

Department of Computer Science									
1.1.1 Curricula developed and implemented have relevance to the local/ national / regional and global developmental needs which are reflected in Programme Outcomes (PSOs) and Course Outcomes (COs) of various programmes offered by the Institution									
S. No.	Course Code	Name of the Course	L	N	R	G	POs, PSOs, COs Addressed		
							POs	PSOs	COs
2023-2024									
1	SP231CC1	Core Course I: Analysis & Design of Algorithms	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 7 - To learn independently for lifelong to execute professional, social and ethical responsibilities promoting sustainable development.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 2 - To apply mathematical model, algorithmic principles, and computer science theory in the design of real-time applications.	CO 1 - To get knowledge about algorithms and determines their time complexity. CO 2 - To gain good understanding of greedy method and its algorithm. CO 3 - To be able to describe about graphs using dynamic programming technique. CO 4 - To demonstrate the concept of backtracking & branch and bound technique. CO 5 - To explore the traversal and searching technique and apply it for trees and graphs.
2	SP231CC2	Core Course II: Object Oriented Analysis and Design & C++	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 3 - To apply knowledge of computing to produce effective designs and solutions for specific problems.	CO 1 - To understand the concept of object-oriented development and modelling techniques. CO 2 - To gain knowledge about the various steps performed during object design. CO 3 - To abstract object-based views for generic software systems. CO 4 - To apply the basic concept of OOPs. CO 5 - To familiarize to write C++ program.
3	SP231CP1	Core Course I: Lab Course: Algorithm and OOPs Lab			<input checked="" type="checkbox"/>		PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 2 - To apply mathematical model, algorithmic principles, and computer science theory in the design of real-time applications.	CO 1 - To understand the concepts of object oriented with respect to c++. CO 2 - To understand and implement oops concepts. CO 3 - To implement data structures like stack, queue, tree, list using c++. CO 4 - To apply of the data structures for sorting, searching using different techniques. CO 5 - To create an application using inheritance.
4	SP231EC1	Elective Course I: (a) Python Programming			<input checked="" type="checkbox"/>		PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 3 - To apply knowledge of computing to produce effective designs and solutions for specific problems.	CO 1 - To understand the basic concepts of python programming. CO 2 - To understand file operations, classes and objects. CO 3 - To acquire object oriented skills in python. CO 4 - To develop web applications using python. CO 5 - To develop client server networking applications.
5	SP231EC2	Elective Course I: (b) Multimedia and its Applications			<input checked="" type="checkbox"/>		PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 3 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 3 - To apply knowledge of computing to produce effective designs and solutions for specific problems.	CO 1 - To understand the basic concepts of multimedia. CO 2 - To demonstrate multimedia authoring tools. CO 3 - To analyze the concepts of sound, images, video & animation. CO 4 - To apply and analyze the role of multimedia in Internet and real time applications. CO 5 - To analyze multimedia applications using hdv.
6	SP231EC3	Elective Course I: (c) Embedded Systems			<input checked="" type="checkbox"/>		PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 3 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 2 - To apply mathematical model, algorithmic principles, and computer science theory in the design of real-time applications.	CO 1 - To understand the concept of 8051 microcontroller. CO 2 - To understand the instruction set and programming. CO 3 - To analyze the concepts of rtos. CO 4 - To analyze and design various real time embedded systems using rtos. CO 5 - To debug the malfunctioning system using various debugging
7	SP231EC4	Elective Course II: (a) Advanced Software Engineering	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 3 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 2 - To apply mathematical model, algorithmic principles, and computer science theory in the design of real-time applications.	CO 1 - To understand software engineering process. CO 2 - To understand software project management skills, design and quality management. CO 3 - To analyze software requirements and specification. CO 4 - To analyze software testing, maintenance and software re-engineering. CO 5 - To design and conduct various types and levels of software quality for a software project.
8	SP231EC5	Elective Course II: (b) Internet of Things	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 3 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 2 - To apply mathematical model, algorithmic principles, and computer science theory in the design of real-time applications.	CO 1 - To understand IoT, its architecture and its applications. CO 2 - To understand basic electronics used in IoT & its role. CO 3 - To develop applications with C using arduino IDE. CO 4 - To analyze about sensors and actuators. CO 5 - To design IoT in real time applications using today's internet & wireless technologies.
9	SP231EC6	Elective Course II: (c) Critical Thinking, Design Thinking and Problem Solving	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 3 - To apply knowledge of computing to produce effective designs and solutions for specific problems.	CO 1 - To understand the concepts of critical thinking and its related technology. CO 2 - To focus on the explicit development of critical thinking and problem solving skills. CO 3 - To apply design thinking in problems. CO 4 - To make a decision and take actions based on analysis. CO 5 - To analyze the concepts of thinking patterns, problem solving & reasoning in real time applications.
10	SP231EP1	Elective Lab Course I: Python Programming Lab			<input checked="" type="checkbox"/>		PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 3 - To apply knowledge of computing to produce effective designs and solutions for specific problems.	CO 1 - To write programs in python using oops concepts. CO 2 - To understand the concepts of file operations and modules in python. CO 3 - To implement lists, dictionaries, sets and tuples as programs. CO 4 - To develop web applications using python. CO 5 - To develop the programs using polymorphism.
11	SP232CC1	Core Course III: Data Mining and Warehousing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication. PO 3 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 2 - To apply mathematical model, algorithmic principles, and computer science theory in the design of real-time applications.	CO 1 - To understand the basic data mining techniques and algorithms. CO 2 - To understand the association rules, clustering techniques and data warehousing contents. CO 3 - To compare and evaluate different data mining techniques like classification, prediction, clustering and association rule mining. CO 4 - To design data warehouse with dimensional modeling and apply olap operations. CO 5 - To identify appropriate data mining algorithms to solve real world problems.
12	SP232CC2	Core Course IV: Advanced Java Programming			<input checked="" type="checkbox"/>		PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 3 - To apply knowledge of computing to produce effective designs and solutions for specific problems.	CO 1 - To understand the advanced concepts of java programming. CO 2 - To understand JDBC and RMI concepts. CO 3 - To apply and analyze java in database. CO 4 - To handle different event in java using the delegation event model, event listener and class. CO 5 - To design interactive applications using java servlet, jsp and jdbc.
13	SP232CP1	Core Lab Course II: Advanced Java Programming Lab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 3 - To apply knowledge of computing to produce effective designs and solutions for specific problems.	CO 1 - To understand and implement concepts of java using html forms, JSP & JAR. CO 2 - To be capable of implementing JDBC and RMI concepts. CO 3 - To write applets with event handling mechanism. CO 4 - To create interactive web based applications using servlets and jsp. CO 5 - To do Socket programming.

14	SP232EC1	Elective Course III: a) Advanced Operating Systems	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication. PO 3 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 4 - To identify, analyze, design, optimize and implement system solutions using appropriate algorithms of varying complexity.	CO 1 - To understand the design issues associated with operating systems. CO 2 - To master various process management concepts including scheduling, deadlocks and distributed file systems. CO 3 - To prepare real time task scheduling. CO 4 - To analyze operating systems for handheld systems. CO 5 - To analyze operating systems like linux and ios.
15	SP232EC2	Elective Course III: b) Mobile Computing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To carry out internship programmes and research projects to develop scientific and innovative ideas through effective communication. PO 7 - To learn independently for lifelong to execute professional, social and ethical responsibilities promoting sustainable development.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 3 - To apply knowledge of computing to produce effective designs and solutions for specific problems.	CO 1 - To understand the need and requirements of mobile communication. CO 2 - To focus on mobile computing applications and techniques. CO 3 - To demonstrate satellite communication in mobile computing. CO 4 - To analyze wireless local loop architecture. CO 5 - To analyze various mobile communication technologies.
16	SP232EC3	Elective Course III: c) Block Chain Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 3 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 3 - To apply knowledge of computing to produce effective designs and solutions for specific problems.	CO 1 - To demonstrate blockchain technology and crypto currency. CO 2 - To understand the mining mechanism in blockchain. CO 3 - To apply and identify security measures, and various types of services that allow people to trade and transact with bitcoins. CO 4 - To apply and analyze blockchain in health care industry. CO 5 - To analyze security, privacy, and efficiency of a given blockchain system.
17	SP232EC4	Elective Course IV: a) Artificial Intelligence & Machine Learning	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 7 - To learn independently for lifelong to execute professional, social and ethical responsibilities promoting sustainable development.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 3 - To apply knowledge of computing to produce effective designs and solutions for specific problems.	CO 1 - To demonstrate AI problems and techniques. CO 2 - To understand machine learning concepts. CO 3 - To apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning. CO 4 - To analyze the impact of machine learning on applications. CO 5 - To analyze and design a real world problem for implementation and elaborate the dynamic behavior of a system.
18	SP232EC5	Elective Course IV: b) Web Services	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 7 - To learn independently for lifelong to execute professional, social and ethical responsibilities promoting sustainable development.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 3 - To apply knowledge of computing to produce effective designs and solutions for specific problems.	CO 1 - To understand web services and its related technologies. CO 2 - To understand xml concepts. CO 3 - To analyze on SOAP and UDDI model. CO 4 - To demonstrate the road map for the standards and future of web services. CO 5 - To identify and select the appropriate framework components in the creation of web service solution.
19	SP232EC6	Elective Course IV: c) Robotic Process Automation for Business	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 7 - To learn independently for lifelong to execute professional, social and ethical responsibilities promoting sustainable development	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 3 - To apply knowledge of computing to produce effective designs and solutions for specific problems.	CO 1 - To demonstrate the benefits and ethics of RPA. CO 2 - To understand the automation cycle and its techniques. CO 3 - To draw inferences and information processing of RPA. CO 4 - To implement & apply RPA in business scenarios. CO 5 - To analyze on robots & leveraging automation.
20	SP232SE1	Skill Enhancement Course I: Practical: Data Mining Lab using R				<input checked="" type="checkbox"/>	PO 1 - To apply their knowledge, analyze complex problems, think independently, formulate and perform quality research. PO 3 - To develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.	PSO 1 - To apply profound knowledge to analyze and design software and systems containing hardware and software components of varying complexity. PSO 4 - To identify, analyze, design, optimize and implement system solutions using appropriate algorithms of varying complexity.	CO 1 - To write programs using R for association rules, clustering techniques. CO 2 - To implement data mining techniques like classification, prediction. CO 3 - To use different visualizations techniques using R. CO 4 - To apply different data mining algorithms to solve real world applications.
21	SU231CC1	Core Course I: Python Programming				<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To obtain sufficient knowledge and skills enabling them to undertake further studies in Computer Science and its allied areas on multiple disciplines linked with Computer Science. PSO 2 - To evaluate and apply emerging technologies in computer science to develop innovative solutions for real-world problems.	CO 1 - To remember fundamental python syntax and basic data types, and understand the concepts. CO 2 - To understand the functionality and purpose of control structures and apply the concepts to identify patterns and relationships. CO 3 - To understand the purpose of functions, database and apply this to solve problems.
22	SU231CP1	Core Lab Course I: Python Programming Lab				<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To obtain sufficient knowledge and skills enabling them to undertake further studies in Computer Science and its allied areas on multiple disciplines linked with Computer Science. PSO 2 - To evaluate and apply emerging technologies in computer science to develop innovative solutions for real-world problems.	CO 1 - To remember python syntax and basic data types, and understand the concepts. CO 2 - To understand the functionality and purpose of control structures and apply the concepts to identify patterns and relationships. CO 3 - To understand the purpose of functions, database and apply this to solve problems.
23	SU231EC1	Elective Course I: Numerical Methods	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 7 - To participate in learning activities throughout life, through self-paced and self-directed learning to develop knowledge and skills.	PSO 1 - To obtain sufficient knowledge and skills enabling them to undertake further studies in Computer Science and its allied areas on multiple disciplines linked with Computer Science. PSO 2 - To evaluate and apply emerging technologies in computer science to develop innovative solutions for real-world problems.	CO 1 - To remember the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for computer problems. CO 2 - To understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations. CO 3 - To solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with software applications. CO 4 - To analyze direct methods for solving linear systems. CO 5 - To evaluate methods for solving first and second order ordinary differential equations.
24	SU231NM1	Non Major Elective NME I: Office Automation	<input checked="" type="checkbox"/>				PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To obtain sufficient knowledge and skills enabling them to undertake further studies in computer science and its allied areas on multiple disciplines linked with computer science. PSO 2 - To evaluate and apply emerging technologies in computer science to develop innovative solutions for real-world problems.	CO 1 - To remember the fundamentals and understand the concepts. CO 2 - To understand the functionality and purpose of commands and apply the concepts. CO 3 - To understand the purpose of functions , database and apply this to solve problems.
25	SU231FC1	Skill Enhancement - Foundation Course : Problem Solving Techniques	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 7 - To participate in learning activities throughout life, through self-paced and self-directed learning to develop knowledge and skills.	PSO 1 - To obtain sufficient knowledge and skills enabling them to undertake further studies in computer science and its allied areas on multiple disciplines linked with computer science. PSO 2 - To evaluate and apply emerging technologies in computer science to develop innovative solutions for real-world problems.	CO 1 - To know the approach and algorithms to solve specific fundamental problems. CO 2 - To understand the systematic approach to problem solving. CO 3 - To apply the efficient methods to solve specific problems related to text processing.
26	SU232CC1	Core Course II: Data Structure and Algorithms	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To obtain sufficient knowledge and skills enabling them to undertake further studies in Computer Science and its allied areas on multiple disciplines linked with Computer Science. PSO 2 - To evaluate and apply emerging technologies in computer science to develop innovative solutions for real-world problems.	CO 1 - To recall the basic data structures like arrays, linked lists, stacks, queues, trees and graphs. CO 2 - To understand and apply basic sorting and searching algorithms. CO 3 - To apply data structures and algorithms to solve real-world problems in different domains like databases, and networking.
27	SU232CP1	Core Lab Course II: Data Structure and Algorithms Lab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To obtain sufficient knowledge and skills enabling them to undertake further studies in Computer Science and its allied areas on multiple disciplines linked with Computer Science. PSO 2 - To evaluate and apply emerging technologies in computer science to develop innovative solutions for real-world problems.	CO 1 - To remember and implement basic data structures linked lists, stacks, queues, trees, graphs. CO 2 - To understand and implement sorting algorithms like bubble, merge, quick sort. CO 3 - To apply hash tables and resolving collisions.

28	SU232EC1	Elective Course II: Discrete Mathematics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PO 4 - To enhance leadership qualities, team spirit and communication skills to face challenging competitive examinations for a better developmental career. PO 7 - To participate in learning activities throughout life, through self-paced and self-directed learning to develop knowledge and skills.	PSO 1 - To obtain sufficient knowledge and skills enabling them to undertake further studies in Computer Science and its allied areas on multiple disciplines linked with Computer Science. PSO 2 - To evaluate and apply emerging technologies in computer science to develop innovative solutions for real-world problems.	CO 1 - To remember the basic concepts of permutations, combinations, relations and graphs. CO 2 - To understand the basic concepts of functions and relations. CO 3 - To apply basic counting techniques to solve combinatorial problems. CO 4 - To represent discrete objects and relationships using abstract mathematical structures. CO 5 - To apply graphs in a wide variety of models.
29	SU232NM1	Non Major Elective NME II: Introduction to HTML	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence	PSO 1 - To obtain sufficient knowledge and skills enabling them to undertake further studies in Computer Science and its allied areas on multiple disciplines linked with Computer Science. PSO 2 - To evaluate and apply emerging technologies in computer science to develop innovative solutions for real-world problems.	CO 1 - To recall and recognize html tags and their syntax. CO 2 - To understand the html elements like headings, paragraphs, lists and links. CO 3 - To apply the concepts in creating web pages and formatting it.
30	SU232SE1	Skill Enhancement Course SEC - I: Advanced Excel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To obtain sufficient knowledge and skills enabling them to undertake further studies in Computer Science and its allied areas on multiple disciplines linked with Computer Science. PSO 2 - To evaluate and apply emerging technologies in computer science to develop innovative solutions for real-world problems.	CO 1 - To use a wide range of advanced excel functions. CO 2 - To apply data validation rules to control data entry. CO 3 - To present data in the form of charts and graphs.
31	SC2131	Major Core III: Programming in Java	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To define the concept of oop and arrays. CO 2 - To analyze the structure of the java programming language and classes. CO 3 - To implement various errors handling technique using exception handling to solve complicated problem. CO 4 - To understand the applet program to display window based activities. CO 5 - To design java program by using awt classes.
32	SC2132	Major Core IV: Data Structures and Algorithms	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To summarize different categories of data structures. CO 2 - To identify different parameters to analyze the performance of an algorithm. CO 3 - To explain the significance of dynamic memory management techniques. CO 4 - To design algorithms to perform operations with linear and nonlinear data structures. CO 5 - To illustrate various techniques for searching, sorting and hashing. CO 6 - To choose appropriate data structures to solve real world problems efficiently.
33	SC21P3	Major Practical III: Java Programming	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and socialresponsibility.	CO 1 - To create java program to calculate simple mathematical problems. CO 2 - To create java program using error handling technique. CO 3 - To create applet program to implement window based activities.
34	SC21P4	Major Practical IV: Data Structure Using C++	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To learn the basic types for data structure, implementation and application. CO 2 - To know the strength and weakness of different data structures. CO 3 - To use the appropriate data structure in context of solution of given problem. CO 4 - To develop programming skills which require to solve given problem.
35	SA2131	Allied III: Theory : Numerical and Statistical Methods	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To solve an algebraic and transcendental equations using an appropriate numerical methods. CO 2 - To find an error analysis for a given numerical method. CO 3 - To solve simultaneous equation using an appropriate numerical method. CO 4 - To find inverse of a matrix using back substitution method. CO 5 - To find a polynomial using interpolation methods. CO 6 - To determine correlation and rank correlation coefficient between two variables. CO 7 - To find a regression equations using the given data. CO 8 - To acquire problem solving techniques and Baye's Theorem to solve real world problems.
36	SC20S1	SLC: Web Designing with HTML	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and socialresponsibility.	CO 1 - To analyze web page and identify its elements and attributes. CO 2 - To design web pages using dhtml and cascading style sheets. CO 3 - To design and construct web sites. CO 4 - To create e-mail id and browse in internet.
37	SC2141	Major Core V: UNIX and Shell Programming	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To identify set of commands in unix. CO 2 - To describe the features & functions of an operating system. CO 3 - To customize environment settings using a text editor. CO 4 - To demonstrate unix commands for file handling and process control. CO 5 - To combine several simple commands in order to produce more powerful operations. CO 6 - To utilize system utilities to perform administrative tasks. CO 7 - To analyze the working of the user defined commands and will be able to change the permissions associated with files. CO 8 - To create and manage simple file processing operations, organize directory structures with appropriate security. CO 9 - To create, delete, move and rename files and directories.
38	SC2142	Major Elective I:(a) Software Engineering	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 5 - To handle ethical issues with social responsibility	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To apply software engineering principles and techniques. CO 2 - To develop, maintain and evaluate large-scale software systems. CO 3 - To produce efficient, reliable, robust and cost-effective software solutions. CO 4 - To work as an effective member or leader of software engineering teams. CO 5 - To manage time, processes and resources effectively by prioritising competing demands to achieve personal and team goals.
39	SC2143	Major Elective I:(b) System Administration and Maintenance	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To know some basic security measures to take in system administration. CO 2 - To understand concepts and acquire skills that are essential to the administration of operating systems, networks, software. CO 3 - To apply the skills in the administration of an actual computer system with actual users. CO 4 - To implement security measures into the network administration.

40	SC2144	Major Elective I:(c) Software Testing				<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To apply software testing knowledge and engineering methods to design and conduct a software test process for a software testing project. CO 2 - To identify and select appropriate testing technique to test a software. CO 3 - To identify various software testing problems and solve these problems by various software testing methods. CO 4 - To understand the contemporary issues in software testing, such as buddy, agile, extreme, adhoc software testing problems etc. CO 5 - To use software testing methods and modern software testing tools for their testing projects and employ correct testing terminology throughout the testing process.
41	SC21P5	Major Practical V: Shell Programming	<input checked="" type="checkbox"/>				PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To run various unix commands on a standard unix operating system. CO 2 - To run C / C++ programs on unix. CO 3 - To do shell programming on unix os. CO 4 - To employ decision making and looping construct to write a shell script.
42	SA2141	Allied IV: Theory: Discrete Mathematics	<input checked="" type="checkbox"/>				PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To learn the basic concepts of permutations relations, graphs and trees. CO 2 - To represent discrete objects and relationships using abstract mathematical structures. CO 3 - To apply basic counting techniques to solve combinatorial problems. CO 4 - To understand the basic concepts of sequences and summations. CO 5 - To apply graphs in a wide variety of models.
43	SC20S2	SLC: Maya	<input checked="" type="checkbox"/>				PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 5 - To handle ethical issues with social responsibility	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To navigate the maya interface, including the various panels, menus, and tools, allowing them to comfortably move around the software. CO 2 - To create 3D models using maya's various modeling tools. CO 3 - To apply textures to 3D models and understand the basics of uv mapping, which involves creating a 2D representation of a 3D model's surface for texture application. CO 4 - To animate objects and characters using maya's animation tools, including keyframing, animation curves, and character rigging.
44	SC2151	Major Core VI: Web Technology: Theory and Practice	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To develop static and dynamic web pages. CO 2 - To differentiate web applications using client-side (javascript, html, xml) and server-side technologies (asp.net, ado.net). CO 3 - To define the fundamental ideas and standards underlying web service technology. CO 4 - To apply the knowledge of the internet and related internet concepts that are vital in understanding web application development and analyze the insights of internet programming to implement complete application over the web.
45	SC2152	Major Core VII: Relational Database Management System	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To describe basic concepts of data base system and architecture. CO 2 - To define the logical design of database including E-R model and normalization approach. CO 3 - To understand and apply the basics of sql and authorization methods. CO 4 - To analyze normal forms and rdms methods. CO 5 - To apply timestamp and transaction management.
46	SC2153	Major Core VIII: Mobile Computing and its Applications	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand the basic concepts and principles in mobile computing. CO 2 - To describe the concepts of FDMA, TDMA, packet delivery and handover management. CO 3 - To acquire and apply the knowledge of conventional TCP/IP protocols. CO 4 - To classify the various data delivery mechanisms and data synchronization. CO 5 - To understand and apply various routing algorithms for mobile applications.
47	SC2154	Major Elective II: (a) Multimedia Systems	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To convey multimedia and design fonts used in texts. CO 2 - To create image and produce audio inserted multimedia projects. CO 3 - To make animations and video clips. CO 4 - To understand the requirements for multimedia preparation. CO 5 - To analyze the process of planning, preparing and owning the multimedia.
48	SC2155	Major Elective II: (b) Microprocessor & Assembly Language Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 5 - To handle ethical issues with social responsibility	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To understand basic architecture of 8 bit microprocessor. CO 2 - To understand and realize the interfacing of memory & various I/O devices with 8085 microprocessor. CO 3 - To understand and classify the instruction set of 8085 microprocessor and distinguish the use of different instructions and apply it in assembly language programming. CO 4 - To understand the difference between 8085 and advanced microprocessor.
49	SC2156	Major Elective II: (c) Open SourceTechnology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 5 - To handle ethical issues with social responsibility	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To understand open source methodologies. CO 2 - To gain experience using open source tools, languages and frameworks to prepare for careers in software development. CO 3 - To understand various open-source licenses and their implications on software distribution and usage. CO 4 - To identify security best practices for open-source software development.
50	SC21P6	Major Practical VI: Web Technology Lab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 4 - To reflect upon green initiatives and take responsible steps to build a sustainable environment	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To build interactive web page using html. CO 2 - To construct and manipulate php applications. CO 3 - To develop dynamic web pages using client side programming and server side programming. CO 4 - To identify, formulate and analyze problems as well as identify the computing requirements appropriate to their solutions.
51	SC21P7	Major Practical VII: SQL and PL SQL				<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 5 - To handle ethical issues with social responsibility	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To understand the logical structure of the rdms. CO 2 - To understand how the data will be stored and retrieved. CO 3 - To understand the PL/SQL to do such things as modify your business rule.
52	SC21PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To learn how to gather and analyze project requirements, including identifying stakeholders, eliciting requirements through interviews and surveys, and documenting requirements using appropriate techniques. CO 2 - To gain proficiency in software design principles and architectural patterns, including modular design, object-oriented design, and design patterns, and apply them to develop well-structured software systems. CO 3 - To understand the principles of database design and management.

53	SC2161	Major Core IX: Android Programming				<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To describe the platforms upon which the android os will run. CO 2 - To apply the fundamental paradigms and technologies to develop mobile applications. CO 3 - To create simple application that runs under the android operating system. CO 4 - To develop application that uses multimedia under android operating system. CO 5 - To implement various methods in Android to create mobile applications for communication network.
54	SC2162	Major Core X: Computer Graphics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To explain the basics of graphics system. CO 2 - To use the digital scan and copy systems accordingly. CO 3 - To analyze two dimensional geometric transformations and view it. CO 4 - To apply three dimensional concepts for transformation and viewing. CO 5 - To apply various visible surface detection methods.
55	SC2163	Major Core XI Operating Systems: Design Principles	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To handle ethical issues with social responsibility PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer , data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and socialresponsibility.	CO 1 - To understand the basic concepts of an operating System and the various system calls. CO 2 - To classify the various processes and threads use for interprocess communication. CO 3 - To describe the various scheduling & memory management techniques and the page replacement techniques used for memory management. CO 4 - To understand the mutual exclusion deadlock detection and recovery for operating systems. CO 5 - To apply the concepts of input/output and file/directory implementation.
56	SC2164	Major Core XII: Computer networks	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand basic computer network technology. CO 2 - To understand and explain data communications system and its components. CO 3 - To identify the different types of network topologies and protocols. CO 4 - To enumerate the layers of the OSI model and TCP/IP. CO 5 - To apply the different types of network devices and their functions within a network. CO 6 - To familiar with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.
57	SC2165	Major Elective III: (a) PHP Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To handle ethical issues with social responsibility PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To analyze php scripts and determine their behavior. CO 2 - To design web pages with the ability to retrieve and present data from a MySQL database. CO 3 - To create php programs that use various php library functions, and that manipulate files and directories. CO 4 - To construct php scripts to create dynamic web content.
58	SC2166	Major Elective III: (b) Network Security				<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand the design concept of cryptography and authentication. CO 2 - To develop experiments on algorithm used for security. CO 3 - To understand the fundamental concepts related to network security, including authentication, encryption, access control. CO 4 - To communicate effectively and collaborate with colleagues and stakeholders on network security-related issues. CO 5 - To develop critical thinking and problem-solving skills necessary to analyze complex network security scenarios.
59	SC2167	Major Elective III: (c) E-CommerceTechnologies	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To handle ethical issues with social responsibility PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand concept of ecommerce and its types. CO 2 - To understand the various online payment and marketing on web. CO 3 - To understand the fundamental concepts, principles, and models of ecommerce, including B2C, B2B, C2C and emerging models. CO 4 - To acquire the skills necessary to design, develop, and maintain ecommerce websites using relevant technologies and platforms such as HTML, CSS. CO 5 - To explore various digital marketing strategies and tactics tailored for ecommerce, including search engine optimization, search engine marketing, social media marketing, email marketing, affiliate marketing, and content marketing.
60	SC21P8	Major Practical VIII: Android Programming Lab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To create application workings with the activities and intents. CO 2 - To create application workings with the user interface using views. CO 3 - To create application workings with graphics. CO 4 - To create application workings with pictures and menus.
61	SC21P9	Major Practical IX: Computer GraphicsLab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To draw lines, circles and different shapes using graphics. CO 2 - To create simple animations applying graphics. CO 3 - To design tiled and cascaded display. CO 4 - To apply two dimensional transformations.
62	SSK206	Skill Enhancement Course (*SEC): Photoshop CS6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To understand retouch and repair a scanned photograph. CO 2 - To create abilities to use photoshop that are employable and rewarding. CO 3 - To understand how to do basic photo repairs and color enhancements techniques. CO 4 - To define and apply the basic functions of pixel selection, painting and editing tools. CO 5 - To understand file compression, import and export files and save files in different formats. CO 6 - To utilize retouching faetures to make pictures perfect.
2022-2023									
63	SC2011	Major Core I: Programming Concepts in C				<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To recall the basic structure and key elements. CO 2 - To understand the fundamentals of C programming. CO 3 - To analyze the various programming constructs and implement it to perform specific task. CO 4 - To design and develop modular programming skills.
64	SC20P1	Major Practical I: C Programming				<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand and solve simple physical problems. CO 2 - To solve mathematical equations using C programs. CO 3 - To understand a concept of functional hierarchical code organization. CO 4 - To write simple C programs to define the key concepts. CO 5 - To develop simple C programs.
65	SA2011	Allied I: Theory: Digital Principles and Applications	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To recall and understand the basic architecture of a computer system. CO 2 - To analyze the basic logic gates and interpret boolean algebra and simplify simple boolean functions by using basic boolean properties. CO 3 - To understand the concepts of memory and storage systems. CO 4 - To classify the various input and output devices. CO 5 - To perform conversion among different number systems and find complements of various numbers. CO 6 - To design various sequential and combinational circuits.

66	SNM201	Non Major Elective (NME): Internet and Web Designing with HTML	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To analyze a web page and identify its elements and attributes. CO 2 - To create email id and browse in the internet. CO 3 - To design and construct websites. CO 4 - To create e-mail id and browse in internet.
67	SC2021	Major Core II: Object Oriented programming C++			<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand object oriented programming and procedure oriented language and data types in C++. CO 2 - To list out the tokens, keywords, identifiers used in C++ programming language. CO 3 - To program using C++ features such as composition of object, operator overloading, inheritance, polymorphism. CO 4 - To build knowledge about important concepts like functions, classes and constructors. CO 5 - To build C++ classes using appropriate encapsulation and design. CO 6 - To evaluate the process of data file manipulations using C++. CO 7 - To apply virtual and pure virtual function and complex programming situations.
68	SC20P2	Major Practical II: C++ Programming			<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand and solve simple physical problems. CO 2 - To solve mathematical equations using C++ programs. CO 3 - To write simple c++ programsto define key concepts. CO 4 - To develop C++ programs using OOP's concept.
69	SA2021	Allied II: Theory: Computer Organization and Architecture	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand the theory and architecture of central processing unit. CO 2 - To use appropriate tools to design verify and test the CPU architecture. CO 3 - To learn the concepts of parallel processing, pipelining and interprocessor communication. CO 4 - To define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation. CO 5 - To exemplify in a better way the I/O and memory organization.
70	SNM202	Non Major Elective (NME): Desktop Publishing using Scribus	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To use critical thinking skills to independently design and create magazines, newsletter, brochures etc. CO 2 - To understand the importance of lifelong, student driven learning. CO 3 - To know the fundamentals of dtp and easily produce stylised documents. CO 4 - To apply major design and marketing concepts to real world projects.
71	SC2131	Major Core III: Programming in Java	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To define the concept of oop and arrays. CO 2 - To analyze the structure of the java programming language and classes. CO 3 - To implement various errors handling technique using exception handling to solve complicated problem. CO 4 - To understand the applet program to display window based activities. CO 5 - To design java program by using awt classes.
72	SC2132	Major Core IV: Data Structures and Algorithms	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To summarize different categories of data structures. CO 2 - To identify different parameters to analyze the performance of an algorithm. CO 3 - To explain the significance of dynamic memory management techniques. CO 4 - To design algorithms to perform operations with linear and nonlinear data structures. CO 5 - To illustrate various techniques for searching, sorting and hashing. CO 6 - To choose appropriate data structures to solve real world problems efficiently.
73	SC21P3	Major Practical III: Java Programming			<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and socialresponsibility.	CO 1 - To create java program to calculate simple mathematical problems. CO 2 - To create java program using error handling technique. CO 3 - To create applet program to implement window based activities.
74	SC21P4	Major Practical IV: Data Structure Using C++			<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To learn the basic types for data structure, implementation and application. CO 2 - To know the strength and weakness of different data structures. CO 3 - To use the appropriate data structure in context of solution of given problem. CO 4 - To develop programming skills which require to solve given problem.
75	SA2131	Allied III: Theory : Numerical and Statistical Methods	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To solve an algebraic and transcendental equations using an appropriate numerical methods. CO 2 - To find an error analysis for a given numerical method. CO 3 - To solve simultaneous equation using an appropriate numerical method. CO 4 - To find inverse of a matrix using back substitution method. CO 5 - To find a polynomial using interpolation methods. CO 6 - To determine correlation and rank correlation coefficient between two variables. CO 7 - To find a regression equations using the given data. CO 8 - To acquire problem solving techniques and Baye's Theorem to solve real world problems.
76	SC20S1	SLC: Web Designing with HTML	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and socialresponsibility.	CO 1 - To analyze web page and identify its elements and attributes. CO 2 - To design web pages using dhtml and cascading style sheets. CO 3 - To design and construct web sites. CO 4 - To create e-mail id and browse in internet.
77	SC2141	Major Core V: UNIX and Shell Programming	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To identify set of commands in unix. CO 2 - To describe the features & functions of an operating system. CO 3 - To customize environment settings using a text editor. CO 4 - To demonstrate unix commands for file handling and process control. CO 5 - To combine several simple commands in order to produce more powerful operations. CO 6 - To utilize system utilities to perform administrative tasks. CO 7 - To analyze the working of the user defined commands and will be able to change the permissions associated with files. CO 8 - To create and manage simple file processing operations, organize directory structures with appropriate security. CO 9 - To create, delete, move and rename files and directories.

78	SC2142	Major Elective I:(a) Software Engineering	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 5 - To handle ethical issues with social responsibility	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To apply software engineering principles and techniques. CO 2 - To develop, maintain and evaluate large-scale software systems. CO 3 - To produce efficient, reliable, robust and cost-effective software solutions. CO 4 - To work as an effective member or leader of software engineering teams. CO 5 - To manage time, processes and resources effectively by prioritising competing demands to achieve personal and team goals.
79	SC2143	Major Elective I:(b) System Administration and Maintenance	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 5 - To handle ethical issues with social responsibility	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To know some basic security measures to take in system administration. CO 2 - To understand concepts and acquire skills that are essential to the administration of operating systems, networks, software. CO 3 - To apply the skills in the administration of an actual computer system with actual users. CO 4 - To implement security measures into the network administration.
80	SC2144	Major Elective I:(c) Software Testing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 5 - To handle ethical issues with social responsibility	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To apply software testing knowledge and engineering methods to design and conduct a software test process for a software testing project. CO 2 - To identify and select appropriate testing technique to test a software. CO 3 - To identify various software testing problems and solve these problems by various software testing methods. CO 4 - To understand the contemporary issues in software testing, such as buddy, agile, extreme, adhoc software testing problems etc. CO 5 - To use software testing methods and modern software testing tools for their testing projects and employ correct testing terminology throughout the testing process.
81	SC21P5	Major Practical V: Shell Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To run various unix commands on a standard unix operating system. CO 2 - To run C / C++ programs on unix. CO 3 - To do shell programming on unix os. CO 4 - To employ decision making and looping construct to write a shell script.
82	SA2141	Allied IV: Theory: Discrete Mathematics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To learn the basic concepts of permutations relations, graphs and trees. CO 2 - To represent discrete objects and relationships using abstract mathematical structures. CO 3 - To apply basic counting techniques to solve combinatorial problems. CO 4 - To understand the basic concepts of sequences and summations. CO 5 - To apply graphs in a wide variety of models.
83	SC2052	SLC: Maya	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To navigate the maya interface, including the various panels, menus, and tools, allowing them to comfortably move around the software. CO 2 - To create 3D models using maya's various modeling tools. CO 3 - To apply textures to 3D models and understand the basics of uv mapping, which involves creating a 2D representation of a 3D model's surface for texture application. CO 4 - To animate objects and characters using maya's animation tools, including keyframing, animation curves, and character rigging.
84	SC2051	Major Core VIII: Web Technology: Theory and Practice	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To develop an ability to design and implement static and dynamic web pages. CO 2 - To differentiate web applications using client-side (javascript,html,xml) and server-side technologies (asp.net, ado.net). CO 3 - To define the fundamental ideas and standards underlying web service technology. CO 4 - To apply the knowledge of the internet and related internet concepts that are vital in understanding web application development and analyze the insights of internet programming to implement complete application over the web.
85	SC2052	Major Core IX: Mobile Computing and its Applications	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand the basic concepts and principles in mobile computing. CO 2 - To describe the concepts of FDMA, TDMA, packet delivery and handover management. CO 3 - To acquire and apply the knowledge of conventional TCP/IP protocols. CO 4 - To classify the various data delivery mechanisms and data synchronization. CO 5 - To understand and apply various routing algorithms for mobile applications.
86	SC2053	Elective II: (a) Multimedia Systems	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To convey multimedia and design fonts used in texts. CO 2 - To create image and produce audio inserted multimedia projects. CO 3 - To make animations and video clips. CO 4 - To understand the requirements for multimedia preparation. CO 5 - To analyze the process of planning, preparing and owning the multimedia.
87	SC2054	Elective II: (b) Microprocessor & Assembly Language Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To understand basic architecture of 8 bit microprocessor. CO 2 - To understand and realize the interfacing of memory & various I/O devices with 8085 microprocessor. CO 3 - To understand and classify the instruction set of 8085 microprocessor and distinguish the use of different instructions and apply it in assembly language programming. CO 4 - To understand the difference between 8085 and advanced microprocessor.
88	SC2055	Elective II: (c) Open Source Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 5 - To handle ethical issues with social responsibility	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To understand open source methodologies. CO 2 - To gain experience using open source tools, languages and frameworks to prepare for careers in software development. CO 3 - To understand various open-source licenses and their implications on software distribution and usage. CO 4 - To identify security best practices for open-source software development.
89	SC20P7	Major Practical VII: Web Technology Lab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To build interactive web page using html. CO 2 - To construct and manipulate java script applications. CO 3 - To develop dynamic web pages using client side programming. CO 4 - To identify, formulate and analyze problems as well as identify the computing requirements appropriate to their solutions.

90	SC20PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To learn how to gather and analyze project requirements, including identifying stakeholders, eliciting requirements through interviews and surveys, and documenting requirements using appropriate techniques. CO 2 - To gain proficiency in software design principles and architectural patterns, including modular design, object-oriented design, and design patterns, and apply them to develop well-structured software systems. CO 3 - To understand the principles of database design and management.
91	SC2061	Major Core X: Android Programming				<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To describe the platforms upon which the android OS will run. CO 2 - To apply the fundamental paradigms and technologies to develop mobile applications. CO 3 - To create a simple application that runs under the android operating system. CO 4 - To develop an application that uses multimedia under android operating system. CO 5 - To implement various methods in android to create mobile applications for communication network.
92	SC2062	Major Core XI: Computer Graphics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To explain the basics of graphics system. CO 2 - To use the digital scan and copy systems accordingly. CO 3 - To analyze two dimensional geometric transformations and view it. CO 4 - To apply three dimensional concepts for transformation and viewing. CO 5 - To apply various visible surface detection methods.
93	SC2063	Major Core XII: Operating Systems: Design Principles	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To handle ethical issues with social responsibility PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer , data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and socialresponsibility.	CO 1 - To understand the basic concepts of an operating system and the various system calls. CO 2 - To classify the various processes and threads use for interprocess communication. CO 3 - To describe the various scheduling & memory management techniques and the page replacement techniques used for memory management. CO 4 - To understand the mutual exclusion deadlock detection and recovery for operating systems. CO 5 - To apply the concepts of input/output and file/directory implementation.
94	SC2064	Elective III: (a) PHP Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To handle ethical issues with social responsibility PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To analyze php scripts and determine their behavior. CO 2 - To design web pages with the ability to retrieve and present data from a MySQL database. CO 3 - To create php programs that use various php library functions, and that manipulate files and directories. CO 4 - To construct php scripts to create dynamic web content.
95	SC2065	Elective III: (b) Network Security				<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand the design concept of cryptography and authentication. CO 2 - To develop experiments on algorithm used for security. CO 3 - To understand the fundamental concepts related to network security, including authentication, encryption, access control. CO 4 - To communicate effectively and collaborate with colleagues and stakeholders on network security-related issues. CO 5 - To develop critical thinking and problem-solving skills necessary to analyze complex network security scenarios.
96	SC2066	Elective III: (c) E-CommerceTechnologies	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To handle ethical issues with social responsibility PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand concept of ecommerce and its types. CO 2 - To understand the various online payment and marketing on web. CO 3 - To gain a comprehensive understanding of the fundamental concepts, principles, and models of ecommerce, including B2C, B2B, C2C and emerging models. CO 4 - To acquire the skills necessary to design, develop, and maintain ecommerce websites using relevant technologies and platforms such as HTML, CSS. CO 5 - To explore various digital marketing strategies and tactics tailored for ecommerce, including search engine optimization , search engine marketing, social media marketing, email marketing, affiliate marketing, and content marketing.
97	SC20P8	Major Practical VIII: Android Programming Lab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To create application workings with the activities and intents. CO 2 - To create application workings with the user interface using views. CO 3 - To create application workings with graphics. CO 4 - To create application workings with pictures and menus.
98	SC20P9	Major Practical IX: Computer Graphics Lab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To draw lines, circles and different shapes using graphics. CO 2 - To create simple animations applying graphics. CO 3 - To design tiled and cascaded display. CO 4 - To apply two dimensional transformations.
99	SSK206	Skill Enhancement Course (*SEC): Photoshop CS6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To understand retouch and repair a scanned photograph. CO 2 - To create abilities to use photoshop that are employable and rewarding. CO 3 - To understand how to do basic photo repairs and color enhancements techniques. CO 4 - To define and apply the basic functions of pixel selection, painting and editing tools. CO 5 - To understand file compression, import and export files and save files in different formats. CO 6 - To utilize retouching faetures to make pictures perfect.
2021-2022									
100	SC2011	Major Core I: Programming Concepts in C				<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To recall the basic structure and key elements. CO 2 - To understand the fundamentals of C programming. CO 3 - To analyze the various programming constructs and implement it to perform specific task. CO 4 - To design and develop modular programming skills.
101	SC20P1	Major Practical I: C Programming				<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand and solve simple physical problems. CO 2 - To solve mathematical equations using C programs. CO 3 - To understand a concept of functional hierarchical code organization. CO 4 - To write simple C programs to define the key concepts. CO 5 - To develop simple C programs.
102	SA2011	Allied I: Theory: Digital Principles and Applications	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To recall and understand the basic architecture of a computer system. CO 2 - To analyze the basic logic gates and interpret boolean algebra and simplify simple boolean functions by using basic boolean properties. CO 3 - To understand the concepts of memory and storage systems. CO 4 - To classify the various input and output devices. CO 5 - To perform conversion among different number systems and find complements of various numbers. CO 6 - To design various sequential and combinational circuits.

103	SNM201	Non Major Elective (NME): Internet and Web Designing with HTML	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To analyze a web page and identify its elements and attributes. CO 2 - To create email id and browse in the internet. CO 3 - To design and construct websites. CO 4 - To create e-mail id and browse in internet.
104	SC2021	Major Core II: Object Oriented programming C++			<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand object oriented programming and procedure oriented language and data types in C++. CO 2 - To list out the tokens, keywords, identifiers used in C++ programming language. CO 3 - To program using C++ features such as composition of object, operator overloading, inheritance, polymorphism. CO 4 - To build knowledge about important concepts like functions, classes and constructors. CO 5 - To build C++ classes using appropriate encapsulation and design. CO 6 - To evaluate the process of data file manipulations using C++. CO 7 - To apply virtual and pure virtual function and complex programming situations.
105	SC20P2	Major Practical II: C++ Programming			<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand and solve simple physical problems. CO 2 - To solve mathematical equations using C++ programs. CO 3 - To write simple c++ programsto define key concepts. CO 4 - To develop C++ programs using OOP's concept.
106	SA2021	Allied II: Theory: Computer Organization and Architecture	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand the theory and architecture of central processing unit. CO 2 - To use appropriate tools to design verify and test the CPU architecture. CO 3 - To learn the concepts of parallel processing, pipelining and interprocessor communication. CO 4 - To define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation. CO 5 - To exemplify in a better way the I/O and memory organization.
107	SNM202	Non Major Elective (NME): Desktop Publishing using Scribus	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To use critical thinking skills to independently design and create magazines, newsletter, brochures etc. CO 2 - To understand the importance of lifelong, student driven learning. CO 3 - To know the fundamentals of dtp and easily produce stylised documents. CO 4 - To apply major design and marketing concepts to real world projects.
108	SC2031	Major Core III: Programming in Java	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To define the concept of OOP and arrays. CO 2 - To analyze the structure of the Java programming language and classes. CO 3 - To implement various errors handling technique using exception handling to solve complicated problem. CO 4 - To understand the applet program to display window based activities. CO 5 - To design a java program by using AWT classes.
109	SC2032	Major Core IV: Data Structures and Algorithms	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To summarize different categories of data structures. CO 2 - To identify different parameters to analyze the performance of an algorithm. CO 3 - To explain the significance of dynamic memory management techniques. CO 4 - To design algorithms to perform operations with linear and nonlinear data structures. CO 5 - To illustrate various technique to for searching, sorting and hashing. CO 6 - To choose appropriate data structures to solve real world problems efficiently.
110	SC2033	Major Core V: Computer Networks	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 5 - To handle ethical issues with social responsibility	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To understand basic computer network technology. CO 2 - To understand and explain data communications system and its components. CO 3 - To identify the different types of network topologies and protocols. CO 4 - To enumerate the layers of the OSI model and TCP/IP. CO 5 - To apply the different types of network devices and their functions within a network. CO 6 - To familiar with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.
111	SC20P3	Major Practical III: Java Programming			<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and socialresponsibility.	CO 1 - To create a java program to calculate simple mathematical problems. CO 2 - To create a java program using error handling technique. CO 3 - To create applet program to implement window based activities.
112	SC20P4	Major Practical IV: Data Structure Using C++			<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To learn the basic types for data structure, implementation and application. CO 2 - To know the strength and weakness of different data structures. CO 3 - To use the appropriate data structure in context of solution of given problem. CO 4 - To develop programming skills which require to solve given problem.
113	SA2031	Allied III: Theory: Numerical and Statistical Methods	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To solve an algebraic and transcendental equations using an appropriate numerical methods. CO 2 - To find an error analysis for a given numerical method. CO 3 - To solve simultaneous equation using an appropriate numerical method. CO 4 - To find inverse of a matrix using back substitution method. CO 5 - To find a polynomial using interpolation methods. CO 6 - To determine correlation and rank correlation coefficient between two variables. CO 7 - To find a regression equations using the given data. CO 8 - To acquire problem solving techniques and Baye's Theorem to solve real world problems.
114	SC20S1	SLC: Web Designing with HTML	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and socialresponsibility.	CO 1 - To analyze web page and identify its elements and attributes. CO 2 - To design web pages using dhtml and cascading style sheets. CO 3 - To design and construct web sites. CO 4 - To create e-mail id and browse in internet.

115	SC2041	Major Core VI: UNIX and Shell Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To identify set of commands in unix. CO 2 - To describe the features & functions of an operating system. CO 3 - To customize environment settings using a text editor. CO 4 - To demonstrate unix commands for file handling and process control. CO 5 - To combine several simple commands in order to produce more powerful operations. CO 6 - To utilize system utilities to perform administrative tasks. CO 7 - To analyze the working of the user defined commands and will be able to change the permissions associated with files. CO 8 - To create and manage simple file processing operations, organize directory structures with appropriate security. CO 9 - To create, delete, move and rename files and directories.
116	SC2042	Major Core VII: Relational Database Management Systems	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enhance the communication skills with lifelong learning.	CO 1 - To describe basic concepts of data base system and architecture. CO 2 - To define the logical design of database including E-R model and normalization approach. CO 3 - To understand and apply the basics of sql and authorization methods. CO 4 - To analyze normal forms and rdms methods. CO 5 - To apply timestamp and transaction management.
117	SC2043	Elective I: (a) Software Engineering	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 5 - To handle ethical issues with social responsibility	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To apply software engineering principles and techniques. CO 2 - To develop, maintain and evaluate large-scale software systems. CO 3 - To produce efficient, reliable, robust and cost-effective software solutions. CO 4 - To work as an effective member or leader of software engineering teams. CO 5 - To manage time, processes and resources effectively by prioritising competing demands to achieve personal and team goals.
118	SC2044	Elective I: (b) System Administration and Maintenance	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 5 - To handle ethical issues with social responsibility	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To know some basic security measures to take in system administration. CO 2 - To understand concepts and acquire skills that are essential to the administration of operating systems, networks, software. CO 3 - To apply the skills in the administration of an actual computer system with actual users. CO 4 - To implement security measures into the network administration.
119	SC2045	Elective I: (c) Software Testing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 5 - To handle ethical issues with social responsibility	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To enhance the communication skills with lifelong learning.	CO 1 - To apply software testing knowledge and engineering methods to design and conduct a software test process for a software testing project. CO 2 - To identify and select appropriate testing technique to test a software. CO 3 - To identify various software testing problems and solve these problems by various software testing methods. CO 4 - To understand the contemporary issues in software testing, such as buddy, agile, extreme, adhoc software testing problems etc. CO 5 - To use software testing methods and modern software testing tools for their testing projects and employ correct testing terminology throughout the testing process.
120	SC20P5	Major Practical V: Shell Programming			<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 6 - To communicate effectively and collaborate successfully with peers to become competent professionals.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To run various unix commands on a standard unix operating system. CO 2 - To run C / C++ programs on unix. CO 3 - To do shell programming on unix os. CO 4 - To employ decision making and looping construct to write a shell script.
121	SC20P6	Major Practical VI: SQL and PL/SQL			<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To understand the logical structure of the rdms. CO 2 - To understand how the data will be stored and retrieved . CO 3 - To understand the PL/SQL to do such things as modify your business rule.
122	SA2041	Allied IV: Theory: Discrete Mathematics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To learn the basic concepts of permutations relations, graphs and trees. CO 2 - To represent discrete objects and relationships using abstract mathematical structures. CO 3 - To apply basic counting techniques to solve combinatorial problems. CO 4 - To understand the basic concepts of sequences and summations. CO 5 - To apply graphs in a wide variety of models.
123	SC20S2	SLC: Maya	<input checked="" type="checkbox"/>			PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To navigate the maya interface, including the various panels, menus, and tools, allowing them to comfortably move around the software. CO 2 - To create 3D models using maya's various modeling tools. CO 3 - To apply textures to 3D models and understand the basics of uv mapping, which involves creating a 2D representation of a 3D model's surface for texture application. CO 4 - To animate objects and characters using maya's animation tools, including keyframing, animation curves, and character rigging.
124	SC1751	Major Core VIII: Web Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To develop an ability to design and implement static and dynamic web pages. CO 2 - To differentiate web applications using client-side (JavaScript, HTML, XML) and server-side technologies (ASP.NET, ADO.NET). CO 3 - To define the fundamental ideas and standards underlying Web Service Technology. CO 4 - To apply the knowledge of the internet and related internet concepts that are vital in understanding web application development and analyze the insights of internet programming to implement complete application over the web.
125	SC1752	Major Core IX: Operating Systems	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 5 - To provide computational solution to complex manual problems.	CO 1 - To analyze the structure of OS and basic architectural components involved in OS design. CO 2 - To analyze the applications to run in parallel either using process or thread models of different OS. CO 3 - To describe the various device and resource management techniques for timesharing and distributed systems. CO 4 - To understand the mutual exclusion ,deadlock detection of distributed operating system. CO 5 - To apply the mechanisms adopted for file sharing in distributed applications.

126	SC1753	Elective II: (a) Data Communication and Computer Networks	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.</p>	<p>CO 1 - To understand basic computer network technology.</p> <p>CO 2 - To understand and explain data communications system and its components.</p> <p>CO 3 - To identify the different types of network topologies and protocols</p> <p>CO 4 - To enumerate the layers of the OSI model and TCP/IP.</p> <p>CO 5 - To apply the different types of network devices and their functions within a network.</p> <p>CO 6 - To familiar with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.</p>
127	SC1754	Elective II: (b) Data Mining	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 2 - To acquire the knowledge of data which leads them as data analyst.</p>	<p>CO 1 - To expand knowledge and skills gained in database management and look in depth at the data mining methods.</p> <p>CO 2 - To evaluate and implement a wide range of emerging and newly-adopted methodologies and technologies to facilitate the knowledge discovery.</p> <p>CO 3 - To discover and measure interesting patterns from different kinds of databases.</p> <p>CO 4 - To discover interesting patterns from large amounts of data to analyze and extract patterns to solve problems.</p>
128	SC1755	Elective II: (c) Image Processing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 10 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To recall the basic image related concepts.</p> <p>CO 2 - To interpret image compression, image segmentation, representation techniques.</p> <p>CO 3 - To categorize various compression techniques.</p> <p>CO 4 - To analyze images in the frequency domain using various transforms.</p> <p>CO 5 - To evaluate the techniques for image enhancement.</p>
129	SC17P7	Practical VII: Web Technology Lab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.</p>	<p>CO 1 - To analyze a web page and identify its elements and attributes using XML.</p> <p>CO 2 - To build interactive web page using html.</p> <p>CO 3 - To construct and manipulate PHP applications.</p> <p>CO 4 - To develop dynamic web pages using client side programming and server side programming.</p> <p>CO 5 - To identify, formulate and analyze problems as well as identify the computing requirements appropriate to their solutions.</p> <p>CO 6 - To understand and apply CSS definitions for document presentation.</p>
130	SC17PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p>	<p>PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional.</p> <p>PSO 6 - To communicate effectively to improve their competency skills to solve real time problems.</p>	<p>CO 1 - To learn how to gather and analyze project requirements, including identifying stakeholders, eliciting requirements through interviews and surveys, and documenting requirements using appropriate techniques.</p> <p>CO 2 - To gain proficiency in software design principles and architectural patterns, including modular design, object-oriented design, and design patterns, and apply them to develop well-structured software systems.</p> <p>CO 3 - To understand the principles of database design and management.</p>
131	SSK175	Skill Based Course (*SBC): Photoshop	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.</p>	<p>CO 1 - To understand retouch and repair a scanned photograph.</p> <p>CO 2 - To create abilities to use photoshop that are employable and rewarding.</p> <p>CO 3 - To understand how to do basic photo repairs and color enhancements techniques.</p> <p>CO 4 - To define and apply the basic functions of pixel selection, painting and editing tools.</p> <p>CO 5 - To understand file compression, import and export files and save files in different formats.</p> <p>CO 6 - To utilize retouching features to make pictures perfect.</p>
132	SC1761	Major Core X: Android Application Development	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.</p>	<p>CO 1 - To describe the platforms upon which the android OS will run.</p> <p>CO 2 - To apply the fundamental paradigms and technologies to develop mobile applications.</p> <p>CO 3 - To create a simple application that runs under the android operating system.</p> <p>CO 4 - To develop an application that uses multimedia under android operating system.</p> <p>CO 5 - To implement various methods in android to create mobile applications for communication network.</p>
133	SC1762	Major Core XI: Computer Graphics and Multimedia	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.</p>	<p>CO 1 - To understand fundamental principles of computer graphics.</p> <p>CO 2 - To discuss algorithms for 2D and 3D transformations.</p> <p>CO 3 - To interpret simple problems in the basic representation and handling of multimedia data (images, audio and animation).</p> <p>CO 4 - To create simple 2D animations, 3D animations.</p>
134	SC1763	Major Core XII: UNIX and Shell Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.</p>	<p>CO 1 - To identify set of commands in unix.</p> <p>CO 2 - To describe the features & functions of an operating system.</p> <p>CO 3 - To customize environment settings using a text editor.</p> <p>CO 4 - To demonstrate unix commands for file handling and process control.</p> <p>CO 5 - To combine several simple commands in order to produce more powerful operations.</p> <p>CO 6 - To utilize system utilities to perform administrative tasks.</p> <p>CO 7 - To analyze the working of the user defined commands and will be able to change the permissions associated with files.</p> <p>CO 8 - To create and manage simple file processing operations, organize directory structures with appropriate security.</p> <p>CO 9 - To create, delete, move and rename files and directories.</p>
135	SC1764	Elective III: (a) Mobile Computing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.</p>	<p>CO 1 - To understand the basic concepts and principles in mobile computing.</p> <p>CO 2 - To describe the concepts of bluetooth, RFID, WiMAX.</p> <p>CO 3 - To acquire and apply the knowledge of GSM and GPRS.</p> <p>CO 4 - To understand the process of CDMA, 3G wireless LAN.</p> <p>CO 5 - To describe and implementing the security techniques.</p>
136	SC1765	Elective III: (b) Client / Server Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.</p>	<p>CO 1 - To create network connectivity with client/server computing.</p> <p>CO 2 - To apply the process of communication technology.</p> <p>CO 3 - To apply the components of client/server technology.</p> <p>CO 4 - To understand the administration and technologies of the system.</p>
137	SC1766	Elective III: (c) Artificial Intelligence and Expert System	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.</p>	<p>CO 1 - To design and program small expert systems.</p> <p>CO 2 - To learn how to analyze the complexity of a given problem and come with suitable optimizations.</p> <p>CO 3 - To understand mathematical models such as belief networks and markov decision processes and apply them to a range of AI problems.</p> <p>CO 4 - To have a glance at machine learning algorithms and extracting knowledge models from data.</p>
138	SC17P8	Practical VIII: Android Application Development Lab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 4 - To develop an ability to design web sites, mobile applications and internet of things.</p>	<p>CO 1 - To create application workings with the activities and intents.</p> <p>CO 2 - To create application workings with the user interface using views.</p> <p>CO 3 - To create application workings with graphics.</p> <p>CO 4 - To create application workings with pictures and menus.</p>

139	SC17P9	Practical IX: Computer Graphics and Multimedia Lab	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.	CO 1 - To acquaint with the basic principles of 2D and 3D computer graphics. CO 2 - To acquaint with algorithms for rasterisation and clipping of 2D graphic primitives and filling of closed regions. CO 3 - To apply algorithms for 2D and 3D transformations, visibility solution, lighting, shading and texturing.
140	SSK176	Skill Based Course (*SBC): Dreamweaver CS4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 9 - To work effectively in teams to design and implement solutions to computational problems.	CO 1 - To implement the knowledge of web publishing. CO 2 - To understand HTML and CSS coding for websites. CO 3 - To understand the basic skills needed to create your own websites. CO 4 - To create professional looking website with dreamweaver CS4 collection of tools.
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141	SC2011	Major Core I: Programming Concepts in C	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To recall the basic structure and key elements. CO 2 - To understand the fundamentals of C programming. CO 3 - To analyze the various programming constructs and implement it to perform specific task. CO 4 - To design and develop modular programming skills.
142	SC20P1	Major Practical I: C Programming	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand and solve simple physical problems. CO 2 - To solve mathematical equations using C programs. CO 3 - To understand a concept of functional hierarchical code organization. CO 4 - To write simple C programs to define the key concepts. CO 5 - To develop simple C programs.
143	SA2011	Allied I: Theory: Digital Principles and Applications	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To recall and understand the basic architecture of a computer system. CO 2 - To analyze the basic logic gates and interpret boolean algebra and simplify simple boolean functions by using basic boolean properties. CO 3 - To understand the concepts of memory and storage systems. CO 4 - To classify the various input and output devices. CO 5 - To perform conversion among different number systems and find complements of various numbers. CO 6 - To design various sequential and combinational circuits.
144	SNM201	Non Major Elective (NME): Internet and Web Designing with HTML	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 4 - To apply modern techniques to sustain the ever-changing era with values.	CO 1 - To analyze a web page and identify its elements and attributes. CO 2 - To create email id and browse in the internet. CO 3 - To design and construct websites. CO 4 - To create e-mail id and browse in internet.
145	SC2021	Major Core II: Object Oriented programming C++	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand object oriented programming and procedure oriented language and data types in C++. CO 2 - To list out the tokens, keywords, identifiers used in C++ programming language. CO 3 - To program using C++ features such as composition of object, operator overloading, inheritance, polymorphism. CO 4 - To build knowledge about important concepts like functions, classes and constructors. CO 5 - To build C++ classes using appropriate encapsulation and design. CO 6 - To evaluate the process of data file manipulations using C++. CO 7 - To apply virtual and pure virtual function and complex programming situations.
146	SC20P2	Major Practical II: C++ Programming	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand and solve simple physical problems. CO 2 - To solve mathematical equations using C++ programs. CO 3 - To write simple c++ programs to define key concepts. CO 4 - To develop C++ programs using OOPs concept.
147	SA2021	Allied II: Theory: Computer Organization and Architecture	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To understand the theory and architecture of central processing unit. CO 2 - To use appropriate tools to design verify and test the CPU architecture. CO 3 - To learn the concepts of parallel processing, pipelining and interprocessor communication. CO 4 - To define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation. CO 5 - To exemplify in a better way the I/O and memory organization.
148	SNM202	Non Major Elective (NME): Desktop Publishing using Scribus	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 3 - To face challenging competitive examinations that offer rewarding careers.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To enrich the managerial skills through team building and social responsibility.	CO 1 - To use critical thinking skills to independently design and create magazines, newsletter, brochures etc. CO 2 - To understand the importance of lifelong, student driven learning. CO 3 - To know the fundamentals of dtp and easily produce stylised documents. CO 4 - To apply major design and marketing concepts to real world projects.
149	SC1731	Major Core III: Programming in Java	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To define the concept of OOP. CO 2 - To understand the structure of the java programming language. CO 3 - To implement various errors handling technique using exception handling to solve complicated problem. CO 4 - To understand the applet program to display window based activities. CO 5 - To create Java programs that solve simple business problems.
150	SC1732	Major Core IV: Microprocessor and Assembly Language Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To understand basic architecture of 8 bit microprocessor. CO 2 - To understand and realize the interfacing of memory & various I/O devices with 8085 microprocessor. CO 3 - To understand and classify the instruction set of 8085 microprocessor and distinguish the use of different instructions and apply it in assembly language programming. CO 4 - To understand the difference between 8085 and advanced microprocessor.
151	SC1733	Major Core V: Data Structures and Algorithms	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 2 - To acquire the knowledge of data which leads them as data analyst.	CO 1 - To define basic static and dynamic data structures and relevant standard algorithm for them. CO 2 - To demonstrate advantages and disadvantages of specific algorithms and data structures. CO 3 - To select basic data structures and algorithms for simple programs CO 4 - To determine and demonstrate bugs in program, recognizes needed basic operations with data structures. CO 5 - To formulate new solutions for programming problems. CO 6 - To analyze algorithms and data structures in terms of time and space complexity of basic operations.
152	SC17P3	Practical III: Programming in Java Lab	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 5 - To provide computational solution to complex manual problems.	CO 1 - To create a java program to calculate simple mathematical problems. CO 2 - To create a java program using error handling technique. CO 3 - To create applet program to implement window based activities. CO 4 - To apply advanced Java features such as exception handling, multithreading, and generics to solve programming challenges.

153	SC17P4	Practical IV: Data Structure using C++ Lab	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 2 - To acquire the knowledge of data which leads them as data analyst.	CO 1 - To learn the basic types for data structure, implementation and application. CO 2 - To know the strength and weakness of different data structures. CO 3 - To use the appropriate data structure in context of solution of given problem. CO 4 - To develop programming skills which require to solve given problem.
154	SA1731	Allied III: Theory: Numerical and Statistical Methods	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 2 - To acquire the knowledge of data which leads them as data analyst.	CO 1 - To solve an algebraic and transcendental equations using an appropriate numerical methods. CO 2 - To find an error analysis for a given numerical method. CO 3 - To solve a simultaneous equation using an appropriate numerical method. CO 4 - To find inverse of a matrix using back substitution method. CO 5 - To find a polynomial using interpolation methods. CO 6 - To determine correlation and rank correlation coefficient between two variables. CO 7 - To find a regression equations using the given data. CO 8 - To acquire problem solving techniques and Baye's Theorem to solve real world problems.
155	SC17S1	SLC: Flash	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To understand principles of animation, such as timing, easing, and frame-by-frame animation. CO 2 - To develop interactive interfaces and games. CO 3 - To work with different media types and integrating them into projects was a valuable skill. CO 4 - To explain the basic principles and components of Adobe Flash, including the timeline, stage, symbols, and libraries.
156	SC1741	Major Core VI: Web Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 7 - To excel in the fields of information technology and its enabled services, government and private sectors, teaching and research.	CO 1 - To understand the fundamentals of Web application design, development, and deployment using .NET framework. CO 2 - To develop data driven Web Applications. CO 3 - To use the Visual Studio IDE to create and debug application and Projects. CO 4 - To understand the fundamentals of developing modular application by using object-oriented methodologies. CO 5 - To create Windows Forms applications in C# by using the .NET Framework. CO 6 - To develop web applications using server-side technologies (ASP.NET, ADO.NET).
157	SC1742	Major Core VII: RDBMS with Oracle	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 5 - To provide computational solution to complex manual problems.	CO 1 - To describe basic concepts of data base system and architecture. CO 2 - To define the logical design of database including E-R model and normalization approach. CO 3 - To understand and apply the basic of SQL and authorization methods. CO 4 - To apply RDBMS for industry application. CO 5 - To design and implement a database schema for a given problem domain.
158	SC1743	Elective I: (a) System Analysis and Design	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To utilize scientific knowledge to pursue higher studies in the relevant field. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To define system and phases of the system development life cycle. CO 2 - To explain the principles, methods and techniques of system development. CO 3 - To analyse and model organizational work. CO 4 - To develop system project documentation. CO 5 - To estimate the budget needed to complete a project. CO 6 - To design and develop proposed system that assists programmers in implementing the systems.
159	SC1744	Elective I: (b) Software Engineering	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.	CO 1 - To apply software engineering principles and techniques. CO 2 - To develop, maintain and evaluate large-scale software systems. CO 3 - To produce efficient, reliable, robust and cost-effective software solutions. CO 4 - To work as an effective member or leader of software engineering teams. CO 5 - To manage time, processes and resources effectively by prioritising competing demands to achieve personal and team goals.
160	SC1745	Elective I: (c) Object Oriented Analysis and Design	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 6 - To communicate effectively to improve their competency skills to solve real time problems.	CO 1 - To analyze and design an application, system or business by applying object oriented programming. CO 2 - To apply object oriented techniques and notation to the process of developing software. CO 3 - To analyze and document system requirements using various techniques such as use case modeling, user stories, and domain modeling. CO 4 - To understand common design patterns and be able to apply them to solve design problems effectively.
161	SC17P5	Practical V: Web Programming Lab	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 7 - To excel in the fields of information technology and its enabled services, government and private sectors, teaching and research.	CO 1 - To use Visual C# and ASP.Net to create webpages with advanced creativity. CO 2 - To gain a solid understanding of the ASP.NET framework, including its architecture, components. CO 3 - To become proficient in server-side programming using languages such as C# or VB.NET within the ASP.NET environment. CO 4 - To implement error handling and debugging techniques in ASP.NET web applications to identify and resolve issues efficiently.
162	SC17P6	Practical VI: Oracle Lab	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 7 - To excel in the fields of information technology and its enabled services, government and private sectors, teaching and research.	CO 1 - To understand the logical structure of the rdhms. CO 2 - To understand how the data will be stored and retrieved. CO 3 - To implement error handling mechanisms in PL/SQL to manage exceptions. CO 4 - To write and debug PL/SQL code effectively to implement business logic, database interactions, and procedural constructs.
163	SA1741	Allied IV: Theory: Operations Research	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 6 - To communicate effectively to improve their competency skills to solve real time problems.	CO 1 - To identify and define real-world problems suitable for analysis using OR techniques, including decision-making, optimization, and simulation. CO 2 - To learn decision analysis techniques, including decision trees, influence diagrams, and multi-criteria decision-making methods, to support optimal decision-making under uncertainty. CO 3 - To understand different optimization methods and algorithms, including simplex method, branch and bound. CO 4 - To understand the principles of simulation modeling and stochastic processes.
164	SC17S2	SLC: Maya	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas to enhance entrepreneurial skills for economic independence.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To navigate the maya interface, including the various panels, menus, and tools, allowing them to comfortably move around the software. CO 2 - To create 3D models using maya's various modeling tools. CO 3 - To apply textures to 3D models and understand the basics of UV mapping, which involves creating a 2D representation of a 3D model's surface for texture application. CO 4 - To animate objects and characters using maya's animation tools, including keyframing, animation curves, and character rigging.

165	SC1751	Major Core VIII: Web Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.</p>	<p>CO 1 - To develop an ability to design and implement static and dynamic web pages.</p> <p>CO 2 - To differentiate web applications using client-side (JavaScript, HTML, XML) and server-side technologies (ASP.NET, ADO.NET).</p> <p>CO 3 - To define the fundamental ideas and standards underlying Web Service Technology</p> <p>CO 4 - To apply the knowledge of the internet and related internet concepts that are vital in understanding web application development and analyze the insights of internet programming to implement complete application over the web.</p>
166	SC1752	Major Core IX: Operating Systems	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 5 - To provide computational solution to complex manual problems.</p>	<p>CO 1 - To analyze the structure of OS and basic architectural components involved in OS design.</p> <p>CO 2 - To analyze the applications to run in parallel either using process or thread models of different OS.</p> <p>CO 3 - To describe the various device and resource management techniques for timesharing and distributed systems.</p> <p>CO 4 - To understand the mutual exclusion ,deadlock detection of distributed operating system.</p> <p>CO 5 - To apply the mechanisms adopted for file sharing in distributed applications.</p>
167	SC1753	Elective II: (a)Data Communication and Computer Networks	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.</p>	<p>CO 1 - To understand basic computer network technology.</p> <p>CO 2 - To understand and explain data communications system and its components.</p> <p>CO 3 - To identify the different types of network topologies and protocols</p> <p>CO 4 - To enumerate the layers of the OSI model and TCP/IP</p> <p>CO 5 - To apply the different types of network devices and their functions within a network.</p> <p>CO 6 - To familiar with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.</p>
168	SC1754	Elective II: (b) Data Mining	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 2 - To acquire the knowledge of data which leads them as data analyst.</p>	<p>CO 1 - To expand knowledge and skills gained in database management and look in depth at the data mining methods.</p> <p>CO 2 - To evaluate and implement a wide range of emerging and newly-adopted methodologies and technologies to facilitate the knowledge discovery.</p> <p>CO 3 - To discover and measure interesting patterns from different kinds of databases.</p> <p>CO 4 - To discover interesting patterns from large amounts of data to analyze and extract patterns to solve problems.</p>
169	SC1755	Elective II: (c) Image Processing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 10 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.</p>	<p>CO 1 - To recall the basic image related concepts.</p> <p>CO 2 - To interpret image compression, image segmentation, representation techniques.</p> <p>CO 3 - To categorize various compression techniques.</p> <p>CO 4 - To analyze images in the frequency domain using various transforms.</p> <p>CO 5 - To evaluate the techniques for image enhancement.</p>
170	SC17P7	Practical VII: Web Technology Lab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.</p>	<p>CO 1 - To analyze a web page and identify its elements and attributes using XML.</p> <p>CO 2 - To build interactive web page using html.</p> <p>CO 3 - To construct and manipulate PHP applications.</p> <p>CO 4 - To develop dynamic web pages using client side programming and server side programming.</p> <p>CO 5 - To identify, formulate and analyze problems as well as identify the computing requirements appropriate to their solutions.</p> <p>CO 6 - To understand and apply CSS definitions for document presentation.</p>
171	SC17PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.</p>	<p>PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional.</p> <p>PSO 6 - To communicate effectively to improve their competency skills to solve real time problems.</p>	<p>CO 1 - To learn how to gather and analyze project requirements, including identifying stakeholders, eliciting requirements through interviews and surveys, and documenting requirements using appropriate techniques.</p> <p>CO 2 - To gain proficiency in software design principles and architectural patterns, including modular design, object-oriented design, and design patterns, and apply them to develop well-structured software systems.</p> <p>CO 3 - To understand the principles of database design and management.</p>
172	SSK175	Skill Based Course (*SBC): Photoshop	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.</p>	<p>CO 1 - To understand retouch and repair a scanned photograph.</p> <p>CO 2 - To create abilities to use photoshop that are employable and rewarding.</p> <p>CO 3 - To understand how to do basic photo repairs and color enhancements techniques.</p> <p>CO 4 - To define and apply the basic functions of pixel selection, painting and editing tools.</p> <p>CO 5 - To understand file compression, import and export files and save files in different formats.</p> <p>CO 6 - To utilize retouching features to make pictures perfect.</p>
173	SC1761	Major Core X: Android Application Development	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 2 - To create innovative ideas through laboratory experiments.</p> <p>PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.</p>	<p>CO 1 - To describe the platforms upon which the android OS will run.</p> <p>CO 2 - To apply the fundamental paradigms and technologies to develop mobile applications.</p> <p>CO 3 - To create a simple application that runs under the android operating system.</p> <p>CO 4 - To develop an application that uses multimedia under android operating system.</p> <p>CO 5 - To implement various methods in android to create mobile applications for communication network.</p>
174	SC1762	Major Core XI: Computer Graphics and Multimedia	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.</p>	<p>CO 1 - To understand fundamental principles of computer graphics.</p> <p>CO 2 - To discuss algorithms for 2D and 3D transformations.</p> <p>CO 3 - To interpret simple problems in the basic representation and handling of multimedia data (images, audio and animation).</p> <p>CO 4 - To create simple 2D animations, 3D animations.</p>
175	SC1763	Major Core XII: UNIX and Shell Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.</p>	<p>CO 1 - To identify set of commands in unix.</p> <p>CO 2 - To describe the features & functions of an operating system.</p> <p>CO 3 - To customize environment settings using a text editor.</p> <p>CO 4 - To demonstrate unix commands for file handling and process control.</p> <p>CO 5 - To combine several simple commands in order to produce more powerful operations.</p> <p>CO 6 - To utilize system utilities to perform administrative tasks.</p> <p>CO 7 - To analyze the working of the user defined commands and will be able to change the permissions associated with files.</p> <p>CO 8 - To create and manage simple file processing operations, organize directory structures with appropriate security.</p> <p>CO 9 - To create, delete, move and rename files and directories.</p>
176	SC1764	Elective III: (a)Mobile Computing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>PO 1 - To apply the acquired scientific knowledge to face day to day needs.</p> <p>PO 2 - To create innovative ideas through laboratory experiments.</p>	<p>PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system.</p> <p>PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.</p>	<p>CO 1 - To understand the basic concepts and principles in mobile computing.</p> <p>CO 2 - To describe the concepts of bluetooth, RFID, WIMAX.</p> <p>CO 3 - To acquire and apply the knowledge of GSM and GPRS.</p> <p>CO 4 - To understand the process of CDMA,3G,wireless LAN.</p> <p>CO 5 - To describe and implementing the security techniques.</p>

177	SC1765	Elective III: (b)Client / Server Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.	CO 1 - To create network connectivity with client/server computing. CO 2 - To apply the process of communication technology. CO 3 - To apply the components of client/server technology. CO 4 - To understand the administration and technologies of the system.
178	SC1766	Elective III: (c)Artificial Intelligence and Expert System			<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.	CO 1 - To design and program small expert systems. CO 2 - To learn how to analyze the complexity of a given problem and come with suitable optimizations. CO 3 - To understand mathematical models such as belief networks and markov decision processes and apply them to a range of AI problems. CO 4 - To have a glance at machine learning algorithms and extracting knowledge models from data.
179	SC17P8	Practical VIII: Android Application Development Lab			<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 4 - To develop an ability to design web sites, mobile applications and internet of things.	CO 1 - To create application workings with the activities and intents. CO 2 - To create application workings with the user interface using views. CO 3 - To create application workings with graphics. CO 4 - To create application workings with pictures and menus.
180	SC17P9	Practical IX: Computer Graphics and Multimedia Lab			<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.	CO 1 - To acquaint with the basic principles of 2D and 3D computer graphics. CO 2 - To acquaint with algorithms for rasterisation and clipping of 2D graphic primitives and filling of closed regions. CO 3 - To apply algorithms for 2D and 3D transformations, visibility solution, lighting, shading and texturing.
181	SSK176	Skill Based Course (*SBC): Dreamweaver CS4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 9 - To work effectively in teams to design and implement solutions to computational problems.	CO 1 - To implement the knowledge of web publishing. CO 2 - To understand HTML and CSS coding for websites. CO 3 - To understand the basic skills needed to create your own websites. CO 4 - To create professional looking website with dreamweaver CS4 collection of tools.
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182	SC1711	Major Core I: Programming in C			<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.	CO 1 - To recall the basic structure and key elements. CO 2 - To understand the fundamentals of C programming. CO 3 - To analyze the various programming constructs and implement it to perform specific tasks. CO 4 - To design and develop modular programming skills.
183	SC17P1	Practical I: Programming in C Lab			<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.	CO 1 - To understand and solve simple physical problems. CO 2 - To solve mathematical equations using C programs. CO 3 - To understand a concept of functional hierarchical code organization. CO 4 - To write simple C programs to define the key concepts. CO 5 - To develop simple C programs.
184	SA1711	Allied I: Theory : Digital Computer Fundamentals	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To understand the basic architecture of computer system. CO 2 - To understand the various input, output devices. CO 3 - To perform conversions among different number systems. CO 4 - To familiar with basic logic gates and understand boolean algebra and simplify simple boolean functions by using basic boolean properties. CO 5 - To design of sequential circuits such as flip-flops, registers, and counters. CO 6 - To design of combinational circuits such as MUX, DEMUX, encoder and decoder etc.
185	SNM171	Non Major Elective Course(NMEC): CorelDraw			<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 5 - To provide computational solution to complex manual problems.	CO 1 - To create Professional illustration for designing magazines, Company logo, Brochures, Book Cover, Visiting Card. CO 2 - To develop images of the highest Quality. CO 3 - To illustrate sufficient knowledge about corel basic. CO 4 - To understand tools for creating, drawing, text manipulation and output options for printing. CO 5 - To import, export, print, applying effects used in order to manipulate images.
186	SC1721	Major Core II: Object Oriented Programming in C++			<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 5 - To provide computational solution to complex manual problems.	CO 1 - To outline the basic concepts of OOPs. CO 2 - To list out the tokens used in C++ programming language. CO 3 - To design OOPs concepts through C++ programs for solving mathematical problems. CO 4 - To build knowledge about important concepts like functions, classes and constructors. CO 5 - To develop skill to make use of arrays and pointers in C++ programs. CO 6 - To make use of file concept to store and edit data through C++ programs.
187	SC17P2	Practical II: Programming in C++ Lab			<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 5 - To provide computational solution to complex manual problems.	CO 1 - To understand and solve simple physical problems. CO 2 - To solve mathematical equations using C++ programs. CO 3 - To write simple C++ programs to define the key concepts. CO 4 - To develop simple C++ programs.
188	SA1721	Allied II: Theory: PC Hardware and Troubleshooting	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To understand processor specifications ,processor upgrades , processor troubleshooting techniques. CO 2 - To understand the features & functions of motherboard. CO 3 - To differentiate the internal memory storage. CO 4 - To understand the concept of BIOS. CO 5 - To assemble and maintain the system.
189	SNM172	Non Major Elective Course(NMEC): Internet and its Applications			<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 5 - To provide computational solution to complex manual problems.	CO 1 - To understand the basic of computer system. CO 2 - To understand the significance of internet applications. CO 3 - To create own email ID and able to work with it. CO 4 - To create simple HTML programs.
190	SC1731	Major Core III: Programming in Java			<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To define the concept of OOP. CO 2 - To understand the structure of the java programming language. CO 3 - To implement various errors handling technique using exception handling to solve complicated problem. CO 4 - To understand the applet program to display window based activities. CO 5 - To create Java programs that solve simple business problems.
191	SC1732	Major Core IV: Microprocessor and Assembly Language Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs . PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To understand basic architecture of 8 bit microprocessor. CO 2 - To understand and realize the interfacing of memory & various I/O devices with 8085 microprocessor. CO 3 - To understand and classify the instruction set of 8085 microprocessor and distinguish the use of different instructions and apply it in assembly language programming. CO 4 - To understand the difference between 8085 and advanced microprocessor.

192	SC1733	Major Core V: Data Structures and Algorithms	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 2 - To acquire the knowledge of data which leads them as data analyst.	CO 1 - To define basic static and dynamic data structures and relevant standard algorithm for them. CO 2 - To demonstrate advantages and disadvantages of specific algorithms and data structures. CO 3 - To select basic data structures and algorithms for simple programs CO 4 - To determine and demonstrate bugs in program, recognizes needed basic operations with data structures. CO 5 - To formulate new solutions for programming problems. CO 6 - To analyze algorithms and data structures in terms of time and space complexity of basic operations.
193	SC17P3	Practical III: Programming in Java Lab				<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 5 - To provide computational solution to complex manual problems.	CO 1 - To create a java program to calculate simple mathematical problems. CO 2 - To create a java program using error handling technique. CO 3 - To create applet program to implement window based activities. CO 4 - To apply advanced Java features such as exception handling, multithreading, and generics to solve programming challenges.
194	SC17P4	Practical IV: Data Structure using C++ Lab		<input checked="" type="checkbox"/>			PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 5 - To provide computational solution to complex manual problems.	CO 1 - To learn the basic types for data structure, implementation and application. CO 2 - To know the strength and weakness of different data structures. CO 3 - To use the appropriate data structure in context of solution of given problem. CO 4 - To develop programming skills which require to solve given problem.
195	SA1731	Allied III: Theory: Numerical and Statistical Methods	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 2 - To acquire the knowledge of data which leads them as data analyst.	CO 1 - To solve an algebraic and transcendental equations using an appropriate numerical methods. CO 2 - To find an error analysis for a given numerical method. CO 3 - To solve a simultaneous equation using an appropriate numerical method. CO 4 - To find inverse of a matrix using back substitution method. CO 5 - To find a polynomial using interpolation methods. CO 6 - To determine correlation and rank correlation coefficient between two variables. CO 7 - To find a regression equations using the given data. CO 8 - To acquire problem solving techniques and Baye's Theorem to solve real world problems.
196	SC17S1	SLC: Flash	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			PO 2 - To create innovative ideas through laboratory experiments. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To understand principles of animation, such as timing, easing, and frame-by-frame animation. CO 2 - To develop interactive interfaces and games. CO 3 - To work with different media types and integrating them into projects was a valuable skill. CO 4 - To explain the basic principles and components of Adobe Flash, including the timeline, stage, symbols, and libraries.
197	SC1741	Major Core VI: Web Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 7 - To excel in the fields of information technology and its enabled services, government and private sectors, teaching and research.	CO 1 - To understand the fundamentals of Web application design, development, and deployment using .NET framework. CO 2 - To develop data driven Web Applications. CO 3 - To use the Visual Studio IDE to create and debug application and Projects. CO 4 - To understand the fundamentals of developing modular application by using object-oriented methodologies. CO 5 - To create Windows Forms applications in C# by using the .NET Framework. CO 6 - To develop web applications using server-side technologies (ASP.NET, ADO.NET).
198	SC1742	Major Core VII: RDBMS with Oracle	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 5 - To provide computational solution to complex manual problems.	CO 1 - To describe basic concepts of data base system and architecture. CO 2 - To define the logical design of database including E-R model and normalization approach. CO 3 - To understand and apply the basic of SQL and authorization methods. CO 4 - To apply RDBMS for industry application. CO 5 - To design and implement a database schema for a given problem domain.
199	SC1743	Elective I: (a) System Analysis and Design	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To define system and phases of the system development life cycle. CO 2 - To explain the principles, methods and techniques of system development. CO 3 - To analyse and model organizational work. CO 4 - To develop system project documentation. CO 5 - To estimate the budget needed to complete a project. CO 6 - To design and develop proposed system that assists programmers in implementing the systems.
200	SC1744	Elective I: (b) Software Engineering	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.	CO 1 - To apply software engineering principles and techniques. CO 2 - To develop, maintain and evaluate large-scale software systems. CO 3 - To produce efficient, reliable, robust and cost-effective software solutions. CO 4 - To work as an effective member or leader of software engineering teams. CO 5 - To manage time, processes and resources effectively by prioritising competing demands to achieve personal and team goals.
201	SC1745	Elective I: (c) Object Oriented Analysis and Design	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 6 - To communicate effectively to improve their competency skills to solve real time problems.	CO 1 - To analyze and design an application, system or business by applying object oriented programming CO 2 - To apply object oriented techniques and notation to the process of developing software CO 3 - To analyze and document system requirements using various techniques such as use case modeling, user stories, and domain modeling. CO 4 - To understand common design patterns and be able to apply them to solve design problems effectively.
202	SC17P5	Practical V: Web Programming Lab				<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 7 - To excel in the fields of information technology and its enabled services, government and private sectors, teaching and research.	CO 1 - To use Visual C# and ASP.Net to create webpages with advanced creativity. CO 2 - To gain a solid understanding of the ASP.NET framework, including its architecture, components. CO 3 - To become proficient in server-side programming using languages such as C# or VB.NET within the ASP.NET environment. CO 4 - To implement error handling and debugging techniques in ASP.NET web applications to identify and resolve issues efficiently.
203	SC17P6	Practical VI: Oracle Lab	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 5 - To face challenging competitive examinations that offer rewarding careers in science and education.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 7 - To excel in the fields of information technology and its enabled services, government and private sectors, teaching and research.	CO 1 - To understand the logical structure of the rdms. CO 2 - To understand how the data will be stored and retrieved. CO 3 - To implement error handling mechanisms in PL/SQL to manage exceptions. CO 4 - To write and debug PL/SQL code effectively to implement business logic, database interactions, and procedural constructs.

204	SA1741	Allied IV: Theory: Operations Research	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 6 - To communicate effectively to improve their competency skills to solve real time problems.	CO 1 - To identify and define real-world problems suitable for analysis using OR techniques, including decision-making, optimization, and simulation. CO 2 - To learn decision analysis techniques, including decision trees, influence diagrams, and multi-criteria decision-making methods, to support optimal decision-making under uncertainty. CO 3 - To understand different optimization methods and algorithms, including simplex method, branch and bound. CO 4 - To understand the principles of simulation modeling and stochastic processes.
205	SC1752	SLC: Maya	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To navigate the maya interface, including the various panels, menus, and tools, allowing them to comfortably move around the software. CO 2 - To create 3D models using maya's various modeling tools. CO 3 - To apply textures to 3D models and understand the basics of UV mapping, which involves creating a 2D representation of a 3D model's surface for texture application. CO 4 - To animate objects and characters using maya's animation tools, including keyframing, animation curves, and character rigging.
206	SC1751	Major Core VIII: Web Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills..	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To develop an ability to design and implement static and dynamic web pages. CO 2 - To differentiate web applications using client-side (JavaScript, HTML, XML) and server-side technologies (ASP.NET, ADO.NET). CO 3 - To define the fundamental ideas and standards underlying Web Service Technology CO 4 - To apply the knowledge of the internet and related internet concepts that are vital in understanding web application development and analyze the insights of internet programming to implement complete application over the web.
207	SC1752	Major Core IX: Operating Systems	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 5 - To provide computational solution to complex manual problems.	CO 1 - To analyze the structure of OS and basic architectural components involved in OS design. CO 2 - To analyze the applications to run in parallel either using process or thread models of different OS. CO 3 - To describe the various device and resource management techniques for timesharing and distributed systems. CO 4 - To understand the mutual exclusion ,deadlock detection of distributed operating system. CO 5 - To apply the mechanisms adopted for file sharing in distributed applications.
208	SC1753	Elective II: (a)Data Communication and Computer Networks	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To understand basic computer network technology. CO 2 - To understand and explain data communications system and its components. CO 3 - To identify the different types of network topologies and protocols. CO 4 - To enumerate the layers of the OSI model and TCP/IP. CO 5 - To apply the different types of network devices and their functions within a network. CO 6 - To familiar with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.
209	SC1754	Elective II: (b) Data Mining	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 2 - To acquire the knowledge of data which leads them as data analyst.	CO 1 - To expand knowledge and skills gained in database management and look in depth at the data mining methods. CO 2 - To evaluate and implement a wide range of emerging and newly-adopted methodologies and technologies to facilitate the knowledge discovery. CO 3 - To discover and measure interesting patterns from different kinds of databases. CO 4 - To discover interesting patterns from large amounts of data to analyze and extract patterns to solve problems.
210	SC1755	Elective II: (c) Image Processing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 10 - To develop entrepreneurial skills, empowered according to the professional requirement and become self-dependent.	CO 1 - To recall the basic image related concepts. CO 2 - To interpret image compression, image segmentation, representation techniques. CO 3 - To categorize various compression techniques. CO 4 - To analyze images in the frequency domain using various transforms. CO 5 - To evaluate the techniques for image enhancement.
211	SC17P7	Practical VII: Web Technology Lab	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.	CO 1 - To analyze a web page and identify its elements and attributes using XML. CO 2 - To build interactive web page using html. CO 3 - To construct and manipulate PHP applications. CO 4 - To develop dynamic web pages using client side programming and server side programming. CO 5 - To identify, formulate and analyze problems as well as identify the computing requirements appropriate to their solutions. CO 6 - To understand and apply CSS definitions for document presentation.
212	SC17PR	Research Project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 6 - To communicate effectively to improve their competency skills to solve real time problems.	CO 1 - To learn how to gather and analyze project requirements, including identifying stakeholders, eliciting requirements through interviews and surveys, and documenting requirements using appropriate techniques. CO 2 - To gain proficiency in software design principles and architectural patterns, including modular design, object-oriented design, and design patterns, and apply them to develop well-structured software systems. CO 3 - To understand the principles of database design and management.
213	SSK175	Skill Based Course (*SBC): Photoshop	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.	CO 1 - To understand retouch and repair a scanned photograph. CO 2 - To create abilities to use photoshop that are employable and rewarding. CO 3 - To understand how to do basic photo repairs and color enhancements techniques. CO 4 - To define and apply the basic functions of pixel selection, painting and editing tools. CO 5 - To understand file compression, import and export files and save files in different formats. CO 6 - To utilize retouching features to make pictures perfect.
214	SC1761	Major Core X: Android Application Development	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To acquire the domain knowledge with critical thinking to serve the technical society as software engineer, data analyst and designing professional. PSO 6 - To communicate effectively to improve their competency skills to solve real time problems.	CO 1 - To describe the platforms upon which the android OS will run. CO 2 - To apply the fundamental paradigms and technologies to develop mobile applications. CO 3 - To create a simple application that runs under the android operating system. CO 4 - To develop an application that uses multimedia under android operating system. CO 5 - To implement various methods in android to create mobile applications for communication network.
215	SC1762	Major Core XI: Computer Graphics and Multimedia	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To understand fundamental principles of computer graphics. CO 2 - To discuss algorithms for 2D and 3D transformations. CO 3 - To interpret simple problems in the basic representation and handling of multimedia data (images, audio and animation). CO 4 - To create simple 2D animations, 3D animations.

216	SC1763	Major Core XII: UNIX and Shell Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To identify set of commands in unix. CO 2 - To describe the features & functions of an operating system. CO 3 - To customize environment settings using a text editor. CO 4 - To demonstrate unix commands for file handling and process control. CO 5 - To combine several simple commands in order to produce more powerful operations. CO 6 - To utilize system utilities to perform administrative tasks. CO 7 - To analyze the working of the user defined commands and will be able to change the permissions associated with files. CO 8 - To create and manage simple file processing operations, organize directory structures with appropriate security. CO 9 - To create, delete, move and rename files and directories.
217	SC1764	Elective III: (a)Mobile Computing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 2 - To create innovative ideas through laboratory experiments.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 3 - To develop sound knowledge base and skills sets to develop and expand professional careers in field related to human-computer interaction.	CO 1 - To understand the basic concepts and principles in mobile computing. CO 2 - To describe the concepts of bluetooth, RFID, WiMAX. CO 3 - To acquire and apply the knowledge of GSM and GPRS. CO 4 - To understand the process of CDMA,3G,wireless LAN. CO 5 - To describe and implementing the security techniques.
218	SC1765	Elective III: (b)Client / Server Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.	CO 1 - To create network connectivity with client/server computing. CO 2 - To apply the process of communication technology. CO 3 - To apply the components of client/server technology. CO 4 - To understand the administration and technologies of the system.
219	SC1766	Elective III: (c)Artificial Intelligence and Expert System	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 1 - To apply the acquired scientific knowledge to face day to day needs. PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.	CO 1 - To design and program small expert systems. CO 2 - To learn how to analyze the complexity of a given problem and come with suitable optimizations. CO 3 - To understand mathematical models such as belief networks and markov decision processes and apply them to a range of AI problems. CO 4 - To have a glance at machine learning algorithms and extracting knowledge models from data.
220	SC17P8	Practical VIII: Android Application Development Lab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 4 - To develop an ability to design web sites, mobile applications and internet of things.	CO 1 - To create application workings with the activities and intents. CO 2 - To create application workings with the user interface using views. CO 3 - To create application workings with graphics. CO 4 - To create application workings with pictures and menus.
221	SC17P9	Practical IX: Computer Graphics and Multimedia Lab	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 2 - To create innovative ideas through laboratory experiments. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 8 - To employ modern computing languages and applications for their successful career, to become an entrepreneur and a relish for higher studies.	CO 1 - To acquaint with the basic principles of 2D and 3D computer graphics. CO 2 - To acquaint with algorithms for rasterisation and clipping of 2D graphic primitives and filling of closed regions. CO 3 - To apply algorithms for 2D and 3D transformations, visibility solution, lighting, shading and texturing.
222	SSK176	Skill Based Course (*SBC): Dreamweaver CS4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PO 3 - To carry out field works and projects independently and in collaboration with other institutions and industries. PO 7 - To equip students with hands on training through various courses to enhance entrepreneurship skills.	PSO 1 - To understand the principles and working of the hardware and software aspects of the computer system. PSO 9 - To work effectively in teams to design and implement solutions to computational problems.	CO 1 - To implement the knowledge of web publishing. CO 2 - To understand HTML and CSS coding for websites. CO 3 - To understand the basic skills needed to create your own websites. CO 4 - To create professional looking website with dreamweaver CS4 collection of tools.