

Program Name	Course Code	Course Name	Course Outcome (COs)
Information Technology(S.E. I.T)	214441	Discrete Structures	CO1: solve counting problems using permutation and combinations
			CO2: perform operations associated with set theory
			CO3: apply concepts of relation and function to solve the problems related to discrete objects
			CO4: apply concepts of tree and graph to solve real life problems
			CO5: perform operations associated with groups and rings
			CO6: Apply concepts of probability in solving real life problems
Information Technology(S.E. I.T)	214442	Computer Organization & Architecture	CO1: Analyze performance measurement of computer.
			CO2:Solve problems based on computer arithmetic.
			CO3:Explain processor structure & its functions
			CO4:Obtain knowledge about micro-programming of a processor.
			CO5:Identify and compare different methods for computer I/O mechanisms.
			CO6:Acquire knowledge about instruction level parallelism & parallel organization of multiprocessors & multi core systems.
Information Technology(S.E. I.T)	214443	Digital Electronics and Logic Design	CO1: Perform basic binary arithmetic & simplify logic expressions.
			CO2: Use logic function representation for simplification with K-Maps and analyze as well as design Combinational logic circuits using SSI & MSI chips
			CO3:Analyze Sequential circuits like Flip-Flops (Truth Table, Excitation table) and perform their conversion
			CO4: Analyze and design sequential circuits
			CO5: Design digital circuits using programmable logic device
			CO6: Use VHDL programming technique with different modeling styles for digital circuits.
Information Technology(S.E. I.T)	214444	Fundamentals of Data Structures	CO1: Implement C language constructs and coding standards for application development
			CO2: Use appropriate searching and sorting technique for application development
			CO3: Construct linear data structures as per the given data
			CO4: Perform basic analysis with respect to time and space
			CO5: Use basic algorithm structures for problem solving and programming
			CO6: Select a precise data structure based upon real life application scenario
Information Technology (S.E. I.T)	214445	Problem Solving and Object Oriented Programming	CO1: Identify real life problems and apply problem solving concepts using computer programming
			CO2: Learn to use different logic structures to design a solution for given problem
			CO3: Exposure to fundamental concepts of object oriented programming using C++
			CO4: Apply concept of polymorphism and inheritance to implement simple solutions for given problems
			CO5: Define the importance of virtual functions and template classes to implement effective solutions
			CO6: Demonstrate the use of exception handling, and streaming input/output to manage problem solutions



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Information Technology(S.E. I.T)	214446	Digital Lab	CO1: Use logic function representation for simplification with K-Maps and analyze, design as well as implement Combinational logic circuits using SSI & MSI chips
			CO2: Analyze Sequential circuits like Flip-Flops (Truth Table, Excitation table) & design and implement the applications like Asynchronous and Synchronous Counters
			CO3: Design and implement Sequential Logic circuits like Sequence generators and MOD counters
			CO4: Understand the need of skills, techniques and learn state-of-the-art engineering tools through hands-on experimentation on the Xilinx tools for design.
			CO5: Design, construct digital logic circuits and analyze their behavior through simulation
			CO6: Understand and implement the design steps, main programming technique with different modeling styles for digital circuits with VHDL Programming
Information Technology(S.E. I.T)	214447	Fundamentals of Data Structures Laboratory	CO1: Apply appropriate constructs of C language, coding standards for application development.
			CO2: Use dynamic memory allocation concepts and file handling in various application developments.
			CO3: Perform basic analysis of algorithms with respect to time and space complexity
			CO4: Select appropriate searching and/or sorting techniques in the application development
			CO5: Select and use appropriate data structures for problem solving and programming
			CO6: Use algorithmic foundations for solving problems and programming
Information Technology(S.E. I.T)	214448	Object Oriented Programming Lab	CO1: Develop and implement algorithms for solving simple problems using modular programming concept
			CO2: Abstract data and entities from the problem domain, build object models and design software solutions using object-oriented principles and strategies
			CO3: Discover, explore and apply tools and best practices in object-oriented programming
			CO4: Develop programs that appropriately utilize key object-oriented concepts
			CO5: Study uses of function and class templates and implement operations on matrices using different data types
			CO6: Develop simple solution for managing student records using CRUD operations on file
Information Technology	214449	Communication Language Laboratory	CO1: Communicate effectively with proper usage of grammar in communication
			CO2: Build vocabulary by direct and indirect communication ways
			CO3: Write and speak publically in proper grammatically correct norm
			CO4: apply effective reading and active listening skills during communication
			CO5: Overcome problems facing in communication
			CO6: Communicate and work efficiently in group activities
Information Technology(S.E. I.T)	207003	Engineering Mathematics III	CO1: Solve Linear differential equations, essential in modeling and design of computer-based systems.
			CO2: Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing.
			CO3: Apply statistical methods like correlation, regression analysis
			CO4: Apply probability theory for analysis and prediction of a given data as applied to machine intelligence.



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			CO5: Perform vector differentiation and integration to analyze the vector fields and apply to compute line, surface and volume integrals.
			CO6: Analyze conformal mappings, transformations and perform contour integration of complex functions required in Image processing, Digital filters and Computer graphics.
Information Technology(S.E. I.T)	214450	Computer Graphics	CO1: Learn to use mathematical and logical aspects for implementing elementary graphics operations
			CO2: Explore object filling methods and geometric transformations to apply on 2D graphics objects
			CO3: Derive the translations and projections to implement 3D graphics operations
			CO4: Ensure the logical aspects of segments, windowing, and clipping to produce graphics output
			CO5: Apply the logic to develop simple animations and gaming applications
			CO6: Develop competency to understand the concept of curves and fractals to create simple interactive graphics using animation tools.
Information Technology(S.E. I.T)	214451	PROCESSOR ARCHITECTURE AND INTERFACING	CO1: Apprehend architectural details of 80386 microprocessor
			CO2: Understand memory management of 80386 microprocessor
			CO3: Understand multitasking and interrupt structure of 80386 microprocessor
			CO4: Compare microprocessor and microcontroller and understand the architecture and memory organization of 8051 microcontroller
			CO5: Explain timers and interrupts of 8051 microcontroller
			CO6: Interface of 8051 with I/O devices and design a system using 8051 micro-controller for various applications
Information Technology(S.E. I.T)	214452	Data Structures and Files	CO1: Communicate effectively with proper usage of grammar in communication
			CO2: Build vocabulary by direct and indirect communication ways
			CO3: Write and speak publically in proper grammatically correct norm
			CO4: apply effective reading and active listening skills during communication
			CO5: Overcome problems facing in communication
			CO6: Communicate and work efficiently in group activities
Information Technology(S.E. I.T)	214453	Foundations of Communication and Computer Network	CO1: Understand data/signal transmission over communication media
			CO2: Recognize usage of various modulation techniques in communication
			CO3: Understand error correction and detection techniques
			CO4: Analyze various spread spectrum and multiplexing techniques
			CO5: Use concepts of data communication to solve various related problems
			CO6: Acquaint with transmission media and their standards.
Information Technology(S)	214454	Processor Interfacing Laboratory	CO1: Learn and apply concepts related to assembly language programming
			CO2: Write and execute assembly language program to perform array addition
			CO3: Write and execute assembly language program to perform code conversion
			CO4: Write and execute assembly language program to perform block transfer



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			CO5: Write and execute assembly language program to sorting and string operations CO6: Learn and apply interfacing of real world input and output devices to 8051 microcontroller
Information Technology (S.E. I.T)	214455	Data Structures and Files Laboratory	CO1: Apply and implement algorithm to illustrate use of linear data structures such as stack, queue CO2: Apply and implement algorithms to create/represent and traverse non-linear data structures such as trees and graphs CO3: .Apply and implement algorithms to create and manipulate database using different file organizations CO4: Learn and apply the concept of hashing in database creation and manipulation CO5: Implement the techniques of sorting and searching on records CO6: Use the learned algorithms to solve problems of real life scenarios
Information Technology(S.E. I.T)	214456	Computer Graphics Laboratory	CO1: Elaborate and apply line and circle drawing algorithms to draw different graphical shapes CO2: Apply and implement polygon filling algorithm for a given polygon CO3: Apply 2D and 3D transformation algorithms for any given input shapes CO4: Draw given input polygon using polygon clipping algorithms CO5: Apply the logic of fractal generation algorithms on given input CO6: Design simple animations using segmentations and animation concepts without using animation tool

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Information Technology(T.E. I.T)	314441	Theory of computation	CO1: Design finite automata as language recognizer. CO2: Perform operations based on grammar, regular expressions and finite automata CO3: Construct different mathematical computation models CO4: Recognize different types of languages and problems in computation theory CO5: Classify the problems in the computation as solvable and unsolvable CO6: Analyze which problem can be computable and if so then implement it on a machine
Information Technology(T.E. I.T)	314442	Database Management System	CO1: Define basic concepts and functionality of database, data models, DBMS, and RDBMS CO2: Apply normalization techniques, SQL queries on database tables CO3: Express the importance of query processing, transaction management, and PL/SQL CO4: Understand the basics of concurrency control and recovery methods of database CO5: Define the importance of emerging database technologies CO6: Study the use of data management using data warehousing and data mining



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Information Technology(T.E. I.T)	314443	Software Engineering &Project Management	CO1: Identify suitable life cycle models to be used.
			CO2: Analyze a problem and identify and define the computing requirements to the problem.
			CO3: Translate a requirement specification to a design using an appropriate software engineering methodology.
			CO4: Formulate appropriate testing strategy for the given software system.
			CO5: Develop software projects based on current technology, by managing resources economically and keeping ethical values.
			CO6: Analyze & design the software models using unified modeling language (UML).
Information Technology(T.E. I.T)	314444	Operating System	CO1: Fundamental understanding of the role of Operating Systems.
			CO2: To understand the concept of a process and thread.
			CO3: To apply the cons of process/thread scheduling.
			CO4: To apply the concept of process synchronization, mutual exclusion and the deadlock.
			CO5: To realize the concept of I/O management and File system.
			CO6: To understand the various memory management techniques
Information Technology(T.E. I.T)	314445	Human Computer Interface	CO1: Students will be able to explain importance of HCI study and human factors in HCI design..
			CO2: Students will be able to understand model, paradigm and context of interaction
			CO3: Students will be able to design effective user-interfaces following a structured and organized UCD process
			CO4: Students will be able to evaluate usability of a user-interaction design
			CO5: Students will be able to apply cognitive models for predicting human-computer-interactions
			CO6: Students will be able to Analyze and discuss HCI issues in groupware, ubiquitous computing, virtual reality, multimedia, and Word Wide Web-related environments.
Information Technology(T.E. I.T)	314446	Software Laboratory I	CO1: Learn to install and configure different types of database systems
			CO2: Design a simple database with suitable ER diagrams and apply DDL, DCL commands
			CO3: Design and implement different DML commands using SQL operators and aggregate functions
			CO4: Understand the basic concepts of PL/SQL and apply them to create procedures and triggers
			CO5: Apply different simple queries on any MongoDB database and demonstrate different querying techniques
			CO6: Analyze database project life cycle and implement any simple database-oriented application
Information Technology(T.E)	314447	SL-II	CO1: Students will be able to understand the basics of Linux commands and program the shell of Linux.
			CO2: Students will be able to develop various system programs for the functioning of operating system
			CO3: Students will be able to implement basic building blocks like processes, threads under the Linux



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			CO4: Students will be able to develop various system programs for the functioning of OS concepts in user space like concurrency control and file handling in Linux CO5: Students will be able to design and implement Linux Kernel Source Code CO6: Students will be able to develop the system program for the functioning of OS concepts in kernel space like embedding the system call in any Linux kernel.
Information Technology(T.E. I.T)	314448	Software Laboratory 3	CO1: identify the needs of users through requirement gathering CO2: apply the concepts of Software Engineering process models for project development. CO3: apply the concepts of HCI for user-friendly project development. CO4: deploy website on live webserver and access through URL. CO5: understand, explore and apply various web technologies. CO6: develop team building for efficient project development.
Information Technology(T.E. I.T)	314450	Computer Network Technology	CO1: To know Responsibilities, services offered and protocol used at each layer of network. CO2: To understand different addressing techniques used in network. CO3: To know the difference between different types of network. CO4: To know the different wireless technologies and IEEE standards. CO5: To use and apply the standards and protocols learned, for application development. CO6: To understand and explore recent trends in network domain.
Information Technology(T.E. I.T)	314451	Systems Programming	CO1: Students will be able to explain the concepts and different phases of compilation with compile time error handling. CO2: Students will be able to represent language tokens using regular expressions, context free grammar and finite automata and design lexical analyzer for a language. CO3: Students will be able to compare top down with bottom up parsers, and develop appropriate parser to produce parse tree representation of the input. CO4: Students will be able to generate intermediate code for statements in high level language. CO5: Students will be able to design syntax directed translation schemes for a given context free grammar CO6: Students will be able to apply optimization techniques to intermediate code and generate machine code for high level language program.
Information Technology(T.E. I.T)	314452	Design and Analysis of Algorithm	CO1: Students will be able to Analyze a given algorithm and express its time and space complexities in asymptotic notations. CO2: Students will be able to Solve recurrence equations using Iteration Method, Recurrence Tree Method and Master's Theorem. CO3: Students will be able to design algorithms using Divide and Conquer Strategy. CO4: Students will be able to compare Dynamic Programming and Divide and Conquer Strategies. CO5: Students will be able to solve Optimization problems using Greedy strategy. CO6: Students will be able to design efficient algorithms using Back Tracking and Branch Bound Techniques for solving problems.
Inf or	3144	Clo ud Co	CO1: Learn the fundamental and basic concepts of cloud computing and cloud enabling technologies



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			CO2: Express the virtualization mechanism and common standards used in cloud computing CO3: Analyze the programming and environments of cloud platforms and move applications on cloud CO4: Identify different threats and issue in cloud computing and implement different cloud security mechanisms CO5: Exposure to basic concepts of ubiquitous clouds and the internet of things CO6: Analyze and understand emerging trends in cloud computing
Information Technology(T.E. I.T)	314454	Data Science and Big Data Analytics	CO1: Students will be able to understand big data primitives CO2: Students will be able to learn and apply different mathematical models for big data CO3: Students will be able to demonstrate their Big Data learning skills by developing industry or research applications CO4: Students will be able to analyze each learning model come from a different algorithmic approach and able to understand needs, challenges and techniques for big data visualization CO5: Students will be able be learn different programming platforms for big data analytics. CO6: Students will be able be Implement best practices for Hadoop development
Information Technology(T.E. I.T)	314455	Software Laboratory-IV	CO1: To implement small size network and its use of various networking commands. CO2: To understand and use various networking and simulations tools. CO3: To configure various client/server environments to use application layer protocols CO4: To understand the protocol design at various layers. CO5: To explore use of protocols in various wired and wireless applications. CO6: To develop applications on emerging trends.
Information Technology(T.E. I.T)	314456	Software Laboratory-V	CO1: To design and implement two pass assembler for hypothetical machine instructions. CO2: To design and implement different phases of compiler (Lexical Analyzer, Parser, Intermediate code generation) CO3: To use the compile generation tools such as "Lex" and "YACC". CO4: To apply algorithmic strategies for solving various problems. CO5: To compare various algorithmic strategies. CO6: To analyze the solution using recurrence relation.
Information Technology(T.E. I.T)	314457	SL-VI (DSBD Lab)	CO1: Students will be able to apply Big data primitives and fundamentals for application development. CO2: Students will be able to explore different Big data processing techniques with use cases CO3: Students will be able to apply the Analytical concept of Big data using R/Python. CO4: Students will be able to design algorithms and techniques for Big data analytics. CO5: Students will be able to design Big data analytic application for emerging trends CO6: Students will be able to perform operations on different big-data platforms
Information Technology(T.E. I.T)	314458	Project Base	CO1: Gather data and findings related to the specific topic CO2: write a technical report and synopsis based upon analysis



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			CO3: apply the observation to find a solution and propose new work as solution
			CO4: Present the study with graphics and multimedia techniques
			CO5: Define and present the project statement based upon review
			CO6: make the literature survey and identify research gaps



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Information Technology (B.E. I.T)	414453	Information and Cyber Security	CO1: Students will be able to use basic cryptographic techniques in application development
			CO2: Students will be able to apply methods for authentication, access control, intrusion detection and prevention.
			CO3: Students will be able to apply the scientific method to digital forensics and perform forensic investigations
			CO4: Students will be able to develop computer forensics awareness.
			CO5: Students will be able to use computer forensics tools.
			CO6: Students will be able to handle different security issues in internet protocols
	414454	Machine Learning and Applications	CO1: Students will be able to model the learning primitives.
			CO2: Students will be able to build the learning model.
			CO3: Students will be able to tackle real world problems in the domain of Data Mining and Big Data Analytics, Information Retrieval, Computer vision, Linguistics and Bioinformatics.
			CO4: Have a good understanding of the fundamental issues and challenges of machine learning: data, model selection, model complexity, etc.
			CO5: Have an understanding of the strengths and weaknesses of many popular machine learning approaches.
			CO6: Be able to design and implement various machine learning algorithms in a range of real-world applications.
	414455	Software Design and Modeling	CO1: Students will be able to Object oriented Methodologies and basics of Unified Modelling Language.
			CO2: Students will be able to Understand object oriented methodology
			CO3: Students will be able to use case modelling and class Modeling
			CO4: Students will be able to Understand design process and business, access and view layer class design.



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			CO5:Students will be able study GRASP Principles and GoF design patterns
			CO6:Students will be able to study architectural design principles on different type of application development
	Elect- I 414456 (A)	Wireless Communications	CO1: Understand the basics of propagation of radio signals.
			CO2: Understand the basic concepts of basic Cellular System and the design requirements.
			CO3: Have an understanding of the basic principles behind radio resource management techniques such as power control, channel allocation and handoffs.
			CO4: Gain insights into various mobile radio propagation models and how the diversity can be exploited to improve performance.
			CO5: Gain knowledge and awareness of the technologies for how to effectively share spectrum through multiple access techniques i.e. TDMA, CDMA, FDMA etc.
			CO6: Have in-depth understanding of the design consideration and architecture for different Wireless Systems like GSM, CDMA, GPRS etc.
	Elect- I 414456 (B)	Natural Language Processing	CO1:Students will be able to Understand automatic processing of human languages using computers
			CO2: Students will be able to Understand various applications of natural language processing
			CO3: Students will be able to Understand properties of natural language and use of algorithms.
			CO4:Students will be able processing linguistic information.
			CO5:Students will be able to abstract of text and use of modern tools for word and sentence embeddings
			CO6:Student will be able to predict a sequence of tags for a sequence of words in language modeling
	Elect- I 414456 (C)	Usability Engineering	CO1:Students will be able to Justify the theory and practice of usability evaluation approaches, methods and techniques
			CO2:Students will be able to Compare and evaluate strengths and weaknesses of various approaches, methods and techniques for evaluating usability
			CO3: Students will be able to Design and implement a usability test plan, based on modelling or requirements specification.
			CO4:Students will be able to Choose appropriate approaches, methods and techniques to evaluate the usability of a specified interactive system
			CO5: Students will be able to develop usability evaluation skills for software testing
			CO6: Students will be able design and evaluate user-interface for industrial applications
	Elect- I 414456 (D)	Multicore and Concurrent Systems	CO1: Know types of parallel machine and to know multicore and concurrent systems in detail.
			CO2: Know the ways to measure the performance of multicore systems.
			CO3: Understand need of multicore and concurrent system programming.
			CO4: Know the different approaches for multicore and concurrent programming.
			CO5: Use and apply the approaches learned, for application development.



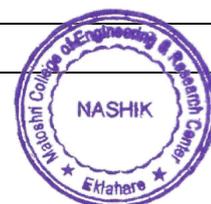
Program Name	Course Code	Course Name	Course Outcome (COs)
			CO6: Understand and explore recent trends in multicore and concurrent system programming.
	Elect- I 414456 (E)	Business Analytics and Intelligence	CO1:Students will be able to Comprehend the Information Systems and development approaches of Intelligent Systems
			CO2:Students will be able to Evaluate and rethink business processes using information systems.
			CO3: Students will be able Align business intelligence with business strategy.
			CO4:Students will be able to Apply the techniques for implementing business intelligence systems
			CO5:Students will be able to select software tools for knowledge management systems in business organizations
			CO6:Students will be able to design systems to provide business intelligence.
	Elect- II 414457 (A)	Software Defined Network	CO1: Acquire fundamental knowledge of SDN exploring the need, characteristics, and architecture of SDN.
			CO2: Recognize OpenFlow protocols and its forwarding, pipeline model.
			CO3: Understand different methodologies for sustainable SDN.
			CO4: Comprehend IT Infrastructure for SDN.
			CO5: Acquiring knowledge of OpenFlow protocols, visualization.
			CO6: To understand network virtualization and network function virtualization
	Elect-II 414457 (B)	Soft Computing	CO1: Tackle problems of interdisciplinary nature.
			CO2: Find an alternate solution, which may offer more adaptability, resilience and optimization.
			CO3: Gain knowledge of soft computing domain which opens up a whole new career option.
			CO4: Tackle real world research problems.
			CO5: Conceptualize fuzzy logic and its implementation for various real world applications.
			CO6: Design soft computing systems by hybridizing various other techniques
	Elect-II 414457 (C)	Software Testing and Quality Assurance	CO1: Test the software by applying testing techniques to deliver a product free from bugs.
			CO2: Investigate the scenario and to select the proper testing technique.
			CO3: Explore the test automation concepts and tools and estimation of cost, schedule based on standard metrics.
			CO4: Understand how to detect, classify, prevent and remove defects.
			CO5: Choose appropriate quality assurance models and develop quality.
			CO6: Ability to conduct formal inspections, record and evaluate results of inspections.
	Elect-II 414457 (D)	Compiler Construction	CO1: Understand the structure of compilers.
			CO2: Understand the basic and advanced techniques used in compiler construction.
			CO3: Understand the basic data structures used in compiler construction such as abstract syntax.



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			CO4: Cognitive skills (thinking and analysis)- Design and implement a compiler using a software engineering approach.
			CO5: Communication skills (personal and academic).
			CO6: Practical and subject specific skills (Transferable Skills) - Use generators (e.g. Lex and Yacc).
	Elect-II 414457 (E)	Gamification	CO1: Write programs to solve problems using gamification and open source tools.
			CO2: Apply gamification for Mobile and Web Applications.
			CO3: Solve problems for multi-core or distributed, concurrent/Parallel environments
			CO4: To develop problem solving abilities using gamification.
			CO5: To understand gamification paradigm
			CO6: To understand different open source tools of gamification
	414458	Computer Laboratory VII	CO1: Students will be able to Solve Problems using various Algorithms
			CO2: Students will be able to Identify Various Attacks and Formulate Defense Mechanism
			CO3: Students will be able to Identify Vulnerabilities in a Network
			CO4: The students will be able to implement and port controlled and secured access to software systems and networks
			CO5: Students will be able to identify the characteristics of datasets and compare the trivial data and big data for various applications
			CO6: Students will be able to select and implement machine learning techniques and computing environment that are suitable for the applications under consideration
	414459	Computer Laboratory VIII	CO1: Used and draw, discuss different UML 2.0 diagrams, their concepts, notation, advanced notation, forward and reverse engineering aspects.
			CO2: Used different software artifacts used to develop analysis and design model from requirements
			CO3: Design the use case model.
			CO4: Design and Implement, perform analysis model and design model.
			CO5: Design and Implement, perform Interaction and behavior Model
			CO6: Understand and Implement an appropriate design pattern to solve a design problem
414460	Project Phase-I	CO1: Solve real life problems by applying knowledge	
		CO2: Analyze alternative approaches, apply and use most appropriate one for feasible solution	
		CO3: Demonstrate effective communication at various levels and write precise reports and technical documents in a nutshell	
		CO4: Participate effectively in multi-disciplinary and heterogeneous teams exhibiting teamwork, Inter-personal relationships, conflict management and leadership quality	
		CO5: Provide solution to problems considering social, safety, environmental, ethical and legal issues	
		CO5: To function effectively as a team to accomplish a desired goal.	
Audit	Statistical		CO1: Students will be familiar with concepts related to "data science", "analytics", "machine learning", etc.



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			<p>CO2: Students will capable of learning “big data” concepts on their own</p> <p>CO3: Understand explosion of “Big Data” problems, statistical learning /machine learning has become a very hot field.</p> <p>CO4: To learn statistical learning and modelling skills which are in high demand also cover basic concepts of statistical learning / modelling methods that have widespread use in business and scientific research.</p> <p>CO5: To get hands on the applications and the underlying statistical / mathematical concepts that are relevant to modelling techniques.</p> <p>CO6: Students will be able to implement the statistical learning methods using the highly popular statistical software package R.</p>
	414462	Distribute Computing System	<p>CO1: Students will be able to Distinguish distributed computing paradigm from other computing paradigms</p> <p>CO2: Students will be able to Identify the core concepts of distributed systems</p> <p>CO3: Students will be able to Illustrate the mechanisms of inter process communication in distributed system</p> <p>CO4: Students will be able to Apply appropriate distributed system principles in ensuring transparency ,consistency and fault-tolerance in distributed file system</p> <p>CO5: Students will be able to Compare the concurrency control mechanisms in distributed transactional environment</p> <p>CO6: Students will be able to Outline the need for mutual exclusion and election algorithms in distributed systems</p>
	414463	Ubiquitous Computing	<p>CO1: Illustrate the knowledge of design of Ubiomp and its applications</p> <p>CO2: Understand smart devices and services used Ubiomp</p> <p>CO3: Understand the content of actuators and controllers in real time application design</p> <p>CO4: Use the concept of HCI to understand the design of automation applications</p> <p>CO5: Analyze Ubiomp privacy and explain the challenges associated with Ubiomp privacy</p> <p>CO6: Describe Ubiomp communication and management.</p>
	Elect III 414464 (A)	Internet Of Things	<p>CO1: Students will be able to Explain what is internet of things.</p> <p>CO2:Students will be able to Understand architecture and design of IoT.</p> <p>CO3: Students will be able Describe the objects connected in IoT.</p> <p>CO4: Students will be able Understand the underlying Technologies and platforms in IOT.</p> <p>CO5: Students will be able to Understand cloud interface to IoT.</p> <p>CO6: Students will be able to understand data transfer between IOT device and cloud enviroment</p>
	Elect III 414464 (B)	Information Storage and Retrieval	<p>CO1: Understand the concept of Information retrieval.</p> <p>CO2: Deal with storage and retrieval process of text and multimedia data.</p> <p>CO3: Evaluate performance of any information retrieval system.</p> <p>CO4: Design user interfaces.</p> <p>CO5: Understand importance of recommender system.</p>



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	Elect III 414464 (C)	MULTIMEDIA TECHNIQUES	CO6: Understand concept of multimedia and distributed information retrieval.
			CO1: Students will be able to create own file formats for specific application
			CO2: Students will be able to do some projects based on current trends in multimedia techniques
			CO3: Students will be able To use open sources for authoring tool for animation and presentations
			CO4: Students will be able to Understand some research areas of current multimedia techniques.
			CO5: Students will be able to Understand Principles behind animation and technologies
			CO6: Students will be able to Understand issues of quality of service in multimedia networking.
	Elect III 414464 (D)	Elective 4 D Internet and Web Programming	CO1: Students will be able to Demonstrate static website using basic tools.
			CO2: Students will be able to Develop client side and server side programming skills
			CO3: Students will be able to Understand web services and handle content management tools
			CO4: Students will be able to Develop mobile website using mobile web development tools.
			CO5: Students will be able to Understand aspects of web security and cyber ethics
			CO6: Students will be able to select tools that assist in automating data transfer over the Internet.
	Elect IV 414465 A	Elective 4 A Rural Technologies and community Development	CO1: Understand rural development model.
			CO2: Learn different measures in rural development and its impact on overall economy
			CO3: Understand and learn importance of technologies in rural and community development
			CO4: Understand challenges and opportunities in rural development.
			CO5: Analyse technologies applicable for the development of rural area
			CO6: Determine the measures and actions for community development in rural areas
	414465 B	Elective 4 B Parallel Computing	CO1: Understand fundamentals in parallel computing
			CO2: Understand and learn importance of technologies including different hardware structures used in parallel computing
			CO3: Understand challenges and opportunities in parallel computing.
			CO4: Learn and apply openMP programming
			CO5: Learn programming heterogeneous processors
			CO6: Learn MPI programming
	414465 C	Elective 4 C Computer Vision	CO1: Implement fundamental image processing techniques required for computer vision.
			CO2: Implement boundary tracking techniques.
			CO3: Apply Hough Transform for line, circle, and ellipse detections.
CO4: Implement motion related techniques.			
CO5: Develop skills to develop applications using computer vision techniques			



Program Name	Course Code	Course Name	Course Outcome (COs)
	414465 D	Elective 4 D Social Media Analytics	CO6: To understand three-dimensional image analysis techniques.
			CO1: Understand the fundamentals of social media analytics
			CO2: Apply the data mining algorithms in social media
			CO3: Use social media measures for social media data
			CO4: Understand behavior analytics techniques used for social media data
			CO5: Apply learned techniques on Facebook and other social media platforms data.
	414466	Computer Laboratory IX	CO1: Students will be able to Demonstrate knowledge of the core concepts and techniques in distributed systems.
			CO2: Students will be able to Learn how to apply principles of state-of-the-Art Distributed systems in practical application.
			CO3: Students will be able to Design, build and test application programs on distributed systems..
			CO4: Students will be able to apply Shared Data access and Files concepts
			CO5: Students will be able to understand Distributed Computing techniques, Synchronous and Processes.
			CO6: Students will be able to understand the importance of security in distributed systems
	414467	Computer Laboratory X	CO1: Used the Android environment and explain the Evolution of cellular networks
			CO2: Develop the User Interfaces using pre-built Android UI components.
			CO3: Design an applications for performing CURD SQLite database operations using Android.
			CO4: Design the smart android applications using the data captured through sensors
			CO5: Understand and implement the authentication protocols between two mobile devices for providing security
			CO6: Analyze the data collected through android sensors using any machine learning algorithm
	414468	Project Phase-II	CO1: Learn co-operation, support, and formal communication among team members
			CO2: Prepare well in implementation phase and tackle technical challenges effectively
			CO3: Demonstrate effective communication at various levels and write precise reports and technical documents in a nutshell
			CO4: Participate effectively in multi-disciplinary and heterogeneous teams exhibiting teamwork, Inter-personal relationships, conflict management and leadership quality
			CO5: Provide solution to problems considering social, safety, environmental, ethical and legal issues
			CO6: Get exposure of various types of testing methods and tools.
	Audit Course 414469	Entrepreneurship	CO1: Expand your knowledge of Entrepreneurship & Startups.
			CO2: Discover how you can use Entrepreneur Qualities.
			CO3: Expand the practical knowledge of Finance, Legal-Patents, Intellectual Property, and Business Associations.
			CO4: Expand the understanding of Deliverables & Achieving Target.



Program Name	Course Code	Course Name	Course Outcome (COs)
			<p>CO5: To understand the abilities to become an Entrepreneur.</p> <p>CO6: To understand how Business Finance concepts can be implemented.</p>

