V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
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VIRUDHUNAGAR - 626 001

PEOs, POs, PSOs and COs

B.Sc. INFORMATION TECHNOLOGY

Programme Educational Objectives (PEOs)

PEOs are broad statements that describe the career and professional achievements, that the Programme is preparing the graduates to achieve within the first few years after graduation. PEOs are framed for each Programme and should be consistent with the Mission of the Institution.

Programme Outcomes (POs)

POs shall be based on Graduate Attributes (GAs) of the Programme. The GAs are the attributes expected of a graduate from a Programme in terms of knowledge, skills, attitude and values. The Graduate Attributes include Disciplinary Knowledge, Communication Skills, Critical Thinking, Problem Solving, Analytical Reasoning, Research Related Skills, Co-operation/Team Work, Scientific Reasoning, Reflective Thinking, Information/Digital Literacy, Multicultural Competence, Moral and Ethical Awareness/Reasoning, Leadership Qualities and Lifelong Learning.

On successful completion of the Programme, the students will be able to

1 Apply effectively the acquired knowledge and skill in the field of Arts, Physical Science, Life Science, Computer Science, Commerce and Management for higher studies and employment. (*Disciplinary Knowledge*)

2 Communicate proficiently and confidently with the ability to express original/complex ideas effectively in different situations. (*Communication Skills)*

3 Identify, formulate and solve problems in real life situations scientifically/ systematically by adapting updated skills in using modern tools and techniques. (*Scientific Reasoning and Problem Solving)*

4 Critically analyse, synthesise and evaluate data, theories and ideas to provide valid suggestions for the betterment of the society. (*Critical Thinking and Analytical Reasoning)*

5 Use ICT in a variety of self-directed lifelong learning activities to face career challenges in the changing environment. (*Digital Literacy, Self - directed and Lifelong Learning)*

6 Self-manage and function efficiently as a member or a leader in diverse teams in a multicultural society for nation building. (*Co-operation/Team Work and Multicultural Competence)*

7 Uphold the imbibed ethical and moral values in personal, professional and social life for sustainable environment. (*Moral and Ethical Awareness)*

Programme Educational Objectives (PEOs)

The students will be able

PEO1 : to be prepared to gain employment as an IT Professional

PEO2 : to function effectively as individuals in the workplace, growing into highly technical or project management and leadership roles.

PEO3 : to develop graduates to meet the challenges of the rapidly changing world.

Key Components of the Mission Statement	**Programme Educational Objectives (PEOs)**		
	PEO1	**PEO2**	**PEO3**
Uplift Rural Students	✓		✓
Enhance employability opportunity	✓	✓	✓
provide moral values to turn out to be a responsible citizen		✓	
develop graduates to meet the challenges of the rapidly changing world		✓	✓

Programme Specific Outcomes (PSOs)

Based on the Programme Outcomes, Programme Specific Outcomes are framed for each UG Programme**.** Programme Specific Outcomes denote what the students would be able to do at the time of graduation. They are Programme specific. It is mandatory that each PO should be mapped to the respective PSO.

On completion of the B.Sc. Information Technology programme, the students will be able to

PO1 - *Disciplinary Knowledge*

PSO 1.a. apply the principles and working of the hardware and software aspects of computer systems incorporated with the knowledge of related courses to pursue higher studies.

PSO 1.b. identify and solve Technical problems by applying mathematical foundations and algorithmic principles in IT environment to meet industrial challenges.

PO2 - *Communication Skills*

PSO 2. a. design and implement a secure and reliable information communication system by using concepts of computer networks, network security and information theory.

PSO 2. b. develop technical project reports and present them orally among the users.

PO3 - *Scientific Reasoning and Problem Solving*

PSO 3. characterize, illustrate and analyze a computer system, component, or algorithm to meet desired needs and to solve computational problems in real world based on their carrier.

PO4 - *Critical Thinking and Analytical Reasoning*

PSO 4. critically analyze the techniques in IT to provide technology based conclusions to transform innovative ideas into reality.

PO5 - *Digital Literacy, Self - directed and Lifelong Learning*

PSO 5. a. use and apply current technical concepts and practices in the core Information Technologies of human computer interaction, programming and networking.

PSO 5.b. be acquainted with the contemporary issues, latest trends in technological development and thereby innovate new ideas by self-directed and lifelong learnings.

PO6 - Cooperation/Team Work and Multi-Cultural Competence

PSO 6: work effectively as a member or leader of a team to achieve project target.

PO7 - Moral and Ethical awareness

PSO 7: demonstrate a sense of societal and ethical responsibility in their professional endeavors.

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Semester I	**INTRODUCTION TO IT AND PROGRAMMING IN C**	**Hours/Week: 5**	
Core Course 1		**Credits: 4**	
Course Code 20UITC11		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: outline the basics of Information Technology and programming fundamentals to enhance the students learning. [K1]

CO2: characterize the usage of basic programming construct, user defined datatypes, C Statements, Array concepts and functions which help them to develop an application. [K2]

CO3: extend the concepts of C Programming that includes various C statements, arrays, built-in and user defined functions to solve real world problems in easier manner. [K2]

CO4: expose the concept of Information Technology which requires the knowledge of C programming environment with variables, data types, numerous statements and functions, Input/output Operations, Arrays to improve their programming skills. [K3]

CO5: scrutinize all fundamental programming statements, functions and Arrays in C to develop their real time projects in the field of Information Technology. [K4]

Course Code 20UITC11	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	H	H	-	H	L	M	H	M	H	-
CO2	H	M	L	M	M	L	H	M	M	-
CO3	H	M	M	L	M	L	M	M	-	-
CO4	H	H	H	H	H	M	M	H	H	-
CO5	M	H	M	M	H	M	M	H	H	-

Semester I	**PROGRAMMING IN C LAB**	**Hours/Week: 5**	
Core Practical 1		**Credits: 3**	
Course Code 20UITC11P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: apply and trace the concept of the programs. [K3]

CO2: capture the logic and the C programming Statements to solve the problem. [K3]

CO3: construct the algorithm and implement the concept using C Programming Statements. [K3]

CO4: prepare the record with the concepts of Function, Arrays and Strings in C. [K3]

CO5: examine the concepts of Function, Arrays and Strings to solve real time computer problems. [K4]

Course Code 20UITC11P	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	H	H	H	H	H	H	H	M	M	-
CO2	H	H	H	H	H	H	M	H	M	-
CO3	M	M	H	H	H	M	M	M	H	-
CO4	M	M	H	H	M	H	M	M	M	-
CO5	L	L	H	H	M	H	L	M	M	-

Semester I	**DIGITAL PRINCIPLES AND APPLICATIONS**	**Hours/Week: 4**	
Allied Course 1		**Credits: 4**	
Course Code 20UITA11		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: recognize number system over Boolean data and outline the arithmetic and combinational circuits using counters and registers in digital logic system. [K1]

CO2: classify various structure of number systems, counters and registers articulating in logic gates, digital circuit designing representations. [K2]

CO3: interpret the knowledge of available coding system, minimization techniques, Flip flops, registers, counters, gates and how to prevent various hazards and timing problems in a digital design. [K2]

CO4: illustrate strong foundations on accessible codes, Boolean Algebra, Logic gates, various combinational and sequential circuits, counters and registers to design the circuits effectively. [K3]

CO5: correlate the concepts of Number systems, Boolean algebra, minimization techniques, Logic gates, Flip flops, Registers and Counters to discover solutions for specific real time problems in the field of Information Technology. [K4]

CourseCode 20UITA11	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**H**	**-**	**M**	**-**	**M**	**-**	**-**
CO2	**H**	**L**	**H**	**L**	**-**	**-**	**-**
CO3	**H**	**M**	**M**	**L**	**M**	**-**	**-**
CO4	**H**	**M**	**H**	**H**	**M**	**-**	**-**
CO5	**H**	**M**	**H**	**H**	**M**	**-**	**-**

Semester I	**HARDWARE SIMULATOR LAB**	**Hours/Week: 2**	
SEC Practical 1		**Credits: 2**	
Course Code 20UITS11P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: determine the circuit to be designed digitally. [K3]

CO2: Construct the simulated circuit model with hardware implementation to design their circuits effectively. [K3]

CO3: practice the basic logic gates and various variable reduction techniques of digital logic circuit in detail. [K3]

CO4: implement and record the hardware circuit to test performance and application for what it is being designed. [K3]

CO5: analyze the computer simulation software to obtain desired result. [K4]

Course Code 20UITS11P	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	H	H	H	H	H	H	H	M	-	-
CO2	H	H	H	H	H	H	M	H	-	-
CO3	M	M	H	H	H	H	M	L	M	-
CO4	M	M	M	H	M	H	M	L	M	-
CO5	L	M	M	M	M	H	M	L	M	-

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Semester I	**VALUE EDUCATION (2020 -21 onwards)**	**Hours/Week: 2**	
		Credits: 2	
Course Code 20UGVE11		**Internal 100**	**External -**

COURSE OUTCOMES

On completion of the course, students will be able to

CO1: describe the general human values and their associated values that are essential to make them committed and responsible individuals. [K1]

CO2: indicate the importance and benefits of upholding human values. [K2]

CO3: explain the steps to be taken for upholding human values and human rights. [K2]

CO4: practice the individual values needed for maintaining harmonious relationship with members of family, institution, organization or society for preserving and transmitting its tradition and culture. [K3]

CO5: uphold the legal, moral, ethical and spiritual values for nurturing health and happiness leading to national integrity and peace and for the existence of human beings with humanity. [K3]

Course Code 20UGVE11	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**H**	**M**	**-**	**-**	**L**	**-**	**H**
CO2	**H**	**M**	**-**	**-**	**L**	**-**	**H**
CO3	**H**	**M**	**-**	**-**	**L**	**-**	**H**
CO4	**H**	**M**	**-**	**-**	**H**	**H**	**H**
CO5	**H**	**M**	**-**	**-**	**L**	**H**	**H**

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Semester II	**ADVANCED CONCEPTS IN C AND DATA STRUCTURES**	**Hours/Week: 5**	
Core Course 2		**Credits: 4**	
Course Code 20UITC21		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: tabulate the difference of structures, unions, Files and the types of ordered list that helps to enhance their learning. [K1]

CO2: recognize the size of memory allocated in variables inside the structure and union to gain their knowledge. [K2]

CO3: implement the Structured programs to develop the applications based on linear data structures such as stack, queue, linked list for better utilization of system resources. [K3]

CO4: scrutinize the various file operations and different types of linked list implementation in data structures to build an intelligent system by using information theory calculations. [K4]

CO5: explore the knowledge in programming to implement data structures and Advanced C concepts in their higher studies to lead a project team effectively. [K4]

Course Code 20UITC21	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	H	M	M	H	M	L	H	M	M	-
CO2	H	H	L	H	M	M	M	H	M	-
CO3	H	H	H	M	H	H	H	M	H	-
CO4	H	H	L	M	H	M	H	M	M	-
CO5	H	H	H	H	H	M	M	H	H	-

Semester II	**DATA STRUCTURES USING C LAB**	**Hours/Week: 5**	
Core Practical 2		**Credits: 3**	
Course Code 20UITC21P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: apply the concepts of data structure, data type and array data structure to enhance their learning. [K3]

CO2: prepare data structure algorithms to solve various problems in IT effectively and professionally. [K3]

CO3: practice and implement various data structure concepts such as Stacks, Queues, linked List, Trees to solve various computing problems. [K3]

CO4: solve and execute programs using data structure concepts. [K3]

CO5: analyze algorithms and determine their time complexity for better utilization of system resources. [K4]

Course Code 20UITC21P	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	H	H	H	H	H	H	M	H	L	-
CO2	H	H	H	H	H	H	H	M	L	-
CO3	M	M	H	H	H	H	M	H	H	-
CO4	L	M	H	H	M	H	H	M	H	-
CO5	L	M	H	H	L	H	M	L	H	-

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Semester II	**DISCRETE MATHEMATICS**	**Hours/Week: 4**	
Allied Course 2		**Credits: 4**	
Course Code 20UITA21		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: recollect the elementary concepts of Groups, Combinatorics and Matrix Algebra in interdisciplinary field. [K1]

CO2: explain the mathematical concepts such as Relations, Functions, basic counting principles, algorithms and algebraic structure. [K2]

CO3: describe the notions of technical concepts in algebraic systems, Matrix Algebra, Recursion and Generating Functions. [K2]

CO4: apply the knowledge gained in Discrete Mathematics to exhibit equivalence classes, various types of functions, recurrence relations, matrix algebra and Group theory. [K3]

CO5: analyze the theory of groups, proofs and techniques of mathematical induction and generating functions. [K4]

Course Code 20UITA21	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	H	-	M	L	H	L	-
CO2	H	L	L	L	M	-	-
CO3	H	-	M	L	L	L	-
CO4	H	L	H	L	M	-	-
CO5	H	-	H	L	L	L	-

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Semester II	**DISCRETE MATHEMATICS**	**Hours/Week: 4**	
Allied Course 2		**Credits: 4**	
Course Code 20UITA21N		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: recollect the elementary concepts of Groups, Combinatorics and Matrix Algebra in interdisciplinary field. [K1]

CO2: explain the mathematical concepts such as Relations, Functions, basic counting principles, algorithms and algebraic structure. [K2]

CO3: describe the notions of technical concepts in algebraic systems, Matrix Algebra, Recursion and Generating Functions. [K2]

CO4: apply the knowledge gained in Discrete Mathematics to exhibit equivalence classes, various types of functions, recurrence relations, matrix algebra and Group theory. [K3]

CO5: analyze the theory of groups, proofs and techniques of mathematical induction and generating functions. [K4]

Course Code 20UITA21N	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**H**	**-**	**M**	**L**	**H**	**L**	**-**
CO2	**H**	**L**	**L**	**L**	**M**	**-**	**-**
CO3	**H**	**-**	**M**	**L**	**L**	**L**	**-**
CO4	**H**	**L**	**H**	**L**	**M**	**-**	**-**
CO5	**H**	**-**	**H**	**L**	**L**	**L**	**-**

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Semester II	**OBJECT ORIENTED PROGRAMMING IN C++**	**Hours/Week: 2**	
SEC 1		**Credits: 2**	
Course Code 20UITS21		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: describe the Procedural and Object Oriented Paradigm with concepts of treams, classes, functions, data and objects to acquire future technologies through the foundation skills. [K1]

CO2: articulate the principles of object-oriented problems using C++ features such as composition of objects, operator overloading, inheritance, polymorphism to apply knowledge of computing and produce effective designs and solutions for specific real time problems. [K2]

CO3: understand dynamic memory management techniques using pointers, constructors, destructors, etc., to adapt new technologies and upgrade their skill. [K2]

CO4: implement simple C++ applications using arrays, structures, pointers, concepts such as information hiding, abstraction and encapsulation and virtual functions to execute projects effectively with a focus on the future. [K3]

CO5: analyze a problem and construct a C++ program that solves the problems in the subjects like Operating System, Computer Networks and real world problems. [K4]

Course Code 20UITS21	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1. a.	**PSO 1. b.**	**PSO 2. a.**	**PSO 2. b.**	**PSO 3**	**PSO 4**	**PSO 5.a.**	**PSO 5. b.**	**PSO 6**	**PSO 7**
CO1	**H**	**M**	**L**	**M**	**L**	**M**	**L**	**M**	**-**	**-**
CO2	**H**	**H**	**L**	**H**	**M**	**M**	**M**	**L**	**-**	**-**
CO3	**M**	**M**	**M**	**M**	**H**	**H**	**M**	**L**	**-**	**-**
CO4	**M**	**L**	**H**	**H**	**H**	**H**	**H**	**M**	**-**	**-**
CO5	**M**	**H**	**M**	**H**	**H**	**H**	**M**	**H**	**-**	**-**

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Semester II	**OBJECT OPRIENTED PROGRAMMING USING C++ LAB**	**Hours/Week: 2**	
SEC Practical 2		**Credits: 2**	
Course Code 20UITS21P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: figure out the solutions for a range of problems. [K3]

CO2: apply object oriented programming concepts in C++ using objects and classes to attain professional excellence. [K3]

CO3: implement algorithmic problems including inheritance and polymorphism for specific real time problems. [K3]

CO4: examine the applications to be implemented for stream, file I/O and C++ concepts to solve problems in the areas of Information Technology for sustainable environment. [K3]

CO5: analyse the object oriented programs using templates and exceptional handling concepts. [K4]

Course Code 20UITS21P	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	H	H	H	H	H	H	H	H	M	-
CO2	H	H	H	H	H	H	H	H	M	-
CO3	M	M	H	H	H	H	H	H	H	-
CO4	M	M	H	H	M	H	M	H	M	-
CO5	L	L	M	H	M	H	M	M	M	-

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Semester III	**DATABASE MANAGEMENT SYSTEMS**	**Hours/Week: 4**	
Core Course 3		**Credits: 4**	
Course Code 20UITC31		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: learn the fundamental elements of DBMS to enhance their knowledge. [K1]

CO2: understand the architecture of database and the languages used to maintain DBMS to apply the software aspects of computer systems. [K2]

CO3: experiment database requirements and determine the entities involved in the system and their relationship to one another to find solutions for specific domain problems. [K3]

CO4: differentiate a relational database using a relational database package and Manipulate a database using SQL for applying current technical concepts and practices. [K4]

CO5: assess the quality and ease of use of data modelling and diagramming tools in real world based on their carrier. [K5]

Course Code 20UITC31	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1.a	**PSO 1.b**	**PSO 2.a**	**PSO 2.b**	**PSO 3**	**PSO 4**	**PSO 5.a**	**PSO 5.b**	**PSO 6**	**PSO 7**
CO1	**H**	**M**	**L**	**H**	**M**	**L**	**M**	**H**	**H**	**L**
CO2	**H**	**H**	**L**	**M**	**M**	**L**	**H**	**M**	**L**	**L**
CO3	**H**	**H**	**L**	**L**	**H**	**M**	**H**	**H**	**H**	**L**
CO4	**H**	**H**	**M**	**H**	**H**	**M**	**M**	**H**	**M**	**L**
CO5	**H**	**H**	**L**	**H**	**H**	**M**	**H**	**M**	**M**	**L**

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Semester III	**DATABASE MANAGEMENT SYSTEMS**	**Hours/Week: 4**	
Core Course 3		**Credits: 4**	
Course Code 20UITC31N		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: learn the fundamental elements of DBMS to enhance their knowledge. [K1]

CO2: understand the architecture of the database and the languages used to maintain DBMS to apply the software aspects of computer systems. [K2]

CO3: experiment database requirements and determine the entities involved in the system and their relationship to one another to find solutions for specific domain problems. [K3]

CO4: differentiate a relational database using a relational database package and manipulate a database using SQL for applying current technical concepts and practices. [K4]

CO5: assess the quality and ease of use of data modeling and diagramming tools in real world based on their carrier. [K5]

Course Code (20UITC31N)	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1. a.	**PSO 1. b.**	**PSO 2. a.**	**PSO 2. b.**	**PSO 3**	**PSO 4**	**PSO 5.a.**	**PSO 5. b.**	**PSO 6**	**PSO 7**
CO 1	**H**	**M**	**L**	**H**	**M**	**L**	**M**	**H**	**H**	**L**
CO 2	**H**	**H**	**L**	**M**	**M**	**L**	**H**	**M**	**L**	**L**
CO 3	**H**	**H**	**L**	**L**	**H**	**M**	**H**	**H**	**H**	**L**
CO 4	**H**	**H**	**M**	**H**	**H**	**M**	**M**	**H**	**M**	**L**
CO 5	**H**	**H**	**L**	**H**	**H**	**M**	**H**	**M**	**M**	**L**

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Semester III	**OPERATING SYSTEMS**	**Hours/Week: 4**	
Core Course 4		**Credits: 3**	
Course Code 20UITC32		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: reminisce the structure of operating system, files, services and techniques used for scheduling CPU helps in synchronizing the process and memory. [K1]

CO2: illustrate the components of a system, main principles and techniques used to implement processes and deadlock as well as the different algorithms for process scheduling and paging of memory to solve the technical memory management errors. [K2]

CO3: identify the main problems related to scheduling and the different process synchronization and also deadlock mechanisms, as well as describe the different approaches of memory management and paging replacement algorithms to resolve page faults. [K3]

CO4: explain the structure and organization of file system, Apply the knowledge of process management, synchronization, deadlock to solve basic problems in allocating memory and resource. [K4]

CO5: evaluate the basic system design process and how to schedule the process and CPU as well as the requirement for process coordination and avoid the deadlock to enhance the system capacitance. [K5]

Course Code 20UITC32	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2.a	PSO 2.b	PSO 3	PSO 4	PSO 5.a	PSO 5.b	PSO 6	PSO 7
CO1	H	M	H	H	L	L	H	M	H	L
CO2	H	L	H	H	H	M	M	H	M	L
CO3	H	M	M	L	M	M	M	H	H	L
CO4	H	M	H	M	H	L	M	H	M	L
CO5	M	L	H	M	H	M	H	M	M	L

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Semester III	**RDBMS LAB**	**Hours/Week: 4**	
Core Practical 3		**Credits: 2**	
Course Code 20UITC31P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: Illustrate the transaction processing system to acquire the knowledge of database concepts. [K3]

CO2: determine the DDL, DML and DCL commands and relational database schemas to develop the PL/SQL programs to solve the real time (online) transaction processing system. [K3]

CO3: demonstrate a basic programmatic interface to a database and to use the basic functions of one such interface to enhance their skills to find the solutions for real time problems. [K3]

CO4: practice and record the commands and database packages that are used to create, populate, maintain, and query a database to deliver a data report in easily understandable format. [K3]

CO5: discover the query using SQL, solutions to a broad range of query, data update problems and derive an information model expressed in the forms to enhance their lifelong learning. [K4]

Course Code 20UITC31P	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1.a	**PSO 1.b**	**PSO 2.a**	**PSO 2.b**	**PSO 3**	**PSO 4**	**PSO 5.a**	**PSO 5.b**	**PSO 6**	**PSO 7**
CO1	**H**	**M**	**H**	**H**	**H**	**H**	**M**	**H**	**L**	**L**
CO2	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**L**	**L**
CO3	**M**	**M**	**H**	**H**	**H**	**H**	**H**	**M**	**M**	**L**
CO4	**M**	**M**	**H**	**M**	**M**	**H**	**M**	**L**	**H**	**L**
CO5	**L**	**M**	**H**	**H**	**M**	**H**	**L**	**M**	**M**	**L**

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Semester III	**NUMERICAL METHODS**	**Hours/Week: 4**	
Allied Course 3		**Credits: 4**	
Course Code 20UITA31		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: recollect the fundamental concepts and principles of numerical approximations for technological development. [K1]

CO2: discuss the notion of several approximation and interpolation methods in interdisciplinary fields. [K2]

CO3: understand the appropriate numerical methods for solving various types of problems by adapting the knowledge of technology. [K2]

CO4: apply the knowledge gained in various methods to find the solutions, missing values, derivatives and integrals of given data in real life situations. [K3]

CO5: analyze complex mathematical problems in technological development using appropriate numerical methods. [K4]

Course Code 20UITA31	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	H	L	H	M	H	L	-
CO2	H	L	H	L	H	-	-
CO3	H	L	H	M	M	L	L
CO4	H	-	H	M	H	-	-
CO5	H	-	H	L	H	-	-

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Semester III	**MS-OFFICE**	**Hours/Week: 2**	
Non Major Elective Course -1		**Credits: 2**	
Course Code 20UITN31		**Internal** 40	**External** 60

COURSE OUTCOMES

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

CO1: recognize the MS-Office tools which enable the students in crafting professional word documents and excel spread sheet calculations in easier manner. [K1]

CO2: demonstrate the document formatting ,editing and spell checking of documents, usage of formulas' and report preparation in work books to enhance their knowledge towards the MS-office tools. [K2]

CO3: interpret the spreadsheet format to include formulas and functions in formula bar to perform business process calculations, document alignment with page borders and page numbers producing pathway to pursue higher education for students. [K2]

CO4: capture the worksheet data in standard format to create different types of charts , formatted word document with foot notes are store for future reference which can be engage them in lifelong learning. [K3]

CO5: practice the format of data and formulae, layout of worksheet content, applying theme in excel and working with document, thesaurus, mail merge in word to exhibit their skills to find solutions for specific domain problems. [K3]

Course Code 20UITN31	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**H**	**L**	**L**	**H**	**L**	**H**	**L**
CO2	**H**	**L**	**M**	**M**	**M**	**L**	**L**
CO3	**H**	**L**	**L**	**H**	**H**	**M**	**L**
CO4	**H**	**M**	**H**	**M**	**H**	**M**	**L**
CO5	**H**	**L**	**H**	**H**	**H**	**M**	**L**

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Semester III	**WOMEN STUDIES**	**Hours/Week: 1**
Generic Elective Course-1		**Credit : 1**
Course Code 20UGEW32		**Internal 100**

COURSE OUTCOMES

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

CO 1: state the significance of Women Studies in establishing Gender Justice. [K1]
CO 2: identify the multi-faceted role of Women in the Current Scenario. [K1]
CO 3: summarise their knowledge on Women Studies and Women Rights. [K2]
CO 4: illustrate the challenges and strategies in upholding Women Empowerment. [K2]
CO 5: manipulate awareness on policies, schemes, atrocities and legal protection for Women. [K3]

Course Code 20UGEW32	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**H**	**M**	**-**	**-**	**-**	**-**	**M**
CO2	**H**	**M**	**-**	**-**	**-**	**M**	**-**
CO3	**H**	**M**	**-**	**-**	**L**	**L**	**M**
CO4	**H**	**M**	**-**	**-**	**L**	**-**	**-**
CO5	**H**	**M**	**-**	**-**	**L**	**M**	**M**

Semester IV	**PHP and MYSQL**	**Hours/Week: 4**	
Core Course 5		**Credits: 4**	
Course Code		**Internal**	**External**
20UITC41		**25**	**75**

COURSE OUTCOMES

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

CO1: demonstrate server-side, client-side scripting techniques, variables, branching, HTTP, arrays and the purpose of a database able to apply particular scripting techniques as per the requirements of users**.** [K1]

CO2: complete the dynamic web pages using basic functions of PHP, types in PHP, functions and variable scope, multidimensional arrays and supported databases technologies through designing the real-time applications. [K2]

CO3: outline the PHP programming concepts in deciding on a web application platform, control structures and functions, string handling functions for developing web applications. [K3]

CO4: summarize about server-side scripting, control structures and functions, PHP number handling, passing information with PHP, Structured Query Language connectivity using PHP programs. [K4]

CO5: measure the advantages of server-side Scripting, alternate control syntaxes, PHP super global arrays, inspecting arrays, privileges and security for developing various database tasks in Web applications through PHP programs. [K5]

Course Code 20UITC41	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1.a	**PSO 1.b**	**PSO 2.a**	**PSO 2.b**	**PSO 3**	**PSO 4**	**PSO 5.a**	**PSO 5.b**	**PSO 6**	**PSO 7**
CO1	**H**	**L**	**M**	**M**	**M**	**H**	**H**	**M**	**L**	**L**
CO2	**H**	**M**	**M**	**M**	**M**	**H**	**M**	**H**	**L**	**L**
CO3	**H**	**M**	**M**	**M**	**H**	**H**	**M**	**H**	**L**	**L**
CO4	**H**	**M**	**M**	**H**	**H**	**H**	**H**	**M**	**L**	**L**
CO5	**M**	**M**	**H**	**M**	**H**	**H**	**H**	**M**	**L**	**L**

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Semester IV	**JAVA PROGRAMMING**	**Hours/Week: 4**	
Core Course – 5		**Credits: 4**	
Course Code 22UITC41		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: recall the Java Programming Concepts, creating an array, threads and defining an interface for gaining strong foundation on Java Programming to upgrade their skills and adapt to new technologies. [K1]

CO2: outline the benefits of Java tokens, symbolic constants, evaluation of expressions, the switch statement, constructors, vectors, implementing interfaces creating packages, threads and exceptions, an applet for designing the real-time web applications to acquire imminent technologies through the foundation skills. [K2]

CO3: develop java programming implementing operator precedence, conditional operators, inheritance, interfaces, package, synchronization, user defined exceptions and applet for developing web pages to execute projects efficiently. [K3]

CO4: analyze overriding methods, type casting, wrapper classes, and java API packages, thread priority, building applet code and graphics in Java programs to transform innovative ideas into real time projects. [K4]

CO5 : measure type conversions in expressions, finalizer methods, and system packages, thread exception, passing parameters to applets and graphics programming to implement a secure and reliable file communication system. [K5]

Course Code (22UITC41)	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1.a	**PSO 1.b**	**PSO 2.a**	**PSO 2.b**	**PSO 3**	**PSO 4**	**PSO 5.a**	**PSO 5.b**	**PSO 6**	**PSO 7**
CO 1	**H**	**L**	**M**	**M**	**M**	**H**	**H**	**M**	**L**	**L**
CO 2	**H**	**M**	**M**	**M**	**M**	**H**	**M**	**H**	**L**	**L**
CO 3	**H**	**M**	**M**	**M**	**H**	**H**	**M**	**H**	**L**	**L**
CO 4	**H**	**M**	**M**	**H**	**H**	**H**	**H**	**M**	**L**	**L**
CO 5	**M**	**M**	**H**	**M**	**H**	**H**	**H**	**M**	**L**	**L**

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Semester IV	**WEB DESIGN USING PHP LAB**	**Hours/Week: 4**	
Core Practical 4		**Credits: 2**	
Course Code 20UITC41P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: demonstrate the client side and server-side scripting techniques and able to apply particular scripting technique as per the requirements of users**.** [K3]

CO2: complete the dynamic web pages using server-side scripting and the basic function of PHP as well as uses of open sources technologies through designing the real-time applications. [K3]

CO3: outline the PHP programming concepts and looping to develop web applications using meta characters, images, frames and regular expressions including modifiers. [K4]

CO4: summarize about the database handling and connectivity using MySQL and Create PHP programs that use various PHP library functions, and that manipulate files and directories. [K5]

CO5: develop various database tasks in Web applications through PHP programs and Build an application to construct various queries in MYSQL and implement the connectivity to the database. [K6]

Course Code 20UITC41P	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1.a	**PSO 1.b**	**PSO 2.a**	**PSO 2.b**	**PSO 3**	**PSO 4**	**PSO 5.a**	**PSO 5.b**	**PSO 6**	**PSO 7**
CO1	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**M**	**L**
CO2	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**	**M**	**L**
CO3	**H**	**M**	**H**	**M**	**H**	**H**	**M**	**H**	**H**	**L**
CO4	**M**	**M**	**H**	**H**	**M**	**H**	**M**	**H**	**H**	**L**
CO5	**L**	**M**	**H**	**H**	**L**	**M**	**L**	**M**	**H**	**L**

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Semester VI	**JAVA PROGRAMMING LAB**	**Hours/Week: 4**	
Core Practical – 4		**Credits: 2**	
Course Code 22UITC41P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: attain the concepts of classes and objects to enhance their oops concepts skills. [K3]

CO2: improves code readability, reusability by the concepts of function overloading and inheritance to solve various problems in IT effectively and professionally. [K3]

CO3: apply multithreading for Program responsiveness, Utilization of Multiprocessor Architecture to solve various computing problems. [K3]

CO4: implement data encapsulation and provide controlled access with packages and provide functionality to import resources such as images, GUI controls, audio clips based on URLs by applets. [K4]

CO5: measures the basic applications, GUI application, web applications handling runtime errors using Exception to transform innovative ideas into real time projects. [K4]

Course Code 22UITC41P	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2.a	PSO 2.b	PSO 3	PSO 4	PSO 5.a	PSO 5.b	PSO 6	PSO 7
CO1	H	H	H	H	H	H	H	M	M	L
CO2	H	H	H	H	H	H	M	H	M	L
CO3	H	M	H	M	H	H	M	H	H	L
CO4	M	M	H	H	M	H	M	H	H	L
CO5	L	M	H	H	L	M	L	M	H	L

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Semester IV	**DATA ANALYTICS**	**Hours/Week: 4**	
Allied Course – 4		**Credits: 4**	
Course Code 20UITA41		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: learn to build reports, interactive dashboards and story interfaces to enhance their knowledge**.** [K1]

CO2: comprehend the data analysis techniques to gather, describe, and analyze data, and use advanced statistical tools to make decisions on operations. [K2]

CO3: infer the charts, graphs, and tools used for analytical problems in real-world scenarios. [K2]

CO4: experiment and evaluate the modeling data to help make more effective business analytics and business industry for specific domain problems. [K3]

CO5: discriminate different methodologies in data analytics to find solutions for predictive analytics in real world based on their carrier. [K4]

Course Code 20UITA41	PO1	PO2	PO3	PO 4	PO5	PO6	PO7
CO1	H	H	L	H	H	H	L
CO2	H	H	H	H	H	M	-
CO3	M	L	M	H	H	H	L
CO4	M	M	H	H	H	M	-
CO5	M	H	H	H	H	M	L

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Semester IV	**DATA ANALYTICS WITH DATA SCIENCE**	**Hours/Week: 4**	
Allied Course - 4		**Credits: 4**	
Course Code 22UITA41		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: learn to build reports, interactive dashboards and story interfaces to enhance their knowledge**.** [K1]

CO2: comprehend the data analysis techniques to gather, describe, and analyze data, and use advanced statistical tools to make decisions on operations. [K2]

CO3: infer the charts, graphs, and tools used for analytical problems in real- world scenarios. [K2]

CO4: experiment and evaluate the modeling data to help make more effective business analytics and business industry for specific domain problems. [K3]

CO5: discriminate different methodologies in data analytics to find solutions for predictive analytics in real world based on their carrier. [K4]

Course Code 22UITA41	PO1	PO2	PO3	PO 4	PO5	PO6	PO7
CO1	H	H	L	H	H	H	L
CO2	H	H	H	H	H	M	-
CO3	M	L	M	H	H	H	L
CO4	M	M	H	H	H	M	-
CO5	M	H	H	H	H	M	L

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Semester IV	**NUMERICAL APTITUDE**	**Hours/Week: 2**	
SEC 3		**Credits: 2**	
Course Code 20UITS41		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: define the concepts of Compound Ratios, Variation, Fourth, Third and Mean Proportional to enhance their skills to succeed in their professional development. [K1]

CO2: comprehend the basic concepts of quantitative ability to solve computational Problems in real world based on their carrier. [K2]

CO3: locate the basic mathematical problems on Numbers, ages, time and ratios and apply their knowledge for specific real time problems. [K2]

CO4: practice for the various competitive examination based on ratios and proportions, time and work to meet industrial challenges. [K3]

CO5: categorize and communicate their conclusions in appropriate ways to transform innovative ideas into reality. [K4]

Course Code 20UITS41	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1.a	**PSO 1.b**	**PSO 2.a**	**PSO 2.b**	**PSO 3**	**PSO 4**	**PSO 5.a**	**PSO 5.b**	**PSO 6**	**PSO 7**
CO1	**M**	**H**	**L**	**L**	**L**	**L**	**L**	**H**	**L**	**-**
CO2	**M**	**H**	**L**	**M**	**M**	**M**	**M**	**H**	**L**	**-**
CO3	**M**	**H**	**M**	**L**	**M**	**L**	**L**	**H**	**L**	**-**
CO4	**M**	**H**	**M**	**M**	**H**	**H**	**M**	**H**	**L**	**-**
CO5	**M**	**H**	**M**	**M**	**H**	**H**	**M**	**H**	**L**	**-**

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Semester IV	**NUMERICAL APTITUDE**	**Hours/Week: 2**	
SEC 2		**Credits: 2**	
Course Code 20UITS41N		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: define the concepts of Permutations, Combinations, Sample space and Probability of occurrence of an event to enhance their skills to succeed in their professional development. [K1]

CO2: comprehend the basic concepts of quantitative ability to solve computational Problem in real world based on their carrier. [K2]

CO3: locate the basic mathematical problems on numbers, ages, time and probabilities and apply their knowledge for specific real time problems. [K2]

CO4: practice for the various competitive examination based on calendar, time and work to meet industrial challenges. [K3]

CO5: categorize and communicate their conclusions in appropriate ways to transform innovative ideas into reality. [K4]

	PO1		PO2		PO3	PO4	PO5		PO6	PO7
Course Code (20UITS41N)	**PSO 1. a.**	**PSO 1. b.**	**PSO 2. a.**	**PSO 2. b.**	**PSO 3**	**PSO 4**	**PSO 5.a.**	**PSO 5. b.**	**PSO 6**	**PSO 7**
CO 1	**M**	**H**	**L**	**L**	**L**	**L**	**L**	**H**	**L**	**-**
CO 2	**M**	**H**	**L**	**M**	**M**	**M**	**M**	**H**	**L**	**-**
CO 3	**M**	**H**	**M**	**L**	**M**	**L**	**L**	**H**	**L**	**-**
CO 4	**M**	**H**	**M**	**M**	**H**	**H**	**M**	**H**	**L**	**-**
CO 5	**M**	**H**	**M**	**M**	**H**	**H**	**M**	**H**	**L**	**-**

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Semester IV	**MULTIMEDIA LAB**	**Hours/Week: 2**	
SEC Practical 2		**Credits: 2**	
Course Code 20UITS41P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: use the Adobe Photoshop tools to write the basic text and image effects. [K3]

CO2: apply the Motion tween, Shape tween in Flash to write basic animation effects and use the drawing and painting tools in Photoshop to write the various effects. [K3]

CO3: explore the edited photoshop image and flash movie file. [K3]

CO4: complete the animation in Flash using action script, filter options, importing sounds and emphasis on web applications and mobile applications. [K3]

CO5: figure out the ability to edit photos and create own 2D short animation film to meet the emerging demand and contemporary challenges. [K4]

Course Code 20UITS41P	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1.a	**PSO 1.b**	**PSO 2.a**	**PSO 2.b**	**PSO 3**	**PSO 4**	**PSO 5.a**	**PSO 5.b**	**PSO 6**	**PSO 7**
CO1	**H**	**M**	**M**	**H**	**H**	**M**	**H**	**M**	**L**	**-**
CO2	**H**	**L**	**M**	**H**	**H**	**H**	**M**	**H**	**L**	**-**
CO3	**H**	**H**	**H**	**H**	**M**	**M**	**H**	**M**	**L**	**-**
CO4	**M**	**H**	**H**	**M**	**M**	**H**	**M**	**H**	**L**	**-**
CO5	**H**	**H**	**H**	**M**	**M**	**H**	**M**	**H**	**L**	**-**

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Semester IV	**MULTIMEDIA LAB**	**Hours/Week: 2**	
SEC Practical 3		**Credits: 2**	
Course Code 20UITS41PN		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: use the Adobe Photoshop tools to write the basic text and image effects. [K3]

CO2: apply and write basic animation effects and use the drawing and painting tools In Photoshop to write the various effects. [K3]

CO3: explore the edited photoshop image and canva file. [K3]

CO4: complete the animation to design cards, Banner and packaging design using Canva. [K3]

CO5: figure out the ability to edit photos and create their own 2D short animation film to meet the emerging demand and contemporary challenges. [K4]

Course Code 20UITS41PN	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1.a	**PSO 1.b**	**PSO 2.a**	**PSO 2.b**	**PSO 3**	**PSO 4**	**PSO 5.a**	**PSO 5.b**	**PSO 6**	**PSO 7**
CO1	**H**	**M**	**M**	**H**	**H**	**M**	**H**	**M**	**L**	**-**
CO2	**H**	**L**	**M**	**H**	**H**	**H**	**M**	**H**	**L**	**-**
CO3	**H**	**H**	**H**	**H**	**M**	**M**	**H**	**M**	**L**	**-**
CO4	**M**	**H**	**H**	**M**	**M**	**H**	**M**	**H**	**L**	**-**
CO5	**H**	**H**	**H**	**M**	**M**	**H**	**M**	**H**	**L**	**-**

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Semester IV	**INTRODUCTION TO HTML**	**Hours/Week: 2**	
Non Major Elective Course - 2		**Credits: 2**	
Course Code 20UITN41		**Internal** 40	**External** 60

COURSE OUTCOMES

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

CO1: describe the basic HTML Commands of tags, text formatting, list and text effects for the emphasizing elements (bold, italic, and sizing), header elements, and color applying the software aspects of computer systems. [K1]

CO2: extend the concepts of list, table, Hyper Links and frames for dividing the web browser window into multiple sections for developing technical project reports. [K2]

CO3: associate the customized web pages by formatting the lists of information in well-formed and semantic way with the usage of links and form tags to solve computational problems in real world based on their carrier. [K2]

CO4: manipulate webpages text styles with lists, tables of bordering attributes with background color, and able to perform different actions using Image Map and Frame Tags to apply current technical concepts and practices. [K3]

CO5: discover the web pages with graphic tools and text effects with images for designing the Forms and activate the Link for achieving technical project. [K3]

Course Code 20UITN41	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO 1	H	H	L	L	M	L	L
CO 2	H	M	M	L	H	L	L
CO 3	H	M	H	M	H	L	L
CO 4	H	H	M	M	H	L	L
CO 5	H	H	H	M	H	L	L

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Semester IV	**INTRODUCTION TO HTML**	**Hours/Week: 2**	
NMEC - 2		**Credits: 2**	
Course Code 20UITN41N		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: Describe the basics of Internet Concepts, HTML Commands of tags, text formatting, list and text effects for the emphasizing elements (bold, italic, and sizing), header elements, and color applying the software aspects of computer systems– **K1**

CO2: generalize the concepts of list, table, Hyper Links and frames for dividing the web browser window into multiple sections for developing technical project reports – **K2**

CO3: associate the customized web pages by formatting the lists of information in a well-formed and semantic way with the usage of links and form tags to solve computational problems in the real world based on their carrier. – **K2**

CO4: Manipulate web pages text styles with lists, tables of bordering attributes with background color, and able to perform different actions using Image Map and Frame Tags to apply current technical concepts and practices – **K3**

CO5: Develop the web pages with graphic tools and text effects with images for designing the Forms and activate the Link for achieving technical project – **K3**

Course Code (20UITN41N)	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2.a	PSO 2.b	PSO 3	PSO 4	PSO 5.a	PSO 5.b	PSO 6	PSO 7
CO 1	**H**	**M**	**L**	**H**	**H**	**L**	**H**	**H**	**H**	**L**
CO 2	**H**	**H**	**L**	**M**	**M**	**L**	**H**	**M**	**M**	**L**
CO 3	**H**	**H**	**L**	**M**	**H**	**M**	**H**	**H**	**H**	**L**
CO 4	**H**	**H**	**M**	**H**	**M**	**M**	**H**	**M**	**M**	**L**
CO 5	**H**	**H**	**L**	**H**	**H**	**M**	**H**	**H**	**M**	**L**

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Semester IV	**DISASTER MANAGEMENT**	**Hours/Week: 1**
Generic Elective Course - 2		**Credit : 1**
Course Code 20UGED44		**Internal 100**

COURSE OUTCOMES

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

CO 1: recall the basic concepts of Disaster Management. [K1]

CO 2: define the types of disasters, disaster management cycle, and agencies for disaster management. [K2]

CO 3: explain the types of disaster, its mitigation and management with Examples. [K2]

CO 4: categorising the disasters, phases of disaster management,agencies involved and the role of IT in disaster management. [K3]

CO 5: Illustrate the causes and effects of manmade and natural disasters, relief, response, stakeholders and the role of technology in disaster management. [K3]

Course Code 20UGED44	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO 1	H	H	M	M	L	H	M
CO 2	H	M	H	M	L	H	H
CO 3	H	M	H	H	L	H	L
CO 4	H	M	L	H	H	H	H
CO 5	H	M	M	H	H	H	H

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Semester V	**VB.Net PROGRAMMING**	**Hours/Week: 5**	
Core Course – 6		**Credits: 5**	
Course Code 20UITC51		**Internal 25**	**External 75**

COURSE OUTCOMES:

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

CO1: Recall .NET framework and can realize some of the major enhancements in the VB.net to enhance their learning. [K1]

CO2: Outline the concept of programs using primitives and constructs in VB .NET to solve various computing problems. [K2]

CO3: Apply the various controls in VB.NET and be able to develop programs using controls to solve the real-world problems to enhance their knowledge. [K3]

CO4: analyze the concept of inheritance and develop code to create objects through the use of inheritance controls to solve the real-world problems. [K4]

CO5: Explain and Implement database connectivity using ADO.NET in a window-based application that will improve their lifelong learning. [K5]

Course Code 20UITC51	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2.a	PSO 2.b	PSO 3	PSO 4	PSO 5.a	PSO 5.b	PSO 6	PSO 7
CO1	H	L	M	M	M	H	H	M	L	L
CO2	H	M	M	M	M	H	M	H	L	L
CO3	H	M	M	M	H	H	M	H	L	L
CO4	H	M	M	H	H	H	H	M	L	L
CO5	M	M	H	M	H	H	H	M	L	L

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Semester V	**SOFTWARE ENGINEERING**	**Hours/Week: 5**	
Core Course – 7		**Credits: 5**	
Course Code 20UITC52		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1 : relate the concepts of software engineering basics, planning, cost estimation, SRS, design, verification, validation and maintenance. [K1]

CO2 : Illustrate about software project base ideas, planning activities, software cost, requirement specification, design activities, verification, validation techniques and maintenance. [K2]

CO3 : utilize the software engineering concepts to choose appropriate life cycle model, quality factors, estimate cost, plan, design notations and testing for software maintenance and implementations. [K3]

CO4 : discover the concepts of quality and modularization, project size, planning activities, SRS, verification, validation for software configurations. [K4]

CO5 : measures planning an organizational structure, software cost estimation techniques, design techniques, modern programming language features, quality assurance for real time project implementations. [K5]

Course Code 20UITC52	PO 1		PO 2		PO 3	PO 4	PO 5		PO 6	PO7
	PSO 1.a	PSO 1.b	PSO 2.a	PSO 2.b	PSO 3	PSO 4	PSO 5.a	PSO 5.b	PSO 6	PSO 7
CO1	**M**	**H**	**M**	**H**	**M**	**H**	**H**	**H**	**H**	**L**
CO2	**M**	**H**	**H**	**H**	**H**	**H**	**H**	**L**	**M**	**-**
CO3	**M**	**M**	**L**	**L**	**H**	**H**	**M**	**H**	**H**	**L**
CO4	**M**	**M**	**H**	**M**	**H**	**H**	**M**	**H**	**M**	**-**
CO5	**H**	**M**	**H**	**M**	**H**	**H**	**H**	**M**	**M**	**L**

Semester V	**DESIGN AND ANALYSIS OF COMPUTER ALGORITHMS**	**Hours/Week: 5**	
Core Course – 8		**Credits: 5**	
Course Code 20UITC53		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1 : list out the time and space complexity required to execute the different algorithms and its implementation techniques to compute the solution for real world problems in easier manner. [K1]

CO2 : illustrate the importance of choosing efficient data structures and the algorithm design techniques to solve the complex problems easily and to improve their lifelong learning. [K2]

CO3 : apply the different problem solving techniques and its algorithms to find the solution for optimization, coloring, sorting and graphical problems to enhance their knowledge. [K3]

CO4 : analyze the various algorithm design techniques based on their performance and ordering them to solve real time problems. [K4]

CO5 : evaluate the amount of time and space needed to execute the particular algorithm to solve the optimization and sorting problems that will be helpful to meet industrial challenges. [K5]

Course Code 20UITC53	PO1		PO2	PO3	PO4		PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	**H**	**M**	**M**	**H**	**H**	**L**	**H**	**M**	**M**	**-**
CO2	**H**	**H**	**L**	**H**	**M**	**M**	**H**	**H**	**M**	**-**
CO3	**H**	**L**	**H**	**M**	**H**	**H**	**H**	**M**	**H**	**-**
CO4	**H**	**H**	**L**	**M**	**H**	**M**	**H**	**H**	**M**	**-**
CO5	**H**	**H**	**L**	**H**	**H**	**M**	**H**	**H**	**H**	**-**

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Semester V	**VB.NET PROGRAMMING LAB**	**Hours/Week: 5**	
Core Practical – 5		**Credits: 2**	
Course Code 20UITC51P		**Internal 40**	**External 60**

COURSE OUTCOMES:

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

CO1 : Apply and identify the importance of object-oriented programming and how to develop small programs to upgrade the skills. [K3]

CO2 : Develop string manipulation, events and exception handling problems within .NET application environment and find the solutions for real world problems. [K3]

CO3 : Experiment with the usage of controls to create websites and depict the knowledge of object – oriented concepts to enhance their knowledge. [K3]

CO4 : Make use of ADO .NET and develop database applications using .NET framework to develop the technical projects in an easier manner. [K3]

CO5 : Analyze Database operations using ADO.Net connectivity and find the solutions for Windows Form and web applications using .NET applications to become a professional developer. [K4]

Course Code 20UITC51P	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2.a	PSO 2.b	PSO 3	PSO 4	PSO 5.a	PSO 5.b	PSO 6	PSO 7
CO1	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**M**	**L**
CO2	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**	**M**	**L**
CO3	**H**	**M**	**H**	**M**	**H**	**H**	**M**	**H**	**H**	**L**
CO4	**M**	**M**	**H**	**H**	**M**	**H**	**M**	**H**	**H**	**L**
CO5	**L**	**M**	**H**	**H**	**L**	**M**	**L**	**M**	**H**	**L**

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Semester V	**SYSTEM SOFTWARE**	**Hours/Week : 4**	
DSEC 1		**Credits : 4**	
Course Code 20UITE51		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the learners will be able to

CO1: recall the relationship between system software and machine architecture, assembler features, loader functions, macro processor, compiler and other system software functions. [K1]

CO2: outline the concepts of one pass, two pass and multi pass assemblers, loaders and linkers, SIC, macro processors, machine codes, debugging process and lexical analysis phase for the generation of machine codes. [K2]

CO3: construct simplified instructional computer, machine dependent and independent assembler, compiler, macro processor to generate executable files and create database. [K3]

CO4: examine the architecture of RISC, CISC, the text editors, the functions of assemblers, loaders, macro processors design options for the object program enhancement. [K4]

CO5: measures evaluation processes, system software tools and functionality of linkers and compilers for the core functions of operating systems and interactive debugging systems. [K5]

Course Code 20UITE51	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	H	M	H	L	M	M	L	M	M	-
CO2	H	H	L	M	H	L	-	L	M	L
CO3	H	L	M	M	M	M	M	H	-	L
CO4	H	H	M	L	H	H	M	L	L	H
CO5	H	H	M	L	H	H	M	M	-	-

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Semester V	**COMPUTER GRAPHICS**	**Hours/Week: 4**	
DSEC 1		**Credits: 4**	
Course Code 20UCAE52		**Internal 25**	**External 75**

COURSE OUTCOMES

On successful completion of the course, the learners will be able to

CO1 : identify the applications of Computer Graphics, recognize the devices of the graphics system, describe the output primitive attributes, the concepts of geometric transformations, visible-surface, viewing pipeline and clipping operations. [K1]

CO2 : understand the basics of computer graphics , 2D and 3D Transformations, attributes of output primitive, clipping algorithms, graphical user interfaces and interactive input methods. [K2]

CO3 : use geometric transformations on graphics objects and their application in composite form, and to know how graphical input and output devices work, solve the problems on viewing transformations. [K3]

CO4 : analyse how primitive graphical objects are generated in the computer, compare the algorithms for drawing a point, line, circle., classify the visible-surface detection methods. [K4]

CO5 : create programs for real time applications by implementing algorithms of computer graphics. [K5]

Course Code 20UCAE52	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
	PSO 1.a	**PSO 1.b**	**PSO 2**	**PSO 3.a**	**PSO 3.b**	**PSO 4.a**	**PSO 4.b**	**PSO 5**	**PSO 6**	**PSO 7**
CO1	**H**	**M**	**H**	**M**	**-**	**M**	**-**	**-**	**-**	**-**
CO2	**H**	**H**	**M**	**M**	**M**	**-**	**-**	**-**	**-**	**L**
CO3	**M**	**M**	**M**	**H**	**M**	**L**	**L**	**M**	**-**	**-**
CO4	**M**	**-**	**L**	**M**	**-**	**L**	**L**	**M**	**-**	**-**
CO5	**-**	**M**	**L**	**-**	**-**	**-**	**-**	**H**	**L**	**-**

Semester V	**CLOUD COMPUTING**	**Hours/Week: 4**	
DSEC 1		**Credits: 4**	
Course Code 20UITE53		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: Learn and identify the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing. [K1]

CO2: Recognize the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud and the concept of Virtualization and Virtual Clusters through designing the real-time applications. [K2]

CO3: Identify the importance of virtualization and how this has enabled the development of Cloud Computing in real time web services. [K3]

CO4: Criticize the key aspects and evolution of cloud computing in current technical concepts and practices. [K4]

CO5: Discriminate the Challenges faced by the cloud data in security in the real world based on their carrier. [K5]

Course Code 20UITE53	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1. a.	**PSO 1. b.**	**PSO 2. a.**	**PSO 2. b.**	**PSO 3**	**PSO 4**	**PSO 5.a.**	**PSO 5. b.**	**PSO 6**	**PSO 7**
CO1	**H**	**M**	**H**	**L**	**H**	**M**	**H**	**M**	**L**	**-**
CO2	**H**	**M**	**H**	**L**	**H**	**H**	**H**	**M**	**-**	**-**
CO3	**H**	**M**	**H**	**L**	**H**	**M**	**H**	**M**	**-**	**-**
CO4	**H**	**M**	**H**	**L**	**H**	**H**	**H**	**M**	**-**	**-**
CO5	**H**	**M**	**H**	**L**	**H**	**H**	**H**	**M**	**-**	**-**

Semester V	**SYSTEM TESTING LAB**	**Hours/Week: 4**	
DSEC 2		**Credits: 2**	
Course Code 20UITE51P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1 : construct and test sample programs by using different testing techniques and learn test case designing**.** [K3]

CO2 : identify the Fault cases in the program with that its logic validation data analysis before they are used. [K3]

CO3 : discover and test different a range of software testing techniques and strategies for the real time projects. [K3]

CO4 : Develop the basic path testing cases and procedures for the verification process. [K3]

CO5 : analyze the different types of test cases to understand real world IT problem. [K4]

Course Code 20UITE51P	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	**H**	**H**	**M**	**H**	**H**	**H**	**H**	**M**	**H**	**-**
CO2	**H**	**H**	**M**	**H**	**H**	**H**	**M**	**H**	**M**	**-**
CO3	**H**	**H**	**H**	**H**	**H**	**M**	**M**	**M**	**H**	**-**
CO4	**H**	**H**	**H**	**H**	**L**	**H**	**M**	**M**	**M**	**-**
CO5	**M**	**L**	**H**	**H**	**M**	**H**	**M**	**M**	**H**	**-**

Semester V	**COMPUTER GRAPHICS PROGRAMMING LAB**	**Hours/Week: 4**	
DSEC 2		**Credits: 2**	
Course Code 20UCAE52P		**Internal 40**	**External 60**

COURSE OUTCOMES

On successful completion of the course, the learners should be able to

CO1 : apply the specification of syntax and rules for C Graphics functions. [K3]

CO2 : write programs using C for drawing pixel, line, circle, text, filling and clipping objects, 2D and 3D transformations. [K3]

CO3 : execute the programs with required input. [K3]

CO4 : prepare the record with the neat output. [K3]

CO5 : analyze and test program with different inputs and justify the result. [K4]

Course Code 20UCAE52P	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	**H**	**H**	**H**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO2	**H**	**H**	**M**	**M**	**M**	**-**	**-**	**-**	**-**	**L**
CO3	**M**	**L**	**L**	**H**	**M**	**L**	**L**	**M**	**-**	**-**
CO4	**M**	**-**	**L**	**M**	**-**	**L**	**H**	**M**	**-**	**L**
CO5	**M**	**M**	**L**	**-**	**-**	**-**	**-**	**H**	**M**	**-**

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Semester VI	**LINUX PROGRAMMING LAB**	**Hours/Week: 4**	
DSEC 2		**Credits: 2**	
Course Code 20UITE53P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: identify the basic set of Linux commands and utilities to deliver a best quality product. [K3]

CO2: organize basic fundamental utilities that are necessary on a modern operating system. [K3]

CO3: apply the important Linux/UNIX Library functions and system calls to provide software-based solutions. [K3]

CO4: develop shell scripts that enhance the usefulness of computers. [K3]

CO5: discover various filter and server commands in Linux Operating System that supports in life long learnings. [K4]

Course Code 20UITE53P	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**-**
CO2	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**-**
CO3	**H**	**M**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**-**
CO4	**H**	**M**	**H**	**H**	**M**	**H**	**H**	**H**	**L**	**-**
CO5	**H**	**L**	**H**	**H**	**H**	**H**	**M**	**M**	**H**	**-**

Semester V	**PROJECT**	**Hours/Week: 0**
Project		**Credits: 1**
Course Code 20UITC5PR		**Internal : 100 Marks**

COURSE OUTCOMES

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

CO1: apply fundamental concepts and methods to identify and solve technical problems.[K3]

CO2: develop the ability to look into industrial problem and implement a secure and reliable information system. [K3]

CO3: identify the characteristics of various stages of projects to provide technology based conclusion. [K3]

CO4: organize team management to complete the project on time and work effectively as a member or a leader of a team. [K3]

CO5: discover the software development process models to present technical report for lifelong learning. [K4]

Course Code 20UITC5PR	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**	**-**
CO2	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**	**M**	**-**
CO3	**M**	**H**	**H**	**H**	**H**	**M**	**H**	**H**	**H**	**-**
CO4	**M**	**H**	**H**	**H**	**M**	**H**	**M**	**H**	**H**	**-**
CO5	**H**	**M**	**H**	**H**	**M**	**H**	**H**	**M**	**M**	**-**

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Semester V	**COMPUTER ORGANIZATION**	**Hours/Week: -**	
Extra Credit Course		**Credits: 2**	
Course Code		**Internal**	**External**
20UITO51		**100**	**-**

COURSE OUTCOMES

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

CO1: Learn and identify the main concepts, key technologies of computer organization and control memory functions to strong their foundation. [K1]

CO2: Recognize the architecture and infrastructure of Computer Registers, Parallel Processing and peripheral devices to design the real-time system. [K2]

CO3: Identify the importance of computer arithmetic, pipelining, Direct Memory Access, design of control unit for data flow efficiency for the system. [K3]

CO4: Criticize the key aspects and evolution of Memory hierarchy to enhance their skill in current technical concepts and practices. [K4]

CO5: Discriminate the challenges faced by the in interrupts, Asynchronous Data Transfer, Instruction Formats and Addressing Modes that supports in lifelong learning. [K5]

Course Code 20UITO51	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	H	M	H	L	M	M	L	M	M	-
CO2	H	H	L	M	H	L	-	L	M	L
CO3	H	L	H	M	L	L	M	H	-	L
CO4	H	H	M	L	H	H	M	L	L	H
CO5	H	H	M	L	H	H	M	M	-	-

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Semester V	**ENVIRONMENTAL STUDIES**	**Hours/Week: 2**	
PART IV		**Credits: 1**	
Course Code 20UGES51		**Internal 100**	**External -**

COURSE OUTCOMES

On completion of the course, students will be able to

CO1 : State the social aspects of the environment, the present condition of the earth and the impact of human activities locally and globally. [K1]

CO2 : Explain the biodiversity conservation, environmental hazards and current possible disasters. [K2]

CO3 : Describe the need for sustainable development. [K2]

CO4 : Solve the environmental associated problems. [K3]

CO5 : Identify environmental legislations and management strategies. [K3]

Course Code 20UGES51	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO 1	H	H	L	L	L	-	L
CO 2	H	H	L	L	L	-	-
CO 3	H	H	L	L	L	-	-
CO 4	H	H	H	H	L	-	-
CO 5	H	H	H	H	L	-	H

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Semester VI	**JAVA PROGRAMMING**	**Hours/Week: 5**	
Core Course – 9		**Credits: 5**	
Course Code 20UITC61		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1 : recall the basic concepts of oops and Java Programming Concepts, creating an array and threads, defining an interface for gaining strong foundation on Java Programming to upgrade their skills and adapt to new technologies. [K1]

CO2 : outline the benefits of oops, java tokens, symbolic constants, evaluation of expressions, the switch statement, constructors, vectors, implementing interfaces creating packages, threads and exceptions, an applet for designing the real-time web applications to acquire imminent technologies through the foundation skills. [K2]

CO3 : develop java programming implementing operator precedence, conditional operator's, inheritance, interfaces, package, synchronization, user defined exceptions, streams classes, applet for developing web pages to execute projects efficiently. [K3]

CO4 : analyze overriding methods, type casting, wrapper classes, and java API packages, thread priority, building applet code, the graphics and stream classes in java programs to transform innovative ideas into real time projects. [K4]

CO5 : measure type conversions in expressions, finalizer methods, and system packages, thread exception, passing parameters to applets, graphics programming, and file classes to implement a secure and reliable file communication system. [K5]

Course Code 20UITC61	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2.a	PSO 2.b	PSO 3	PSO 4	PSO 5.a	PSO 5.b	PSO 6	PSO 7
CO1	H	L	M	M	M	H	H	M	L	L
CO2	H	M	M	M	M	H	M	H	L	L
CO3	H	M	M	M	H	H	M	H	L	L
CO4	H	M	M	H	H	H	H	M	L	L
CO5	M	M	H	M	H	H	H	M	L	L

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Semester VI	**PHP and MySQL**	**Hours/Week: 5**	
Core Course 9		**Credits: 5**	
Course Code		**Internal**	**External**
22UITC61		**25**	**75**

COURSE OUTCOMES

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

CO1: demonstrate server-side, client-side scripting techniques, variables, branching, HTTP , arrays and the purpose of a database able to apply particular scripting techniques as per the requirements of users**.** [K1]

CO2: complete the dynamic web pages using basic functions of PHP, types in PHP, functions and variable scope, multidimensional arrays and supported databases technologies through designing the real-time applications. [K2]

CO3: outline the PHP programming concepts in deciding on a web application platform,, control structures and functions, string handling functions for developing web applications. [K3]

CO4: summarize about server-side scripting, control structures and functions, PHP number handling, passing information with PHP, Structured Query Language connectivity using PHP programs. [K4]

CO5: measure the advantages of server-side Scripting, alternate control syntaxes, PHP super global arrays, inspecting arrays ,privileges and security for developing various database tasks in Web applications through PHP programs. [K5]

Course Code 22UITC61	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1.a	**PSO 1.b**	**PSO 2.a**	**PSO 2.b**	**PSO 3**	**PSO 4**	**PSO 5.a**	**PSO 5.b**	**PSO 6**	**PSO 7**
CO1	**H**	**L**	**M**	**M**	**M**	**H**	**H**	**M**	**L**	**L**
CO2	**H**	**M**	**M**	**M**	**M**	**H**	**M**	**H**	**L**	**L**
CO3	**H**	**M**	**M**	**M**	**H**	**H**	**M**	**H**	**L**	**L**
CO4	**H**	**M**	**M**	**H**	**H**	**H**	**H**	**M**	**L**	**L**
CO5	**M**	**M**	**H**	**M**	**H**	**H**	**H**	**M**	**L**	**L**

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Semester VI	**BlockChain Technology**	**Hours/Week: 5**	
Core Course10		**Credits: 5**	
Course Code 20UITC62		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1 : outline the basic concepts, architecture, technology and the primitives of the distributed computing and cryptography related to block chain to pursue higher studies. [K1]

CO2 : demonstrate the secure hash function algorithm, working of blockchain components and elements of trust in a block chain validation, verification and consensus for a reliable information system. [K2]

CO3 : implement Ethereum blockchain contract and apply the learning of solidity and decentralized apps in blockchain technology to solve computational problems in real world. [K3]

CO4 : analyze the blockchain and its allied technology, the working of smart contracts and decentralized system and robotic process automation to transform innovative ideas into reality. [K4]

CO5 : Evaluate security, privacy, transactions, and efficiency of a given blockchain system for better system performance. [K5]

Course Code 20UITC62	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5. a.	PSO 5. b.	PSO 6	PSO7
CO1	H	M	H	L	H	H	H	H	L	-
CO2	H	H	H	L	H	H	H	H	-	-
CO3	H	H	H	L	H	H	H	H	-	-
CO4	H	M	H	L	H	H	H	H	-	-
CO5	H	M	H	L	H	H	H	H	-	

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Semester VI	**COMPUTER NETWORKS**	**Hours/Week: 5**	
Core Course – 11		**Credits: 5**	
Course Code 20UITC63		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: acquire network types, components, problems, services, protocols and design issues of each layer in reference models to design reliable information communication system. [K1]

CO2: outline the types of transmission media, elementary protocols, routing algorithms, error control and flow control to solve technical problems in industry. [K2]

CO3: identify the functionalities of DNS, core knowledge of TCP, IP, collision free protocols& Email to build real time applications. [K3]

CO4: analyze the characteristics of data unit, Multiple Access Protocols, Service Primitives, and IP addresses for additional security to meet security issues. [K4]

CO5: measures network types, mode of transmission, network standards, Architecture and Services, communication protocol for better system performance. [K5]

Course Code 20UITC63	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1. a.	**PSO 1. b.**	**PSO 2. a.**	**PSO 2. b.**	**PSO 3**	**PSO 4**	**PSO 5.a.**	**PSO 5. b.**	**PSO 6**	**PSO 7**
CO1	**H**	**M**	**H**	**L**	**H**	**M**	**H**	**M**	**L**	**-**
CO2	**H**	**M**	**H**	**L**	**H**	**H**	**H**	**M**	**-**	**-**
CO3	**H**	**M**	**H**	**L**	**H**	**M**	**H**	**M**	**-**	**-**
CO4	**H**	**M**	**H**	**L**	**H**	**H**	**H**	**M**	**-**	**-**
CO5	**H**	**M**	**H**	**L**	**H**	**H**	**H**	**M**	**-**	**-**

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Semester VI	**JAVA PROGRAMMING LAB**	**Hours/Week: 5**	
Core Practical – 6		**Credits: 2**	
Course Code 20UITC61P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: attain the concepts of classes and objects to enhance their oops concepts skills. [K3]

CO2: improves code readability, reusability by the concepts of function overloading and inheritance to solve various problems in IT effectively and professionally. [K3]

CO3: apply multithreading for Program responsiveness, Utilization of Multiprocessor Architecture to solve various computing problems. [K3]

CO4: implement data encapsulation and provide controlled access with packages and provide functionality to import resources such as images, GUI controls, audio clips based on URLs by applets. [K4]

CO5: measures the basic applications, GUI application, web applications handling runtime errors using Exception to transform innovative ideas into real time projects. [K4]

Course Code 20UITC61P	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2.a	PSO 2.b	PSO 3	PSO 4	PSO 5.a	PSO 5.b	PSO 6	PSO 7
CO1	H	H	H	H	H	H	H	M	M	L
CO2	H	H	H	H	H	H	M	H	M	L
CO3	H	M	H	M	H	H	M	H	H	L
CO4	M	M	H	H	M	H	M	H	H	L
CO5	L	M	H	H	L	M	L	M	H	L

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Semester VI	**WEB DESIGN USING PHP LAB**	**Hours/Week: 5**	
Core Practical 6		**Credits: 2**	
Course Code		**Internal**	**External**
22UITC61P		**40**	**60**

COURSE OUTCOMES

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

CO1: demonstrate the client side and server-side scripting techniques and be able to apply particular scripting techniques as per the requirements of users**.** [K3]

CO2: complete the dynamic web pages using server-side scripting and the basic function of PHP as well as uses of open source technologies through designing the real-time applications. [K3]

CO3: outline the PHP programming concepts and looping to develop web applications using Meta characters, images, frames and regular expressions including modifiers. [K4]

CO4: summarize about the database handling and connectivity using MySQL and Create PHP programs that use various PHP library functions, and that manipulate files and directories. [K5]

CO5: develop various database tasks in Web applications through PHP programs and Build an application to construct various queries in MYSQL and implement the connectivity to the database. [K6]

Course Code 20UITC41P	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1.a	**PSO 1.b**	**PSO 2.a**	**PSO 2.b**	**PSO 3**	**PSO 4**	**PSO 5.a**	**PSO 5.b**	**PSO 6**	**PSO 7**
CO1	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**M**	**L**
CO2	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**	**M**	**L**
CO3	**H**	**M**	**H**	**M**	**H**	**H**	**M**	**H**	**H**	**L**
CO4	**M**	**M**	**H**	**H**	**M**	**H**	**M**	**H**	**H**	**L**
CO5	**L**	**M**	**H**	**H**	**L**	**M**	**L**	**M**	**H**	**L**

Semester VI		**Hours/Week: 4**	
DSEC 3		**Credits: 4**	
Course Code 20UCAE61	**MOBILE APPLICATION DEVELOPMENT**	**Internal 25**	**Externa l 75**

COURSE OUTCOMES

On successful completion of the course, the learners will be able to

CO1 : recite the concepts of Android programming basics, Activities, Fragments, Intents, UI, Views, inserting pictures, menus and data persistence. [K1]

CO2 : interpret about Android basics, Activities, Fragments, Intents, UI, Views, apps with pictures, menus and data storage in memory card, Databases. [K2]

CO3 : identify the needed views to design the UI and use Activities, Fragments, intents, picture insertion, menu, Data storage in Android Apps. [K3]

CO4 : figure out the elements needed for the UI designing such as views, menu, images and combine the concepts such as activities, fragment, intent and data persistence. [K4]

CO5 : design simple Android Apps using Android basics, Activities, Fragments, Intents, UI, Views, pictures, menus and data persistence. [K5]

Course Code 20UCAE61	PO1			PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	M	M	M	-	-	-	-	-	-	-
CO2	M	M	M	M	M	-	-	-	-	-
CO3	M	M	M	M	M	L	L	M	L	-
CO4	H	M	L	H	M	L	L	M	L	-
CO5	H	H	L	-	-	-	-	H	L	L

Semester VI	**CYBER SECURITY**	**Hours/Week: 4**	
DSEC 3		**Credits: 4**	
Course Code 20UITE62		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: observe the security concepts, preventions, tools, control systems and basic approaches in information security. [K1]

CO2: summarize the firewall categories, types of IDPS, physical security controls and understand risk management and security maintenance model for the development of secured communication system. [K2]

CO3: implement firewall Architectures, IDPS detection methods, management maintenance models, technical aspects of information security to provide technology based conclusions. [K3]

CO4: select the Right Firewall, IDPS Approaches and Products, various risk assessments and apply the technological aspects for computational problems. [K4]

CO5: measure the effectiveness of IDPSs, the need for project management, internal & external environment and analyze real-life security cases. [K5]

Course Code 20UITE62	**PO1**		**PO2**		**PO3**	**PO4**	**PO5**		**PO6**	**PO7**
	PSO 1. a.	**PSO 1. b.**	**PSO 2. a.**	**PSO 2. b.**	**PSO 3**	**PSO 4**	**PSO 5.a.**	**PSO 5. b.**	**PSO 6**	**PSO 7**
CO1	**H**	**M**	**H**	**L**	**M**	**M**	**H**	**M**	**L**	**-**
CO2	**H**	**M**	**H**	**L**	**H**	**H**	**H**	**M**	**L**	**-**
CO3	**H**	**H**	**H**	**L**	**H**	**H**	**H**	**H**	**-**	**-**
CO4	**H**	**M**	**H**	**L**	**H**	**H**	**H**	**H**	**-**	**-**
CO5	**H**	**M**	**H**	**L**	**H**	**H**	**H**	**H**	**-**	**-**

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Semester VI	**EMBEDDED SYSTEMS**	**Hours/Week: 4**	
DSEC 3		**Credits: 4**	
Course Code 20UITE63		**Internal 25**	**External 75**

COURSE OUTCOMES

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

CO1: list the Hardware, Software, design technologies, Microcontrollers and program modeling concepts used in designing Embedded Systems to acquire the knowledge of the components of Information Technology. [K1]

CO2: outline the Embedded System architecture, design process, Microcontrollers, designing C, C++ and Java programs that gain ability to familiarize the latest trends in technological development. [K2]

CO3: identify the features of the microcontrollers and provide the exact solutions for any embedded applications that helps in applying standard Software Engineering practices. [K3]

CO4: analyze suitable microcontroller along with appropriate interfacing circuits and implement with software programs that enhances the practice in the core information technologies of human computer interaction. [K4]

Course Code 20UITE63	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	**H**	**M**	**M**	**H**	**M**	**L**	**H**	**M**	**L**	**L**
CO2	**H**	**H**	**L**	**H**	**M**	**M**	**M**	**H**	**L**	**L**
CO3	**H**	**H**	**H**	**M**	**H**	**H**	**H**	**M**	**L**	**L**
CO4	**H**	**H**	**L**	**M**	**H**	**M**	**H**	**M**	**L**	**L**
CO5	**H**	**H**	**M**	**H**	**H**	**H**	**M**	**M**	**L**	**L**

Semester VI	**MOBILE APPLICATION DEVELOPMENT LAB**	**Hours/Week: 4**	
DSEC 4		**Credits: 2**	
Course Code 20UCAE61P		**Internal 40**	**External 60**

COURSE OUTCOMES

On successful completion of the course, the learners should be able to

CO1 : identify the packages, classes and methods needed for the problem. [K3]

CO2 : make use of views, menu, images to design UI and write programs using activities, fragment, intent and data persistence. [K3]

CO3 : key-in the programs and test the programs with required input and get expected outputs with neat formatting and prepare the record work. [K3]

CO4 : explain the UI design, activities in App and deduce the answers for any queries raised. [K3]

CO5 : reconstruct the program to adapt the necessary modifications and justify the desired result. [K4]

Course Code 20UCAE61P	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	H	M	M	-	-	-	-	-	-	-
CO2	H	M	M	M	M	-	-	-	-	L
CO3	M	M	L	H	M	L	L	M	-	L
CO4	M	-	L	M	-	L	L	M	L	-
CO5	-	M	L	-	-	-	-	H	L	-

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Semester VI	**UML DESIGNING LAB**	**Hours/Week:4**	
DSEC 4		**Credits: 2**	
Course Code 20UITE62P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1: organize, design, document the requirements through Use Case driven approach to present multiple views of a system. [K3]

CO2: model the event driven state of objects and transform them into implementation specific layouts. [K3]

CO3: develop class diagrams and object diagrams that model the design model and design solution using creative patterns to effectively share and communicate the vision orally among users. [K3]

CO4: choose the structural and behavioral patterns for a given application and verify the elements of UML to solve design problems in the IT environment. [K3]

CO5: analyze the subsystem, various components and its notations for recording design artifacts to meet desired needs for efficient system design. [K4]

Course Code 20UITE62P	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	M	M	H	H	H	M	H	M	L	-
CO2	M	H	H	M	H	H	M	M	-	-
CO3	M	H	H	H	H	H	H	M	-	-
CO4	M	H	H	H	H	H	M	M	-	-
CO5	M	H	H	H	H	H	M	M	-	-

Semester VI	**R PROGRAMMING LAB**	**Hours/Week: 4**	
DSEC 4		**Credits: 2**	
Course Code 20UITE63P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1 : utilize the R language syntax including control statements, loops and functions to write programs for a wide variety of real world problems in mathematics and research field. [K3]

CO2 : apply the control structures like looping and conditional statements in R to store, process and sort the data in easier manner. [K3]

CO3 : interpret the concepts of arrays and vectors in R to implement sorting and searching problems to enhance their knowledge. [K3]

CO4 : discover the capabilities of R data expression for data verification and Recursion procedure for building performance efficient R programs. [K3]

CO5 : analyze the different packages in R language to manipulate the large set of data that will improve their lifelong learning. [K4]

Course Code 20UITE63P	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**	**-**
CO2	**H**	**H**	**M**	**H**	**H**	**H**	**M**	**H**	**M**	**-**
CO3	**M**	**M**	**H**	**H**	**H**	**M**	**M**	**M**	**H**	**-**
CO4	**M**	**M**	**H**	**H**	**M**	**H**	**M**	**M**	**M**	**-**
CO5	**L**	**L**	**H**	**H**	**M**	**H**	**L**	**M**	**H**	**-**

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

Semester VI	**PYTHON PROGRAMMING LAB**	**Hours/Week: 2**	
SEC Practical – 4		**Credits: 2**	
Course Code 20UITS61P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1 : utilize the Python language syntax including control statements, loops and functions to write programs for a wide variety problem in mathematics, science, and games to enhance their learning. [K3]

CO2 : apply the core data structures like lists, dictionaries, tuples and sets in Python to store, process and sort the data in efficient manner. [K3]

CO3 : interpret the concepts of Object-oriented programming as used in Python such as encapsulation, polymorphism and inheritance to solve the real world problems. [K3]

CO4 : discover the capabilities of Python regular expression for data verification and utilize matrices for building performance efficient Python programs that helpful their research work. [K3]

CO5 : analyze the external modules for creating and writing data to excel files and inspect the file operations to navigate the file systems to enhance their knowledge. [K4]

Course Code 20UITS61P	PO1		PO2		PO3	PO4	PO5		PO6	PO7
	PSO 1. a.	PSO 1. b.	PSO 2. a.	PSO 2. b.	PSO 3	PSO 4	PSO 5.a.	PSO 5. b.	PSO 6	PSO 7
CO1	H	H	H	H	H	H	H	M	H	-
CO2	H	H	H	H	H	H	M	H	M	-
CO3	M	H	H	H	H	M	M	M	H	-
CO4	M	M	H	H	M	H	M	H	M	-
CO5	L	L	H	H	M	H	L	M	M	-