
Unit III	Adapter classes, Inner classes	C31	Lecture
Unit III	Introduction and comparison with AWT controls	C32	Lecture
	Clarification Class-3	C33	Clarification Class

	Home Assignment-3		Take Home Assignments
	Class Room Assignment-3	C34	Class Room Assignment
	Presentation-3	C35	Presentation
	Activity - Mind Mapping	C36	Activity
Unit IV	Socket (datagram and TCP/IP based client and server socket)	C37	Lecture
Unit IV	factory methods, Inet Address	C38	Lecture
Unit IV	JDBC Architecture, JDBC Drivers	C39	Lecture
	Class Room Assignment-4	C40	Class Room Assignment
	Presentation-4	C41	Presentation
Unit IV	Life cycle, Interfaces	C42	Lecture
Unit IV	classes in javax. servlet package , Connecting Database	C43	Lecture
Unit IV	Creating a simple servlet	C44	Lecture
	Clarification Class-3	C45	Clarification Class

19008300– Core Java Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Write a program to display "Hello World" in 'JAVA' language.	P1-P2	Practical
2	Implementation of input and output statements	P3-P4	Practical
3	Implementation of control statements.	P5-P6	Practical
4	Implementation of functions.	P7-P8	Practical
5	Implementation of single dimension, two dimension array	P9-P10	Practical
6	Write a JAVA program that uses a recursive function for solving Towers of Hanoiproblem.	P11-P12	Practical
7	Activity-Mind Mapping	P13-P14	Activity
8	Write a JAVA program to implement the matrix ADT using a class. The operations supported by this ADT are: a) Reading a matrix. b) Addition of matrices. c) Printing a matrix. d) Subtraction of matrices. e) Multiplication of matrices.	P15-P16	Practical
9	Write a JAVA program that overloads the + operator and relational operators (suitable)to perform the following operations: a) Concatenation of two strings. b) Comparison of two strings.	P17-P18	Practical
10	Write JAVA programs that illustrate how the following forms of inheritance are supported: a) Single inheritance b) Multiple inheritances c) Multi inheritance d) Hierarchical inheritance	P19-P20	Practical
11	Clarification Class	P21-P22	Clarification Class
12	Test	P23-P24	Test
13	Write a JAVA program that illustrates the order of execution of constructors and destructors when new class is derived from more than one base class.	P25-P26	Practical
14	Additional java Program for desktop application	P27-P28	Practical
15	Additional java Program for desktop application	P29-P30	Practical

19008400– PHP & My SQL

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Introduction to PHP: What is PHP How PHP better than other Benefits of Using PHP MYSQL Server Client Environment	C1	Lecture
Unit I	Web Browse Web Server Installation & Configuration Files.	C2	Lecture
Unit I	Development Concept: How PHP Script Work PHP Syntax Write your First PHP Program Embed PHP In HTML/HTML In PHP	C3	Lecture
Unit I	PHP Data Type Variable In PHP Contents In PHP Operator In PHP	C4	Lecture
Unit I	PHP Data Type Variable In PHP Contents In PHP Operator In PHP	C5	Lecture
Unit I	Control Structure, Looping, Switch Statement	C6	Lecture
Unit I	Function: User-defined, Pre-defined, Array: Indexed, Associative, Multidimensional	C7	Lecture
Unit I	Date Time, Mail Function, Hash functions, Include(), Required(), Super-Global Variables, isset(), isempty() functions	C8	Lecture
	Clarification Class	C9	Clarification Class
	Class Room Assignment	C10	Class Room Assignment
	Presentation	C11	Presentation
Unit II	Array: What is Array Syntax Associative Array Numeric Array Multi-Dimensional Array	C12	Lecture
Unit II	String Function Chr() strlen() strpos() strcmp()	C13	Lecture
Unit II	Working with File Opening File Reading File Writing File Closing File, Appending File Uploading File	C14	Lecture
Unit II	OOPs Concept Class & Object Access Modifier Properties of Object Encapsulation and abstraction	C15	Lecture
Unit II	Inheritance Polymorphism, Function overriding Abstract class	C16	Lecture
Unit II	State Management Creating Cookies Set Cookies Destroying Cookies Creating Session Set Session Destroying Session	C17	Lecture
Unit II	Error Handling & Exception Introduction to Error Try, catch, throw Block Handling	C18	Lecture
	Clarification Class	C19	Clarification Class
	Class Room Assignment	C20	Class Room Assignment
	Presentation	C21	Presentation
	Quiz	C22	Quiz
	Webinar	C23	Webinar
	Guest lecture	C24	Guest lecture
	Take Home Assignments		Take Home Assignments
Unit III	Introduction to MYSQL What is Database? Understanding an RDBMS Understanding Tables,	C25	Lecture

	Record & Fields SQL Language		
Unit III	Working with MYSQL Admin Working with PHP My Admin Types Data Type	C26	Lecture
Unit III	Creating Database & Tables Dropping	C27	Lecture
Unit III	Database & Tables Adding Fields Selecting Table Alerting Fields Properties	C28	Lecture
Unit III	MySQL Function in PHP Database	C29	Lecture
Unit III	Connections Managing Database	C30	Lecture
Unit III	Connections Performing Queries Closing Connection	C31	Lecture
	Clarification Class	C32	Clarification Class
	Class Room Assignment	C33	Class Room Assignment
	Presentation	C34	Presentation
	Take Home Assignments		Take Home Assignments
Unit IV	SQL Queries Create Database & Table Drop Database & Table Insert Record Select Record Deleting Record Modifying Record WHERE Clause Using Operators Sorting Records Eliminating Duplicates Grouping Records, Having Clause Joining Tables Sub queries Using Table And Column Aliases	C35	Lecture
Unit IV	SQL Queries Create Database & Table Drop Database & Table Insert Record Select Record Deleting Record Modifying Record WHERE Clause Using Operators Sorting Records Eliminating Duplicates Grouping Records, Having Clause Joining Tables Sub queries Using Table And Column Aliases	C36	Lecture
Unit IV	SQL Queries Create Database & Table Drop Database & Table Insert Record Select Record Deleting Record Modifying Record WHERE Clause Using Operators Sorting Records Eliminating Duplicates Grouping Records, Having Clause Joining Tables Sub queries Using Table And Column Aliases	C37	Lecture
Unit IV	SQL Queries Create Database & Table Drop Database & Table Insert Record Select Record Deleting Record Modifying Record	C38	Lecture
Unit IV	WHERE Clause Using Operators Sorting Records Eliminating Duplicates Grouping Records, Having Clause Joining Tables Sub queries Using Table And Column Aliases	C39	Lecture
	Clarification Class	C40	Clarification Class
	Class Room Assignment	C41	Class Room Assignment
	Presentation	C42	Presentation
	Webinar	C43	Webinar
	Seminar	C44	Seminar
	Guest lecture	C45	Guest lecture
	Take Home Assignments		Take Home Assignments

19008500– PHP & My SQL Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	1. Create a php webpage and print "hello world". 2. Create a php program to find odd or even number from given number.	P1-P2	Practical
2	3. Write a php program to find maximum among three numbers 4. Write a PHP program to swap two numbers.	P3-P4	Practical
3	5. Write a PHP Program to demonstrate the variable function: a. Gettype() b. Settype() 6. Write a PHP Program to demonstrate the variable Function a. isset() b. unset()	P5-P6	Practical
4	7. Give the example of variable function: a. strval() b. floatval() c. intval() d. print_r() e. var_dump() 8. Give the example of string function a. substr() b. substr() c. strcmp() d. strcasecmp() e. strpos() f. strpos()	P7-P8	Practical
5	9. Write a PHP program that demonstrate form element(input elements). 10. Write a PHP program that demonstrate passing variable using URL. i. Write a PHP program that demonstrate use of session:1 ii. Write a PHP program that demonstrate use of session:2	P9-P10	Practical
6	11. Write a program that demonstrate use of cookies: 1 Write a program that demonstrate use of cookies: 2 12. Write a PHP program to create a database using MySQL	P11-P12	Practical
7	13. Write a PHP program to drop a database using MySQL. 14. Write a PHP program to create a table in MySQL.	P13-P14	Practical
8	15. Write a PHP program to insert record into a table using MySQL. 16. Write a PHP program to drop table using MySQL.	P15-P16	Practical
9	17. Write a program to update table	P17-P18	Practical
10	18. Write a PHP program to select data and show into table format	P19-P20	Practical

11	19. Create a student Registration in PHP and Save and Display the student Records.	P21-P22	Practical
12	20. Write a program to Develop student registration form and display all the submitted data on another page.	P23-P24	Practical
13	Presentation	P25-P26	Presentation
14	Clarification Class	P27-P28	Clarification Class
15	Quiz	P29-P30	Quiz

19006300– Ability and Skill Enhancement -V

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	What is leadership? Traits of Leadership, Identifying leaders and traits of Leadership	C1	Lecture
Unit I	What is leadership? Traits of Leadership, Identifying leaders and traits of Leadership	C2	Activity
Unit I	Movie/ Story/ Interviews of leaders: Identify leadership qualities	C3	Activity
Unit I	Leadership: Debate/ Screening of a debate	C4	Activity
Unit I	Leadership: Debate	C5	Activity
Unit I	Leadership: Group Discussion	C6	Group discussions
Unit I	Leadership: Presentations on leaders	C7	Group discussions
Unit I	Leadership: Presentations on leaders	C8	Presentation
Unit I	Clarification Class I	C9	Clarification Class
Unit II	What is Entrepreneurship, Traits of Successful Entrepreneurs	C10	Lecture
Unit II	Movie/ Story/Interviews of Entrepreneurs: Identify Entrepreneurial qualities,	C11	Activity
Unit II	Entrepreneurs: Group Discussion	C12	Activity
Unit II	Entrepreneurs: Debate	C13	Debate
Unit II	Presentation on Entrepreneurs	C14	Presentation
Unit II	Presentation on Entrepreneurs	C15	Presentation
	Take Home Assignments I		Home Assignments
Unit III	What are organizational skills, how to develop them,	C16	Webinar
Unit III	Skills needed to become a successful entrepreneur/administrator	C17	Quiz
Unit III	Organizational skills can be developed by discipline making a system, rules, delegation of power at workplace, etc	C18	Presentation
Unit III	Employability Skills: How to enhance employability skills	C19	Guest lecture
Unit III	Employability Skills: why do we need them	C20	Presentation
Unit III	Class Room Assignment-1	C21	Class Assignment
Unit III	Employability Skills: different workplaces, having different needs, different skills	C22	Activity
Unit III	how to recognize different work skills	C23	Class Assignment
Unit III	Process of decision making- steps, its basics, and the basics of organizational decision making process	C24	Activity
Unit III	entrepreneurial decision making, how to make a right decision at right time, dilemma.	C25	Activity
Unit IV	Clarification Class II	C26	Clarification Class
Unit IV	Conducting Interviews with Leaders/ Entrepreneurs	C27	Class Assignment
	Take Home Assignments II		Home Assignments
Unit IV	Preparing Questions	C28	Class Assignment
Unit IV	Preparing Questions	C29	quiz
Unit V	Clarification Class III	C30	Clarification Class

11.1 Semester - VI		
Course	**Course Outcomes: - After completion of these courses' students should be able to**	
19008800-Theory of Computation	**CO1:**	Define undecidability and identify class P and NP problems.
	CO2:	Explain regular expressions to FA and minimize Automata.
	CO3:	Apply the theoretical concepts and techniques in designing finite automata.
	CO4:	Design Turing machine and identify recursively enumerable languages.
	CO5:	Design and develop of various finite state machines.
19008900-Theory of Computation Lab	**CO1:**	Illustrate the LEX/FLEX tool and write some basic programs.
	CO2:	Build Deterministic Turing Machine for all inputs and all outputs.
	CO3:	Design program based on Non-deterministic and Deterministic finite automata.
	CO4:	Create a program based on P and NP problems.
	CO5:	Apply algorithms to improve the performance of the translated code.
19009000-.NET Technologies	**CO1:**	Define the basis of .Net framework
	CO2:	Explain the object-oriented Aspects of C# and ASP.Net.
	CO3:	Develop simple applications under .Net framework.
	CO4:	Create Web based Applications using .Net programming languages.
	CO5:	Apply the concept of CORBA and database interfacing in real time projects
19009100-.NET Technologies Lab	**CO1:**	Demonstrate the fundamentals of Web application design, development, and deployment using ASP.NET (Active Server Pages) and the .NET framework.
	CO2:	Make use of Validation controls and Database Queries.
	CO3:	Utilize .NET languages to manage and create web forms, server controls, and web services to accomplish complex data access tasks and implement dynamic content.
	CO4:	Design and Develop web applications using server-side technologies (ASP.NET, ADO.NET).
	CO5:	Analyze appropriate middleware technology to develop real time applications
19009200- Engineering Economics	**CO1:**	Explain the major capabilities and limitations of cash flow analysis for evaluating proposed capital investments.
	CO2:	Solve the engineering problems by using the mathematics, economics, and engineering principles.
	CO3:	Analyse cash flow models in practical situations.
	CO4:	Develop the ability to account for time value of money using engineering economy factors and formulas, as well as the implications and

		importance of considering taxes, depreciation and inflation.
	CO5:	Evaluate to manage the cash flow analysis by using the tools.
19009300-Database Administration with MySQL	**CO1:**	Define the MySQL basics and different models that we use for database.
	CO2:	Compare different form of MySQL Security and Optimizing Query Performance.
	CO3:	Build the logical representation of internet database.
	CO4:	AnalyseReplication Threads and Troubleshooting Replication.
	CO5:	Understand the OODBMS concepts and design
19009400-Database Administration with MySQL Lab	**CO1:**	Explain the user management-based modules.
	CO2:	Construct client and utility programs using MySQL architecture.
	CO3:	Analyse the advanced database Programming concepts.
	CO4:	Develop the ability to handle MySQL threads, information schema.
	CO5:	Apply triggers and assertions to stop malicious operations on tables
19009500-Cloud Computing	**CO1:**	Apply and design suitable Virtualization concept, Cloud Resource Management, and design scheduling algorithms.
	CO2:	Analyse the Cloud computing setup with its vulnerabilities and applications using different architectures.
	CO3:	Design different workflows according to requirements and apply map reduce programming model.
	CO4:	Create combinatorial auctions for cloud resources and design scheduling algorithms for computing clouds.
	CO5:	Build a virtual machine with a machine image
19009600-Software Verification and Validation	**CO1:**	Define the fundamental concepts in software testing such as manual testing, automation testing and software quality assurance.
	CO2:	Demonstrate on recent automation tool for various software testing for testing software.
	CO3:	Apply different approaches of quality management, assurance, and quality standard to software system.
	CO4:	Design and develop project test plan, design test cases, test data, and conduct test operations.
	CO5:	Apply and analyze effectiveness Software Quality Tools.
19006400-Ability and Skill Enhancement -VI	**CO1:**	Learn about verbal reasoning & English aptitude
	CO2:	Develop a winning attitude
	CO3:	Learn the ways to understand news and be a journalist.
	CO4:	Learn the ability to prepare reports on major national and international news.
	CO5:	Conduct chat shows, panel discussions, parliamentary debates etc.

11.2 Mapping: Semester – VI

19008800	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3		2	2	3	3		3		2		3
CO2	2	2			3	2		2		2	3	
CO3		2	3	2	2	3			2	2	2	3
CO4	2		2		2			2		3	3	3
CO5	3	3		2			3		3		2	2

19008900	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		3	3	3	3	3	3	
CO2	2	2	3		3	3		3				3
CO3				3	3				3	3	3	3
CO4	3	3		2	3				3	3	3	
CO5	2		3			3	2	2				3

19009000	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		2		2			2	2		3
CO2		3	3		2			2		2	3	3
CO3	2					2			3	3		
CO4	2	2		2		3			3	2		3
CO5			3	2	3		3	3			2	2

19009100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2			3	3		3	2	
CO2	3		3	3	2			3	2	3		3
CO3	2	2		3	3	3			3		3	
CO4		2	3			3	3	3	3	2		3
CO5	2			3	2		3				3	2

19009200	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		2		3			3	2		3
CO2	3		2	3		3				2		3
CO3	2	2			2				2		2	
CO4		2		2		3			3	2		3
CO5	3		3		3		2	2			3	2

19009300	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2			3	3	3	3	3	3	
CO2	2	2		2	3	3		3		3		3
CO3	2		2	3					3		3	
CO4		3	2	2	3					3	3	3
CO5	2					3	2	2	3			3

19009400	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3			2	3	3		3				
CO2	3	2	3		3					2	3	3
CO3	2	2	3	2		3			2		2	
CO4			2			3				2	3	3
CO5	2	3		3	2		3	3	3	3	2	2

19009500	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2						2		3
CO2	3		2	3	3	3	3		3		2	
CO3	3	3		2	3	3		2	3	3		3
CO4		2	3	2		3	3	3	3	3	3	3
CO5	2				2		2	3		2	2	

19009600	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3		3	2	3		2	2			2	3
CO2	3	2	2		3	3						
CO3					2				2			
CO4	2	3	2	3		3			2			3
CO5	2	3		3	3		3	2	3	3	3	2

19006400	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2		3	2	3		3		3	2	2
CO2	2	2	3					2	3	3		2
CO3		2			3	2		3		3	3	2
CO4	2	2	3	3	2	2			3	3	3	3
CO5	3	3		3	3		3	3	2		2	2

11.3 Lesson Plan: Semester – VI

19008800– Theory of Computation

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Finite State Machine		
Unit I	Recursive definitions, Regular Expressions, definitions of Finite State Machine, Transition Graphs	C1	Lecture
Unit I	Deterministic & Non Deterministic	C2	Lecture
Unit I	Finite State Machines,	C3	Lecture
Unit I	Thomson's & Subset Algorithm to convert regular Expression to NDFSM & NDFSM to FSM	C4	Lecture
Unit I	Thomson's & Subset Algorithm to convert regular Expression to NDFSM & NDFSM to FSM	C5	Lecture
Unit I	Thomson's & Subset Algorithm to convert regular Expression to NDFSM & NDFSM to FSM	C6	Lecture
Unit I	Regular Grammar left linear and right linear.	C7	Lecture
Unit I	Finite State Machine with output (Moore machine and Melay Machine)	C8	Lecture
Unit I	Conversion of Moore machine to Melay Machine & Vice-Versa,	C9	Lecture
Unit I	Conversion of Moore machine to Melay Machine & Vice-Versa,	C10	Lecture
Unit I	Pumping Lemma, Properties and limitations of finite state machine	C11	Lecture
Unit I	Presentation 1	C12	Presentation
Unit I	Clarification Class 1	C13	Clarification Class
	Take Home Assignments 1		Take Home Assignments
	Activity 1	C14	Activity
Unit II	Context free Grammar design	C15	Lecture
Unit II	Normal Form CNF, GNF	C16	Lecture
Unit II	Push down Stock machine, Context free Grammar	C17	Lecture
Unit II	Presentation 2	C18	Presentation
Unit II	Properties of context free grammar: Union, Closure & Intersection, Pumping lemma for context free grammar	C19	Lecture
Unit II	Properties of context free grammar: Union, Closure & Intersection, Pumping lemma for context free grammar	C20	Lecture
Unit II	Webinar 1	C21	Webinar
Unit II	Take Home Assignments 2		Take Home Assignments
Unit II	Parser Design and Push Down stock machine, CYK algorithm, Earley's Algorithm	C22	Lecture
Unit II	Clarification Class 2	C23	Clarification Class
Unit II	Class Room Assignment 1	C24	Class Room Assignment
Unit III	Turing machine, Post machine,	C25	Lecture

Unit III	Conversion of Turing to Post-Wang and vice versa, Combining Turing machine, Chomsky Hierarchy.	C26	Lecture
Unit III	Conversion of Turing to Post-Wang and vice versa, Combining Turing machine, Chomsky Hierarchy.	C27	Lecture
Unit III	Presentation 3	C28	Presentation
Unit III	Conversion of Turing to Post-Wang and vice versa, Combining Turing machine, Chomsky Hierarchy.	C29	Lecture
Unit III	Church's Thesis, Primitive Recursion Functions, Godelization, Universal Turing machine	C30	Lecture
Unit III	Take Home Assignments 3		Take Home Assignments
Unit III	Clarification Class 3	C31	Clarification Class
Unit III	Class Room Assignment 2	C32	Class Room Assignment
Unit IV	Halting Problem, Turing Enumerability, Turing Acceptability and Turing Decidabilities.	C33	Lecture
Unit IV	Halting Problem, Turing Enumerability, Turing Acceptability and Turing Decidabilities.	C34	Lecture
Unit IV	Guest lecture 1	C35	Guest lecture
Unit IV	Class Room Assignment 3	C36	Class Room Assignment
Unit IV	Webinar 2	C37	Webinar
Unit IV	Unsolvable problems about Turing machines,	C38	Lecture
Unit IV	Unsolvable problems about Grammar and similar system Computation Complexity: P, NP and NP complete problems	C39	Lecture
Unit IV	Guest lecture 2	C40	Guest lecture
Unit IV	Unsolvable problems about Grammar and similar system Computation Complexity: P, NP and NP complete problems	C41	Lecture
Unit IV	Presentation 4	C42	Presentation
Unit IV	Seminar	C43	Seminar
Unit IV	Class Room Assignment 4	C44	Class Room Assignment
Unit IV	Clarification Class 4	C45	Clarification Class

19008900– Theory of Computation Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Create a Deterministic Finite Automata (DFA) for the following problems. State the 5 Tuples of the DFA.	P1-P2	Practical
2	Construct the Transition Diagram for the DFA as well as Program to convert Non-deterministic finite automaton (NFA) to Deterministic finite automaton (DFA)	P3-P4	Practical
3	Program to generate lexical tokens	P5-P6	Practical
4	Algorithm:·Declare an array of characters, as buffer to store the tokens ,that is,'lexbuffer'; ·Get token from user put it into character type of variable, say 'c'. ·If 'c' is blank then do nothing. ·If 'c' is new line character line=line+1. ·If 'c' is digit, set token_val ,the value assigned for a digit and return 'NUMBER'. ·If 'c' is proper token then assign the token value. Print the complete table with oToken entered by the user oAssociated token value.	P7-P8	Practical
5	Study of LEX/FLEX tool	P9-P10	Practical
6	Write LEX /FLEX program to identify tokens: integer numbers, decimal numbers.	P11-P12	Practical
7	Write LEX /FLEX program to identify tokens: identifiers, keywords.	P13-P14	Practical
8	Write LEX /FLEX program to identify tokens: arithmetic operators, relational operators.	P15-P16	Practical
9	Write LEX /FLEX program to identify tokens: relational operators.	P17-P18	Practical
10	Write LEX /FLEX program to identify tokens: relational operators.	P19-P20	Practical
11	Program to implement any one code optimization technique.	P21-P22	Practical
12	Program to implement any one code optimization technique.	P23-P24	Practical
13	Clarification Class	P25-P26	Clarification Class
14	Test	P27-P28	Test
15	Activity	P29-P30	Activity

19009000 -.NET Technologies

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Microsoft .net Platform, Design Goals and Overview	C1	Lecture
Unit I	Common Language Runtime: CLR Environment and Executables	C2	Lecture
Unit I	Metadata, Assemblies, Intermediate Language	C3	Lecture
Unit I	CLR Execution, CLR Functions, CLR Structure.	C4	Lecture
Unit I	Programming in .net Framework: Common Programming Model	C5	Lecture
Unit I	Features and Languages, Language Integration, Framework Class Library	C6	Lecture
Unit I	.net Framework Components: Deployment options, Distributed components, COM+ services, Message queuing.	C7	Lecture
	Clarification Class-1	C8	Clarification Class
	Take Home Assignments-1		Take Home Assignments
	Class Room Assignment-1	C9	Class Room Assignment
	Presentation-1	C10	Presentation
Unit II	The Basics and Console Applications in C#: Name Spaces - Constructor and Destructors	C11	Lecture
Unit II	Function Overloading & Inheritance	C12	Lecture
Unit II	Operator Overloading, Modifiers - Property and Indexers, Attributes & Reflection API	C13	Lecture
Unit II	When to use Console Applications - Generating Console Output, Processing Console Input	C14	Lecture
Unit II	C#.NET: Language Features and Creating .NET Projects, Namespaces Classes and Inheritance	C15	Lecture
Unit II	Namespaces Classes and Inheritance, C, Exploring the Base Class Library -, Debugging and Error Handling	C16	Lecture
Unit II	Data Types, Exploring Assemblies and Namespaces, String Manipulation	C17	Lecture
Unit II	Files and I/O, Collections	C18	Lecture
	Clarification class-2	C19	Clarification Class
	Take Home Assignments-2		Take Home Assignments
	Class Room Assignment-2	C20	Class Room Assignment
	Presentation-2	C21	Presentation
	Quiz-1	C22	Quiz
Unit III	ADO.NET Architecture, Benefits of ADO.NET, ADO.NET compared to classic ADO	C23	Lecture
Unit III	Datasets, Managed Providers, Data Binding: Introducing Data Source Controls	C24	Lecture
Unit III	Reading and Write Data Using the Sql Data Source Control	C25	Lecture
Unit III	Windows Forms and Controls in details: The Windows Forms Model, Creating Windows Forms	C26	Lecture

	Windows Forms Properties and Events		
Unit III	Windows Form Controls, Menus - Dialogs – ToolTips	C27	Lecture
Unit III	Visual Inheritance in C#.NET: Apply Inheritance techniques to Forms	C28	Lecture
Unit III	Creating Base Forms	C29	Lecture
Unit III	Clarification class-3	C30	Clarification Class
	Take Home Assignments-3		Take Home Assignments
	Class Room Assignment-3	C31	Class Room Assignment
	Webinar-1	C32	Webinar
	Workshop	C33	Workshop
	Presentation-3	C34	Presentation
	Activity-1-Mind Mapping	C35	Activity
Unit IV	Web services in practice, Web services Framework, Provider, Customer and Security	C36	Lecture
Unit IV	Web forms: ASP, ASP.NET, Web Form syntax	C37	Lecture
Unit IV	Data binding, Use of templates	C38	Lecture
Unit IV	State management and scalability, Application development	C39	Lecture
Unit IV	Class Room Assignment-4	C40	Class Room Assignment
Unit IV	ASP.NET and Web services	C41	Lecture
Unit IV	Windows forms: Introduction, System. Windows, Forms Namespace, Windows Forms development	C42	Lecture
Unit IV	Windows Forms and Web services	C43	Lecture
Unit IV	Presentation-4	C44	Presentation
	Clarification Class-4	C45	Clarification Class

19009100 -.NET Technologies Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Installation of Visual Studio 2019	P1-P2	Practical
2	Simple application using web controls	P3-P4	Practical
3	Program to display the simple calculator using windows application. Deploy the program as a setup.	P5-P6	Practical
4	Finding factorial Value a. Money Conversion b. Quadratic Equation c. Temperature Conversion d. Login control	P7-P8	Practical
5	Adrotator Control	P9-P10	Practical
6	Calendar control a. Display messages in a calendar control b. Display vacation in a calendar control c. Selected day in a calendar control using style d. Difference between two calendar dates	P11-P12	Practical
7	Activity 01	P13-P14	Practical
8	Treeview control a. Treeview control and data list b. Treeview operations	P15-P16	Practical
9	Validation controls, Query textbox and Displaying records, Display records by using database, Data list link control	P17-P18	Activity
10	Data binding using drop down list control, Inserting record into a database, Deleting record into a database, Data binding using data list control, Data list control templates	P19-P20	Practical
11	Activity 02	P21-P22	Activity
12	Data binding using data grid, Data-grid control template, Data grid hyperlink	P23-P24	Practical
13	Data grid button column, Data List event Data grid paging	P25-P26	Practical
14	Test	P27-P28	Test
15	Creating own table format using data grid	P29-P30	Practical

19009200– Engineering Economics

Unit	Particulars	Class No.	Pedagogy of Class
UNIT I	Introduction and Scope of Engineering Economics		
UNIT I	Demand and Supply: Meaning of Demand and supply	C1	Lecture
UNIT I	Determinants of demand and Supply	C2	Lecture
UNIT I	Determinants of demand and Supply	C3	Lecture
	Class Room Assignment	C4	Class Room Assignment
	Clarification Class	C5	Clarification Class
UNIT II	Demand Forecasting		
UNIT II	Purpose of Forecasting Demand, Determinants of demand forecasting	C6	Lecture
	Activity	C7	Activity
	Take Home Assignments		Take Home Assignments
	Presentation	C8	Presentation
UNIT II	Methods of Demand Forecasting	C9	Lecture
UNIT II	Criteria for the good forecasting method	C10	Lecture
UNIT II	Cost of Production: Explicit and Implicit costs	C11	Lecture
UNIT II	Marginal, Incremental and Sunk costs	C12	Lecture
UNIT II	Opportunity cost	C13	Lecture
UNIT II	Short-run cost function	C14	Lecture
	Presentation	C15	Presentation
UNIT II	Total Average and Marginal costs	C16	Lecture
UNIT II	Long-run costs	C17	Lecture
UNIT II	Break-even analysis	C18	Lecture
	Clarification Class	C19	Clarification Class
UNIT III	Theory of Production		
UNIT III	Law of Variable Proportions and Laws of returns to scale	C20	Lecture
UNIT III	Depreciation: Definite and characteristics of term Depreciation	C21	Lecture
UNIT III	Causes of Depreciation	C22	Lecture
	Webinar	C23	Webinar
	Class Room Assignment	C24	Class Room Assignment
	Presentation	C25	Presentation
	Take Home Assignments		Take Home Assignments
	Seminar	C26	Seminar
	Guest Lecture	C27	Guest lecture
UNIT III	Computation of Depreciation	C28	Lecture
UNIT III	Markets Structures and Pricing Theory: Perfect competition	C29	Lecture
UNIT III	Monopoly	C30	Lecture
UNIT III	Monopolistic competition	C31	Lecture
UNIT III	Oligopoly (Payback Period, IRR, NPV, BCR)	C32	Lecture
UNIT III	Payback Period, IRR, NPV, BCR	C33	Lecture

	Clarification Class	C34	Clarification Class
	Presentation	C35	Presentation
	Class Room Assignment	C36	Class Room Assignment
	Take Home Assignments		Take Home Assignments
UNIT IV	Investment Decision		
UNIT IV	Capital Budgeting	C37	Lecture
UNIT IV	Methods of Project Appraisal	C38	Lecture
UNIT IV	Overview of Financial Markets: Money Market	C39	Lecture
UNIT IV	Stock Market	C40	Lecture
UNIT IV	Mutual Fund	C41	Lecture
UNIT IV	National Accounting: Meaning, Methods and Current Trends	C42	Lecture
UNIT IV	Inflation &Deflation: Meaning, Measures and Impact on Indian economy	C43	Lecture
	Class Room Assignment	C44	Class Room Assignment
	Clarification Class	C45	Clarification Class

19009300– Database Administration with MySQL

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	AN INTRODUCTION TO MySQL		
Unit-I	MySQL Overview, MySQL Enterprise Edition, MySQL on the Web	C-1	Lecture
Unit-I	MySQL in the Cloud, Installing MySQL	C-2	Lecture
Unit-I	Installed Files and Directories, Initial Configuration	C-3	Lecture
Unit-I	Starting and Stopping MySQL, Upgrading MySQL	C-4	Lecture
Unit-I	Clarification Class	C-5	Clarification Class
Unit-I	Class Room Assignment	C-6	Class Room Assignment
Unit-I	Take Home Assignment		Take Home Assignment
Unit-I	Presentation	C-7	Presentation
Unit-II	MySQL ARCHITECTURE		
Unit-II	Architectural Overview, How MySQL Transmits Data	C-8	Lecture
Unit-II	How MySQL Processes Requests	C-9	Lecture
Unit-II	How MySQL Stores Data, Table spaces	C-10	Lecture
Unit-II	Class Room Assignment	C-11	Class Room Assignment
Unit-II	Redo and Undo Logs, How MySQL Uses Memory	C-12	Lecture
Unit-II	Plug-in Interface	C-13	Lecture
Unit-II	Server Options, Variables and the Command Line	C-14	Lecture
Unit-II	Option Files, System Variables	C-15	Lecture
Unit-II	Launching Multiple Servers on the Same Host	C-16	Lecture
Unit-II	Monitoring MySQL, Monitoring MySQL with Log Files	C-17	Lecture
Unit-II	Monitoring MySQL with Status Variables, Monitoring MySQL with Performance Schema	C-18	Lecture
Unit-II	Class Room Assignment	C-19	Class Room Assignment
Unit-II	MySQL Privilege System, Creating and Modifying User Accounts	C-20	Lecture
Unit-II	Configuring Passwords and Account Expiration, Authentication Plug-Ins	C-21	Lecture
Unit-II	Granting Permissions, Grant Tables. Resetting a Forgotten Root Password	C-22	Lecture
Unit-II	Clarification Class	C-23	Clarification Class
Unit-II	Presentation	C-24	Presentation
Unit-II	Take Home Assignment		Take Home Assignment
Unit-III	MySQL SECURITY		
Unit-III	Security Risks, Network Security, Secure Connections	C-25	Lecture
Unit-III	Password Security, Operating System Security	C-26	Lecture
Unit-III	Protecting Against SQL Injections, MySQL	C-27	Lecture

	Enterprise Firewall		
Unit-III	Stability, Why Databases Fail	C-28	Lecture
Unit-III	Capacity Planning, Troubleshooting	C-29	Lecture
Unit-III	Identifying the Causes of Server Slowdowns, InnoDB Recovery	C-30	Lecture
Unit-III	Identifying Slow Queries, The EXPLAIN statement	C-31	Lecture
Unit-III	working with Indexes, Index Statistics	C-32	Lecture
Unit-III	Clarification Class	C-33	Clarification Class
Unit-III	Presentation	C-34	Presentation
Unit-III	Take Home Assignment		Take Home Assignment
Unit-III	Class Room Assignment	C-35	Class Room Assignment
Unit-IV	ADMINISTERING A REPLICATION TOPOLOGY		
Unit-IV	Failover, MySQL Utilities	C-36	Lecture
Unit-IV	Replication Threads, Monitoring Replication	C-37	Lecture
Unit-IV	Troubleshooting Replication	C-38	Lecture
Unit-IV	Clarification Class	C-39	Clarification Class
Unit-IV	Presentation	C-40	Presentation
Unit-IV	Take Home Assignment		Take Home Assignment
	Webinar	C-41	Webinar
	Seminar	C-42	Seminar
	Activity	C-43	Activity
	Activity	C-44	Activity
	Guest Lecture	C-45	Guest Lecture

19009400– Database Administration with MySQL Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	MySQL architecture-client	P1-P2	Practical
2	MySQL architecture-utility programs	P3-P4	Practical
3	MySQL threads, Connectors installing	P5-P6	Practical
4	Starting and Shutting down	P7-P8	Practical
5	Locking General, advisory, explicit table locking	P9-P10	Practical
6	Storage engines, information schema database, Creating, Altering, Dropping-Database	P11-P12	Practical
7	Connecting to Server, Privilege Provided	P13-P14	Practical
8	Password Management	P15-P16	Practical
9	Adding, Deleting User Account	P17-P18	Practical
10	Backup and Restoring Data	P19-P20	Practical
11	Use of stored routines	P21-P22	Practical
12	Triggers for Performance and Security	P23-P24	Practical
13	Optimizing-Schemas	P25-P26	Practical
14	Optimizing-Server	P27-P28	Practical

19009500– Cloud Computing

Unit	Particulars	Class No.	Pedagogy of Class
Unit 1	Overview of Existing Hosting Platforms	C1	Lecture
Unit I	Grid Computing	C2	Lecture
Unit I	Utility Computing, Autonomic Computing	C3	Lecture
Unit I	Dynamic Datacenter Alliance	C4	Lecture
Unit I	Hosting / Outsourcing	C5	Lecture
Unit I	Introduction to Cloud Computing	C6	Lecture
Unit I	Workload Patterns for the Cloud	C7	Lecture
Unit I	Big Data	C8	Lecture
Unit I	IT as a Service	C9	Lecture
Unit I	Technology Behind Cloud Computing	C10	Lecture
	Clarification Class-1	C11	Clarification Class
	Take Home Assignment-1		Take Home Assignments
	Class Room Assignment-1	C12	Class Room Assignment
Unit II	Amazon Web Services	C13	Lecture
Unit II	IaaS	C14	Lecture
Unit II	The Elastic Compute Cloud (EC2)	C15	Lecture
Unit II	The Simple Storage Service (S3)	C16	Lecture
Unit II	The Simple Queuing Services (SQS)	C17	Lecture
Unit II	VMware vCloud - IaaS	C18	Lecture
Unit II	vCloud Express	C19	Lecture
Unit II	Google AppEngine - PaaS	C20	Lecture
Unit II	The Java Runtime Environment	C21	Lecture
Unit II	Clarification Class-2	C22	Clarification Class
	Take Home Assignment-2		Take Home Assignments
	Class Room Assignment-2	C23	Class Room Assignment
	Presentation-1 & 2	C24	Presentation
	Guest Lecture	C25-C26	Guest lecture
	Quiz-1 /Workshop	C27	Quiz
Unit III	The Datastore	C28	Lecture
Unit III	Development Workflow	C29	Lecture
Unit III	Windows Azure Platform	C30	Lecture
Unit III	Windows Azure Platform	C31	Lecture
Unit III	PaaS	C32	Lecture
Unit III	Windows Azure	C33	Lecture
Unit III	SQL Azure	C34	Lecture
Unit III	SQL Azure	C35	Lecture
Unit III	Windows AzureAppFabric	C36	Lecture
Unit III	Windows AzureAppFabric	C37	Lecture
Unit III	Clarification Class-3	C38	Clarification Class
	Take Home Assignment-3		Take Home Assignments
	Class Room Assignment-3	C39	Class Room Assignment

	Presentation-3 & 4	C40	Presentation
	Webinar	C41-C42	Webinar
	Activity-1 Mind Mapping	C43	Activity
Unit IV	SaaS / PaaS	C44	Lecture
Unit IV	Force.com	C45	Lecture
Unit IV	Force Database	C46	Lecture
Unit IV	Data Security	C47	Lecture
Unit IV	Class Room Assignment-4	C48	Class Room Assignment
Unit IV	The persistency layer	C49	Lecture
Unit IV	Microsoft Office Live - SaaS	C50	Lecture
Unit IV	LiveMesh.com	C51	Lecture
Unit IV	LiveMesh.com	C52	Lecture
Unit IV	Google Apps - SaaS	C53	Lecture
Unit IV	Google Apps - SaaS	C54	Lecture
Unit IV	A Comparison of Cloud Computing Platforms	C55	Lecture
Unit IV	Common Building Blocks	C56	Lecture
Unit IV	Common Building Blocks	C57	Lecture
Unit IV	Case studies on latest paradigms	C58	Lecture
Unit IV	Case studies on latest paradigms	C59	Lecture
	Clarification Class-4	C60	Clarification Class

19009600– Software Verification and Validation

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Introduction		
Unit I	Terminology, error	C1	Lecture
Unit I	fault and failures	C2	Lecture
Unit I	design for testability, objectives	C3	Lecture
Unit I	Purpose of testing	C4	Lecture
Unit I	Testing Technology	C5	Lecture
Unit I	Error, Terminology	C6	Lecture
Unit I	Type of Debugging	C7	Lecture
Unit I	Design principles	C8	Lecture
	Clarification Class 1	C9	Clarification Class
	Presentation 1	C10	Presentation
	Class Room Assignment 1	C11	Class Assignment
	Guest Lecture 1	C12	Guest lecture
Unit II	Limitations, Role of V&V in Software Evolution, Testing Techniques and Strategies		
Unit II	Theoretical foundations: impracticality of testing all data	C13	Lecture
Unit II	Types of Products: requirements, specifications, designs, implementations, changes	C14	Lecture
Unit II	V&V objectives: correctness, consistency, necessity, sufficiency, performance	C15	Lecture
Unit II	Static and dynamic testing, software technical reviews	C16	Lecture
Unit II	Software testing: levels of testing - module, integration	C17	Lecture
Unit II	system, regression, Testing techniques	C18	Lecture
Unit II	structural testing and analysis, error-oriented testing and analysis	C19	Lecture
Unit II	integration strategies, transaction flow analysis, stress analysis, failure analysis	C20	Lecture
Unit II	applicability-functional testing and analysis	C21	Lecture
Unit II	impracticality of testing all paths, no absolute proof of correctness	C22	Lecture
Unit II	hybrid approaches	C23	Lecture
Unit II	concurrency analysis, performance analysis	C24	Lecture
	Presentation 2	C25	Presentation
	Clarification Class 2	C26	Clarification Class
	Class Room Assignment 2	C27	Class Assignment
	Webinar 1	C28	Webinar
	Take Home Assignment 1		Home Assignments
Unit III	Flow graphs and Path Testing, Transaction Flow Testing, Data Flow Testing		
Unit III	Flow graphs and Path Testing	C29	Lecture
Unit III	Path Testing Basics, Path Predicates	C30	Lecture
Unit III	Transaction Flow Testing	C31	Lecture
Unit III	Generalizations, Transaction Flows, Data Flow	C32	Lecture

	Testing		
Unit III	Activity-1	C33	Lecture
Unit III	Basics of Data flow model	C34	Lecture
Unit III	Data flow testing strategies, Applications	C35	Lecture
Unit III	Transaction Flow Testing, Data Flow Testing	C36	Lecture
Unit III	Application of Path Testing	C37	Lecture
Unit III	Transaction-Flow testing techniques	C38	Lecture
Unit III	Applications of Data flow testing strategies	C39	Lecture
	Presentation 3	C40	Presentation
	Clarification Class 3	C41	Clarification Class
	Class Room Assignment 3	C42	Class Assignment
	Workshop 1	C43	Workshop
	Take Home Assignment 2		Home Assignments
	Quiz 1	C44	Quiz
Unit IV	Software Testing and Regular Expression, Program Mutation Testing, Laboratory Work		Lecture
Unit IV	Software Testing and Regular Expression: Path products, path sums, Loops, Reduction procedure, Applications	C45	Lecture
Unit IV	Approximate number of paths, The mean processing time of any routine	C46	Lecture
Unit IV	Regular expression and Flow-anomaly detection	C47	Lecture
	Presentation 4	C48	Presentation
	Class Room Assignment 4	C49	Class Assignment
Unit IV	Take Home Assignments 3		Home Assignments
Unit IV	Program Mutation Testing: Introduction, Mutation and mutants, Mutation operators, Equivalent mutants	C50	Lecture
Unit IV	Laboratory Work: Developing various exercises like cyclomatic complexity	C51	Lecture
Unit IV	Fault detection using mutants, Types of mutants	C52	Lecture
Unit IV	Activity-2	C53	Activity
Unit IV	Mutation operators for C and Java.	C54	Lecture
Unit IV	boundary value analysis and data flow testing etc.	C55	Lecture
Unit IV	Developing a small project/tool to generate test data	C56	Lecture
Unit IV	execute test data etc. Exposure to automated testing tool	C57	Lecture
	Clarification Class 4	C58	Clarification Class
	Webinar 2	C59	Webinar
	Seminar	C60	Seminar

19006400– Ability and Skill Enhancement -VI

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Logical Sequence of Words	C1	Lecture
Unit I	Verbal Analogy	C2	Lecture
Unit I	Classification	C3	Activity
Unit I	Blood Relation Test	C4	Activity
Unit I	Syllogism	C5	Activity
Unit I	Reading Comprehension	C6	Class Assignment
Unit II	How to develop a winning attitude	C7	Lecture
Unit II	How to have a winning and positive mindset, how to win in difficult situations	C8	Presentation
Unit II	How to have a winning and positive mindset, how to win in difficult situations	C9	Presentation
Unit II	Positing thinking, passion dedication confidence, well preparation, focus, hard work, planning, never give up, etc-some trails that help in developing	C10	Lecture
Unit III	Reading Current News - Assignment	C11	Presentation
Unit III	Comparing & Analysing the news	C12	Presentation
Unit III	Write an editorial	C13	Activity
	Clarification Class I	C14	Clarification Class
Unit III	News Vocabulary	C15	Activity
Unit III	News Vocabulary		Home Assignments
Unit III	Presentation on any major news (political/ social/sports/economics)	C16	Presentation
Unit III	Presentation on any major news (political/ social/sports/economics)	C17	Presentation
Unit IV	Chat Show	C18	Activity
Unit IV	Panel Discussion	C19	Group discussions
Unit IV	Panel Discussion -	C20	Group discussions
Unit IV	Parliamentary debate	C21	Activity
Unit IV	News Inspired Theatrical Performance	C22	Activity
Unit IV	Clarification Class II	C23	Clarification Class
Unit V	Preparing a report on major National/International News	C24	Lecture
Unit V	Insights/ review of major news papers and news channels	C25	Lecture
	Take Home Assignment		Home Assignments
Unit V	Clarification Class III	C26	Clarification Class
Unit V	Preparing a report on major National/International News	C27	Activity
Unit V	Insights/ review of major news papers and news channels	C28	Lecture
Unit V	Insights/ review of major news papers and news channels	C29	Activity
	Clarification Class IV	C30	Clarification Class

12.1 Semester – VII		
Course	**Course Outcomes: - After completion of these courses' students should be able to**	
19010500-Compiler Construction	**CO1:**	Explain Lambda Calculus to verify programs.
	CO2:	Apply parsing techniques and able to write Context Free Grammars for various languages.
	CO3:	Distinguish the various phases of a compiler.
	CO4:	Design the structure of intermediate code for various types of statements and expressions.
	CO5:	Identify tools to construct the machine independent code
19010700-Artificial Intelligence	**CO1:**	Define the ontological engineering to plan a strategy to solve given problem.
	CO2:	Identify and apply suitable Intelligent agents for various AI applications.
	CO3:	Design smart system using different informed search / uninformed search or heuristic approaches.
	CO4:	Create the suitable algorithms to solve AI problems.
	CO5:	Apply knowledge representation, reasoning and machine learning techniques to real-time application systems
19010600-Multimedia Technologies	**CO1:**	Classify the different realizations of multimedia tools and their usage.
	CO2:	Identify various multimedia standards.
	CO3:	Distinguish the compression and decompression technologies.
	CO4:	Discuss the various storage technologies.
	CO5:	Evaluate the color combination by using different methods.
19010900-Data Warehouse & Data mining	**CO1:**	Define clustering and learning algorithms.
	CO2:	Illustrate the suitable pre-processing and visualization techniques for data analysis.
	CO3:	Apply frequent pattern and association rule mining techniques for data analysis.
	CO4:	Design a Data warehouse system and perform business analysis with OLAP tools.
	CO5:	Ability to classify web pages, extracting knowledge from the web
19011100-Network Security & Cryptography	**CO1:**	Define the Encrypt and decrypt messages using block ciphers.
	CO2:	Demonstrate techniques to Sign and verify messages using well-known signature generation and verification algorithms.
	CO3:	Identify and classify computer and security threats and develop a security model to prevent, detect and recover from attacks.
	CO4:	Develop code to implement a cryptographic algorithm or write an

		analysis report on any existing security product.
	CO5:	Design a network security system by implementing all the concepts of encryption and decryption algorithms
19011200- Network Security & Cryptography Lab	**CO1:**	How to use network security tool for intrusion detection system.
	CO2:	Compare the performance of various security algorithms.
	CO3:	Apply the Digital signature for secure data transmission.
	CO4:	Build the cryptographic algorithms.
	CO5:	Develop java programs on MD-5 and SHA-1 algorithms
19010400- Capstone Project	**CO1:**	Explain the work as a responsible member and possibly a leader of a team in developing software solutions.
	CO2:	Experiment with technical and behavioral ideas and thought in oral settings.
	CO3:	Test for the conformance of the developed prototype against the original requirements of the problem.
	CO4:	Formulate a real-world problem and develop its requirements develop a design solution for a set of requirements.
	CO5:	Able to apply the engineering and management principles to achieve the goal of the project
19012000- Summer Internship & Report II	**CO1:**	Summarize the guidelines, suggestions and scope regarding companies.
	CO2:	Plan the interacting lectures with the industrial experts.
	CO3:	Explain the importance of internship program.
	CO4:	Improve the quality to choose the best company for the career.
	CO5:	Create a clear understanding of industry trends and advancements
19012100- Professional Development (CLD)	**CO1:**	Understand the important attributes which make a good leader
	CO2:	Demonstrate competitiveness by preparing themselves for public speaking and group discussion.
	CO3:	Develop team building skills, goal setting strategy, time management & conflict management.
	CO4:	Build employability skills for successful placements in corporate sector
	CO5:	Create critical thinking ability so as to perform successfully at higher positions of organization.

12.2 Mapping: Semester – VII

19010500	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		2		3	3	3	3	3	2	3
CO2	3		3	2	3	2	2	3		2		3
CO3		2	2		3						3	
CO4	2	2	3	2	3				3	3	3	3
CO5	2			3		3	3	2	2		2	2

19010700	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2			3		3		2	3
CO2	2	3		3	3		3	3	2	3	3	3
CO3	2		2		2	3			3		3	
CO4		2	3		2		3	2	3	2	3	3
CO5	3			3		3		3		3		2

19010600	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2			3	3	3	3	2	3
CO2	3			3	2		3	3	2	3		3
CO3	2	2	2		3	3					3	
CO4		2	3	2	2	3	3	2	3	2	3	3
CO5	3			3		2				3		2

19010900	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		3	3	3		3		3
CO2	2		3		3	2	2	3	3	2	3	3
CO3	2	2		2	3				2	3	3	3
CO4		3	3	2	3					3	3	
CO5	3					3	2	2	3			2

19011100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2			3	3		3	2	3
CO2	2	3			2		3	3	2	3	2	3
CO3	3		2	3	2	3			3		3	3
CO4		2	3	2	3	3		3	3	2	3	
CO5	2	2		2			3					3

19011200	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2			3	3	3	3		3	3
CO2	2	2		2	3	3	3	3	3	3		3
CO3	2		2	3						3	3	
CO4		3	2	2	3				3		3	3
CO5	3					2	2	3		2	2	2

19010400	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2			3	3		3	2	3
CO2	3	3	3		2		3	3	2	3		3
CO3	2		2	3	3	3				3		3
CO4		2	3	3	3	3	3	3	3	2	3	3
CO5	3			2		2				3	2	2

19012000	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2			3	3	3	3	3	3	3
CO2	2	2	3	2	3	3	3	3		3	3	3
CO3		2		3	3				3	3		3
CO4	3	3	2	2	3				3		3	3
CO5	2	2	3	1		2	3	3	2	1	2	1

19012100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	3	2	3	2	3	3	3
CO2		2	3	2				2	2		2	
CO3	1		1	3	2	3	3	2		1	3	
CO4	2	1	2			1		1	2		1	2
CO5	2	1	2			3		3	3		2	2

12.3 Lesson Plan: Semester - VII

19010500– Compiler Construction

Unit	Particulars	Class No.	Pedagogy of Class
Unit 1	Languages	C1	Lecture
Unit I	Grammars – Types of grammars – Context free grammar	C2	Lecture
Unit I	Regular expression - Recognizing of patterns - finite automation (deterministic & non deterministic)	C3	Lecture
Unit I	Conversion of NDFA to DFA	C4	Lecture
Unit I	Conversion of regular expression of NDFA	C5	Lecture
Unit I	Thompson's construction- specification	C6	Lecture
Unit I	Design of lexical analysis (LEX) - Automatic generation of lexical analyzer - input buffering	C7	Lecture
Unit I	A language for specifying lexical analyzers - implementation of lexical analyzer	C8	Lecture
Unit I	Clarification Class-1	C9	Clarification Class
	Class Room Assignment-1	C10	Class Room Assignment
	Presentation-1	C11	Presentation
Unit 2	Definition - role of parsers - top down parsing - bottom-up parsing - Left recursion – left factoring	C12	Lecture
Unit 2	Shift reduce parsing	C13	Lecture
Unit 2	Handle pruning	C14	Lecture
Unit 2	operator precedence parsing -FIRST- FOLLOW- LEADING- TRAILING	C15	Lecture
Unit 2	Predictive parsing - recursive descent parsing	C16	Lecture
Unit 2	LR parsing – LR (0) items - SLR parsing	C17	Lecture
Unit 2	Canonical LR	C18	Lecture
Unit 2	LALR parsing - generation of LALR	C19	Lecture
Unit 2	Ambiguous grammars - error recovery	C20	Lecture
Unit 2	Clarification Class-2	C21	Clarification Class
	Class Room Assignment-2	C22	Class Room Assignment
	Take Home Assignments-1		Take Home Assignments
	Presentation-2	C23	Presentation
	Guest Lecture	C24	Guest lecture
Unit 3	Intermediate Languages - prefix - postfix	C25	Lecture
Unit 3	Quadruple - triple - indirect triples	C26	Lecture
Unit 3	Syntax tree- Evaluation of expression	C27	Lecture
Unit 3	Three-address code- Synthesized attributes - Inherited attributes	C28	Lecture
Unit 3	Conversion of Assignment statements	C29	Lecture
Unit 3	Boolean expressions	C30	Lecture
Unit 3	Backpatching	C31	Lecture
Unit 3	Declaration - CASE statements	C32	Lecture
	Clarification Class-3	C33	Clarification Class
	Class Room Assignment-3	C34	Class Room

			Assignment
	Take Home Assignments-2		Take Home Assignments
	Presentation-3	C35	Presentation
	Workshop	C36	Workshop
Unit 4	Local optimization- Loop Optimization techniques	C37	Lecture
Unit 4	DAG	C38	Lecture
Unit 4	Dominators- Flow graphs	C39	Lecture
	Class Room Assignment-4	C40	Class Room Assignment
	Presentation-4	C41	Presentation
Unit 4	Storage allocations	C42	Lecture
Unit 4	Peephole optimization	C43	Lecture
Unit 4	Issues in Code Generation	C44	Lecture
	Clarification Class-4	C45	Clarification Class

19010700– Artificial Intelligence

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Introduction and Overview		
Unit I	Introduction	C1	Lecture
Unit I	Importance of AI and Applications of AI	C2	Lecture
Unit I	Problem Solving Techniques: Problem state spaces	C3	Lecture
Unit I	Problem characteristics	C4	Lecture
Unit I	Production System	C5	Lecture
Unit I	Search space control: Uninformed search- Depth first search	C6	Lecture
Unit I	Breadth first search	C7	Lecture
Unit I	Depth first search with iterative deepening	C8	Lecture
Unit I	Heuristic search	C9	Lecture
Unit I	Simple Hill Climbing, Steepest ascent Hill Climbing	C10	Lecture
Unit I	A* algorithm	C11	Lecture
Unit I	AO* algorithm	C12	Lecture
Unit I	Min-max search procedure for game playing	C13	Lecture
Unit I	Alpha beta cutoffs	C14	Lecture
Unit I	Clarification Class	C15	Clarification Class
Unit I	Class Room Assignment	C16	Class Room Assignment
Unit II	Knowledge Representation		
Unit II	Propositional and predicate logic	C17	Lecture
Unit II	Resolution in predicate logic	C18	Lecture
Unit II	Question answering	C19	Lecture
Unit II	Theorem proving	C20	Lecture
Unit II	Semantic networks	C21	Lecture
Unit II	Frames and scripts	C22	Lecture
Unit II	Conceptual graphs	C23	Lecture
Unit II	Conceptual dependencies	C24	Lecture
	Webinar	C25	Webinar
Unit II	Clarification Class	C26	Clarification Class
Unit II	Class Room Assignment	C27	Class Room Assignment
Unit II	Take Home Assignment		Take Home Assignment
Unit II	Presentation	C28	Presentation
	Guest lecture	C29	Guest lecture
Unit III	Knowledge acquisition		
Unit III	Types of learning	C30	Lecture
Unit III	General learning models	C31	Lecture
Unit III	learning Automata	C32	Lecture
Unit III	Intelligent Editors	C33	Lecture
Unit III	Learning by Induction	C34	Lecture
Unit III	Introduction to: Expert Systems	C35	Lecture
Unit III	Pattern recognition	C36	Lecture
Unit III	Natural Language Processing-	C37	Lecture
Unit III	Evolutionary algorithm	C38	Lecture
Unit III	Fuzzy logic	C39	Lecture

Unit III	Neural Networks	C40	Lecture
Unit III	Webinar	C41	Webinar
Unit III	Clarification Class	C42	Clarification Class
Unit III	Class Room Assignment	C43	Class Room Assignment
Unit III	Take Home Assignment		Take Home Assignment
Unit III	Presentation	C44	Presentation
	Guest lecture	C45	Guest lecture
Unit IV	Languages for AI Problem Solving		
Unit IV	Introduction to Prolog- syntax and data structures	C46	Lecture
Unit IV	Representing objects and relationships	C47	Lecture
Unit IV	Built in predicates	C48	Lecture
Unit IV	Introduction to LISP- basic and intermediate LISP programming	C49	Lecture
Unit IV	Introduction to LISP- basic and intermediate LISP programming	C50	Lecture
Unit IV	Introduction to LISP- basic and intermediate LISP programming	C51	Lecture
Unit IV	Introduction to LISP- basic and intermediate LISP programming	C52	Lecture
Unit IV	Introduction to LISP- basic and intermediate LISP programming	C53	Lecture
Unit IV	Introduction to LISP- basic and intermediate LISP programming	C54	Lecture
Unit IV	Clarification Class	C55	Clarification Class
Unit IV	Class Room Assignment	C56	Class Room Assignment
Unit IV	Take Home Assignment		Take Home Assignment
Unit IV	Presentation	C57	Presentation
	Presentation	C58	Presentation
	Webinar	C59	Webinar
	Seminar	C60	Seminar

19010600– Multimedia Technologies

Unit	Particulars	Class No.	Pedagogy of Class
UNIT-I	INTRODUCTION TO MULTIMEDIA		
Unit-I	Introduction to multimedia	C-1	Lecture
Unit-I	Multimedia Information & Objects	C-2	Lecture
Unit-I	Multimedia in Business and Work, Convergence of Computer, Communication and Entertainment Products	C-3	Lecture
Unit-I	Stages of Multimedia Projects, Multimedia hardware	C-4	Lecture
Unit-I	Video representation, colors, video compression, MPEG standards	C-5	Lecture
Unit-I	Multimedia Software, Presentation Tools	C-6	Lecture
Unit-I	Tools for object generation, video, sound, image capturing, Authoring Tools	C-7	Lecture
Unit-I	Card and Page Based authoring tools	C-8	Lecture
Unit-I	Assignment 1	C-9	Class Room Assignment
Unit-II	MULTIMEDIA BUILDING BLOCKS		
Unit-II	Multimedia Building Blocks (Audio, Video, Text, Animation)	C-10	Lecture
Unit-II	Sound MIDI	C-11	Lecture
Unit-II	Digital Audio and Audio File Formats	C-12	Lecture
Unit-II	MIDI under windows environment audio & video capture	C-13	Lecture
Unit-II	Clarification of problems on Unit-II	C-14	Clarification Class
Unit-II	Presentation on various topics of Unit-II	C-15	Presentation
Unit-II	Assignment 2		Take Home Assignments
Unit-III	DATA COMPRESSION AND ITS TYPE		
Unit-III	Data Compression Huffman code	C-16	Lecture
Unit-III	Shannon Fano Algorithm, Huffman Algorithms	C-17	Lecture
Unit-III	Adaptive Coding & Arithmetic Coding	C-18	Lecture
Unit-III	Higher Order Modeling	C-19	Lecture
Unit-III	Finite Context Modeling	C-20	Lecture
Unit-III	Dictionary based Compression	C-21	Lecture
Unit-III	Sliding Window Compression	C-22	Lecture
Unit-III	LZ77,LZW compression ,Compression ratio loss less & lossy compression	C-23	Lecture
Unit-III	Guest Lecture by………….	C-24	Guest Lecture
Unit-III	Clarification of problems on Unit-III	C-25	Clarification Class
Unit-III	Assignment-2	C-27	Class Room Assignment
Unit-III	Presentation on various topics of Unit-II & III	C-27	Presentation
Unit-IV	SPEECH COMPRESION		
Unit-IV	Speech Compression & Synthesis Digital Audio Concepts	C-28	Lecture
Unit-IV	Sampling Variables & Loss less compression of sound, loss compression & silence compression	C-29	Lecture
Unit-IV	Webinar on ……….	C-30	Webinar

Unit-IV	Presentation on various topics of Unit-IV	C-31	Presentation
Unit-IV	Clarification of problems on Unit-IV	C-32	Clarification Class
UNIT-V	IMAGES & VIDEO BITMAPS		
UNIT-V	Images: Multiple monitors, bitmaps,	C-33	Lecture
UNIT-V	Vector drawing Lossy graphic compression	C-34	Lecture
UNIT-V	Image file formatic animations Images standard JPEG compression	C-35	Lecture
UNIT-V	Zig-Zag coding Multimedia Database, Content based retrieval for text & videos	C-36	Lecture
UNIT-V	Video representation, colors, video compression, MPEG standards	C-37	Lecture
UNIT-V	MHEG standard video streaming on net, video conferencing	C-38	Lecture
UNIT-V	Multimedia broadcast services Indexing	C-39	Lecture
UNIT-V	Retrieval of video database, Recent development in multimedia	C-40	Lecture
UNIT-V	Seminar	C-41	Seminar
UNIT-V	Clarification of problems on Unit-IV	C-42	Clarification Class
UNIT-V	Presentation on various topics of Unit-V	C-43	Presentation
UNIT-V	Assignment-3	C-44	Class Room Assignment
UNIT-V	Assignment-4	C-45	Class Room Assignment

19010900– Data Warehouse & Data mining

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Introduction of Data Warehousing and Data Mining.	C1	Lecture
Unit I	It's merits and demerits, Different types of data used in data mining.	C2	Lecture
Unit I	Architecture of Data Warehousing, Data Mining Functionalities With the Diagram.	C3	Lecture
Unit I	Patterns of Data Mining and Task Primitives of Data Mining.	C4	Lecture
Unit I	Classification of Data Mining and Integration of a data mining with a Database or a Data Warehouse.	C5	Lecture
Unit I	Data Pre-Processing: Descriptive Data Summarization and Classification.	C6	Lecture
Unit I	Fraud Detection & Mining Unusual Patterns: Approaches.	C7	Lecture
Unit I	Applications, Internet Web Surf-Aid. Data Mining: A KDD Process: Different Type of Data used in Data Mining.	C8	Lecture
Unit I	Data Mining Functionalities, Data mining Patterns: Human-Centered/Query Language.	C9	Lecture
Unit I	Data Mining: Confluence of Multiple Disciplines, Concept of Hierarchy Generation.	C10	Lecture
	Clarification Class 1	C11	Clarification Class
	Class Room Assignment 1	C12	Class Room Assignment
	Presentation 1	C13	Presentation
	Take Home Assignments 1		Take Home Assignments
Unit II	What is data warehouse, Introduction of OLAP and OLTP	C14	Lecture
Unit II	A multidimensional data model, data warehouse architecture	C15	Lecture
Unit II	data warehouse implementation, data warehouse usage	C16	Lecture
Unit II	data warehouse implementation, data warehouse usage	C17	Lecture
Unit II	OLAP, OLAM Mining frequent patterns	C18	Lecture
Unit II	OLAP, OLAM Mining frequent patterns	C19	Lecture
Unit II	association and correlation, efficient	C20	Lecture
Unit II	scalable frequent item set mining methods	C21	Lecture
Unit II	scalable frequent item set mining methods	C22	Lecture
Unit II	From association mining to correlation analysis.	C23	Lecture
	Clarification Class 2	C24	Clarification Class
	Class Room Assignment 2	C25	Class Room Assignment
	Presentation 2	C26	Presentation
	Take Home Assignments 2		Take Home Assignments
	Webinar 1	C27	Webinar

	Guest lecture 1	C28	Guest lecture
Unit III	Introduction, issues, classification by decision tree induction	C29	Lecture
Unit III	rule based classification, classification by back propagation	C30	Lecture
Unit III	rule based classification, classification by back propagation	C31	Lecture
Unit III	lazy learners, other classification methods	C32	Lecture
Unit III	lazy learners, other classification methods	C33	Lecture
Unit III	Prediction: accuracy and error measures	C34	Lecture
Unit III	evaluating the accuracy of a classifier or predictor	C35	Lecture
	Activity	C36	Activity
Unit III	Cluster Analysis: Types of data in cluster analysis	C37	Lecture
Unit III	Cluster Analysis: Types of data in cluster analysis	C38	Lecture
Unit III	A categorization of major clustering methods, partitioning methods	C39	Lecture
	Clarification Class 3	C40	Clarification Class
	Class Room Assignment 3	C41	Class Room Assignment
	Presentation 3	C42	Presentation
	Webinar 2	C43	Webinar
	Seminar 1	C44	Seminar
	Guest lecture 2	C45	Guest lecture
Unit IV	Multidimensional analysis and descriptive mining of complex data objects	C46	Lecture
Unit IV	Multidimensional analysis and descriptive mining of complex data objects	C47	Lecture
Unit IV	mining spatial database, multimedia database	C48	Lecture
Unit IV	mining spatial database, multimedia database	C49	Lecture
Unit IV	mining world wide web. Data mining Applications	C50	Lecture
Unit IV	mining world wide web. Data mining Applications	C51	Lecture
Unit IV	data mining system products	C52	Lecture
Unit IV	data mining system products	C53	Lecture
Unit IV	research prototypes	C54	Lecture
Unit IV	research prototypes	C55	Lecture
Unit IV	social impact of data mining, trends in data mining	C56	Lecture
Unit IV	social impact of data mining, trends in data mining	C57	Lecture
	Clarification Class 4	C58	Clarification Class
	Class Room Assignment 4	C59	Class Room Assignment
	Presentation 4	C60	Presentation

19011100– Network Security & Cryptography

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Introduction to Concept of Security		
Unit I	Need of Security, Security Approach	C1	Lecture
Unit I	Type of Attack, Substitution Technique	C2	Lecture
Unit I	Transposition Techniques	C3	Lecture
Unit I	Encryption and Decryption	C4	Lecture
Unit I	Symmetric and Asymmetric key cryptography	C5	Lecture
Unit I	Steganography	C6	Lecture
Unit I	Key range and key size	C7	Lecture
Unit I	Possible type of attack	C8	Lecture
	Clarification Class1	C9	Clarification Class
	Home ASSIGNMENT-1		Home Assignments
	Class Assignment-1	C10	Class Assignment
Unit 2	Symmetric Cryptography		
Unit 2	Algo type and Mode, Overview of symmetric key cryptography	C11	Lecture
Unit 2	DES Algorithm	C12	Lecture
Unit 2	IDEA algorithm	C13	Lecture
Unit 2	RC5	C14	Lecture
Unit 2	Blowfish Algorithm	C15	Lecture
Unit 2	AES Algorithm	C16	Lecture
	Clarification Class 2	C17	Clarification Class
	Home ASSIGNMENT-2		Home Assignments
Unit 3	Asymmetric key cryptography		
Unit 3	History of Asymmetric key cryptography	C18	Lecture
	Seminar	C19	Seminar
Unit 3	Overview of Asymmetric key cryptography	C20	Lecture
Unit 3	RSA Algorithm	C21	Lecture
Unit 3	Digital Signature	C22	Lecture
Unit 3	HMAC Algorithm	C23	Lecture
Unit 3	Guest lecture	C24	Guest lecture
Unit 3	Clarification Class 3	C25	Clarification Class
Unit 3	MCQ Quiz Based on job oriented	C26	Quiz
	Home ASSIGNMENT-3		Home Assignments
Unit 4	Key Management & Distribution		
Unit 4	Kerberos	C27	Lecture
Unit 4	SSL Protocol	C28	Lecture
Unit 4	Webinar	C29	Webinar
Unit 4	TLS Protocol	C30	Lecture
Unit 4	Http and Https protocol	C31	Lecture
Unit 4	SSH Algorithm	C32	Lecture
	Presentation	C33	Presentation
	Presentation	C34	Presentation
Unit 4	Shttp Protocol	C35	Lecture
Unit 4	TSP Protocol	C36	Lecture
Unit 4	SET Protocol	C37	Lecture
	Clarification Class 4	C38	Clarification Class
	Class Room Assignment 2	C39	Class Assignment

	Class Room Assignment 3	C40	Class Assignment
Unit 5	Information Security		
Unit 5	Goals of Protection, Domain of Protection, Access Matrix	C41	Lecture
Unit 5	Security and Authentication, Revocation of access Rights, Program Threats and System Threads	C42	Lecture
Unit 5	Clarification Class 5	C43	Clarification Class
	Guest lecture	C44	Guest lecture
	Webinar	C45	Webinar

19011200– Network Security & Cryptography Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Ceaser Cipher	P1-P2	Practical
2	Substitution Cipher	P3-P4	Practical
3	Hill Cipher	P5-P6	Practical
4	DES algorithm	P7-P8	Practical
5	Blow Fish algorithm	P9-P10	Practical
6	Using Java Cryptography, encrypt the text "Hello world" using Blow Fish. Create your own key using Java key tool	P11-P12	Practical
7	Rijndael algorithm	P13-P14	Practical
8	Activity1	P15-P16	Activity
9	Write a Java program to implement RSA Algorithm	P17-P18	Practical
10	Implement the Diffie-Hellman Key Exchange mechanism using HTML and JavaScript. Consider the end user as one of the parties (Alice) and the JavaScript application as other party (bob).	P19-P20	Practical
11	Calculate the message digest of a text using the SHA-1 algorithm in JAVA	P23-P24	Practical
12	Nested If-else, Do while	P25-P26	Practical
13	Calculate the message digest of a text using the SHA-1 algorithm in JAVA	P27-P28	Practical
14	Modified Ceaser Cipher	P29-P30	Practical

19012100– Professional Development (CLD)

Unit	Particulars	Class No.	Pedagogy of Class
UNIT I	How to give Self-Introduction–	C-1	Lecture
UNIT I	Self-Introduction–Expressing yourself	C-2	Lecture
UNIT I	SWOT Analysis and Its need	C-3	Lecture
UNIT I	SWOT Analysis	C-4	Lecture
UNIT I	Identifying One's Strengths and weakness	C-5	Lecture
UNIT I	Clarification Class I	C-6	Clarification Class
	Presentation 1	C-7	Presentation
UNIT I	Impromptu speech (welcome, thank you, introducing others)	C-8	Lecture
Unit I	Impromptu speech (welcome, thank you, introducing others)	C-9	Lecture
UNIT I	tackling hesitation,	C-10	Lecture
UNIT I	shyness and nervousness in speaking.	C-11	Class Assignment
	Take Home Assignment No1		Take Home Assignments
UNITI	Clarification Class II	C-12	Clarification Class
UNIT II	Email Message, Netiquette Guidelines	C-13	Lecture
UNIT II	Email Message, Netiquette Guidelines	C-14	Class Assignment
UNIT II	Email writing Practice	C-15	Class Assignment
UNIT II	Email writing Practice	C-16	Class Assignment
UNIT II	Job application, introduction, reference, thank you, follow up, appreciation	C-17	Lecture
UNIT III	Enhancing presentations with slides and other Audio-visual aids - Art	C-18	Lecture
UNIT II	Clarification Class III	C-19	Clarification Class
UNIT III	Different types of Interview format	C-20	Lecture
UNIT III	Different types of Interview format- answering questions-	C-21	Activity
UNIT III	interviews-body language (paralinguistic features)- articulation of sounds- intonation.	C-22	Activity
UNIT III	Case based group discussion.	C-23	Group discussions
Unit III	Prepared speech (topics are given in advance; students get 10 minutes to prepare the speech	C-24	Lecture
Unit IV	Prepared speech (topics are given in advance; students get 10 minutes to prepare the speech	C-25	Activity
UNIT IV	What is Extempore speech	C-26	Lecture
UNIT IV	What is Extempore speech: (students deliver speeches spontaneously for 5 minutes each on a given	C-27	Activity
UNIT IV	Story telling (Student narrates a fictional or real-life story for 5 minutes each)	C-28	Activity
UNIT IV	English Language Proficiency Test	C-29	Activity
	Clarification Class IV	C-30	Clarification Class

13.1 Semester – VIII		
Course	**Course Outcomes: - After completion of these courses' students should be able to**	
19011400-Project Semester	**CO1:**	Choose the alternative solutions, compare them, and select the optimum one.
	CO2:	Classify the various skills and perform well in teams.
	CO3:	Determine the practical problems of the society and find the better solution.
	CO4:	Design and develop hardware and/or software for their project specific problem.
	CO5:	Apply current technologies and develop applications for the problems.

13.2 Mapping: Semester – VIII

19011400	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2			3	3	3	3	2	
CO2	2			3	2		3	3	2	3	2	3
CO3		2	2		2	3			3		3	3
CO4		2	3	2	3	3	3	3		2	3	3
CO5	3		3			2	3		2			2

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