



Koneru Lakshmaiah Education Foundation

(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)

Accredited by NAAC as 'A++' ♦ Approved by AICTE ♦ ISO 21001:2018 Certified

Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.

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DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

Program: B. Tech -CS&IT

Academic Year :2022-2023

Course Code	Course Title	CO. No	Description of the course Outcome
		CO2	Develop reasoning, problem solving skills and critical thinking skills by using Shakuntala Devi Puzzles.
22UC0011	Gender And Social Equality (Gse)	CO1	Students will have developed a better understanding of important issues related to gender in contemporary India.
		CO2	Students will be sensitized to basic dimensions of the biological, sociological, psychological, and legal aspects of gender. This will be achieved through group discussions.
		CO3	Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
		CO4	Students will acquire insight into the gendered division of labor and its relation to politics and economics.
22UC0019	Essence Of Indian Knowledge Tradition (Eikt)	CO1	To understand the concepts of Indian traditional knowledge
		CO2	To develop the outstanding knowledge on Indian administration
		CO3	To understand the importance of traditional culture and knowledge
		CO4	To know the impact of western culture on Indian society
22UC0008	Indian Constitution (Ic)	CO1	To acquire knowledge of the historical developments that culminated in the drafting of the Indian Constitution
		CO2	To understand the basic features of the Indian Constitution
22UC0017	Indian Knowledge System With Vedic Mathematics (Iks-Vm)	CO1	List all the 16 sutras in Vedic Mathematics, Using Vedic mathematics sutras to perform basic arithmetic operations and solve system of linear equations.
		CO3	To understand the structure of the Federal Government as defined by the Indian Constitution
		CO4	To understand the Indian Judicial System and Election System of India.
22UC0020T	Ancient Indian Computing: A Historical And Cultural Perspective (Aic)	CO1	Summarize the contributions of ancient Indian mathematics, linguistics, logic, and philosophy to computational thinking.

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		CO2	Build MVP for the solution developed
		CO3	Devise go to market strategy
		CO4	Create a Pitch-deck with funding strategy
22MT1001	Linear Algebra And Calculus For Engineers (Lace)	CO1	Apply matrix algebra to the real-world problems - engineering, physical and biological sciences, finance and economics.
		CO2	Apply multivariate differential calculus to find extremum of functions and solve differential equations.
		CO3	Solve improper integrals using beta and gamma functions and evaluate double and triple integrals in 2-D and 3-D geometry.
		CO4	Make use of vector differentiation and integration, solve the real-world problems.
22MT1002	Discrete Structures (Dis)	CO1	Apply the knowledge of sets and function to the real-world problems and computer problems to analyze and draw venn diagrams
		CO2	Apply basic and computational techniques on discrete structures like relations, orders, functions & FSM, Lattices, and propositional & predicate logic
		CO3	Apply the knowledge of counting techniques, Recurrence Relations, generating functions to solve the real-world problems
		CO4	Apply graph theory to solving real world structures and their related applications
22MT2005	Probability, Statistics & Queueing Theory (Psqt)	CO1	To understand the importance of probabilistic concepts in a wide spectrum of problems arising in engineering applied science
		CO2	Identify the relationship between variables using correlation and regression techniques.
		CO3	Explain the role of Statistical tests of significance in solving real world engineering problems
		CO4	To formulate Stochastic process in terms of Markov chains and solve problems in queueing systems, and networks
22MT2004	Mathematical Programming (Mpg)	CO1	Apply various methods for finding the optimal solution of Linear Programming Problem
		CO2	Apply Integer and Fractional programming approaches for solving optimization problems
		CO3	To express a practical problem, such as an engineering analysis or design problem and to optimize a multivariate quadratic function subject to linear constraints on the variables.
		CO4	To apply the search and optimization methodologies applicable to the resolution of multi-disciplinary decision problems, under a decision support framework.
22PH1006	Quantum Physics For Engineers (Qpfe)	CO1	Understand structure property relationship in crystals, band theory, semiconductors, and principles of lasers potential applications of lasers in various fields.
		CO2	Understand the need of quantum phenomenon to understand various phenomena like black body radiation, photoelectric effect, Compton effect, matter waves etc.
		CO3	Apply Schrödinger wave equation to solve simple quantum mechanical problems, interpret wave functions and probability densities, and understand the behaviour of

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			particles in confined systems and under potential barriers.
		CO4	Understand various relativistic effects using special theory of relativity.
22CY1001	Engineering Chemistry (Ecy)	CO1	Apply the operation of electrochemical systems to produce electric energy and storage devices.
		CO2	Use the fundamental aspects of electrochemistry and materials science relevant to corrosion phenomena.
		CO3	Examine water quality and apply appropriate purification technique for intended problem.
		CO4	Employ the fundamental principles and general properties of materials in various engineering applications.
21SC1101	Computational Thinking For Structured Design (Ctsd)	CO1	Develop and apply logical building blocks to solve real world problems
		CO2	Apply computational thinking for designing solutions
		CO3	Develop and apply the CRUD operations on arrays
		CO4	Apply CRUD operations on Linear Data Structures
		CO5	Apply the structured programming paradigm with logic buildingskills on Basic and Linear Data Structures for solving real world problems
		CO6	Skill the students in such a way that students will be able to develop logic that help them to create programs as well as applications in C
22SC1202	Data Structures (Ds)	CO1	Understand various sorting algorithms and analyse the efficiency of the algorithms.
		CO2	Implement and evaluate Linear Data Structures and Demonstrate their applications.
		CO3	Implement and evaluate tree data structures and understand hashing techniques
		CO4	Understand graph data structures and apply graphs to solve problems
		CO5	Design, Develop and evaluate common practical applications for linear and nonlinear datastructures.
		CO6	Skill the students in such a way that students will be able to develop logic that help them to create programs on both linear and non-linear data structures and its applications.
22ME1103	Design Tools Workshop (Dtw)	CO1	Demonstrate proficiency in typing sentence , paragraph , report , presentations along spread sheets using office tools,LaTeX tools and PowerBI
		CO2	Build a static website and blog with using html along with Special features of HTML5, CSS and Javascript
		CO3	Develop a virtual environment with cospace and construct a marker based Augmented Reality and create a 3D terrain
		CO4	Utilizing the software of Autodesk Fusion 360 and the same can be printed in 3D printer as physical prototype, Fundamentals of electrical circuit: Ohms law, KCL and KVL law
22EC1203	Basic Electrical & Electronic Circuits (Beec)	CO1	Apply the Loop and Nodal methods to solve complex Electrical and electronic circuits.
		CO2	Apply the Study State Analysis techniques to study the response of R, L and C circuits.
		CO3	Examine the applications of Semiconductor Devices.

		CO4	Examine the applications of different Analog and Digital ICs.
22UC3108	Problem Solving & Reasoning Skills-1 (Psrs-1)	CO1	Apply the concepts of Linear Equations, concepts of Ratios, Averages, Partnership, Percentages and Interest to solve the problems related to Ages, Ratio & Proportion, Variation & Partnership, Percentages, Profit, Loss & Discounts, Simple & Compound Interest, Averages & Allegations or Mixtures.
		CO2	Apply the concepts of Co-primes, Divisibility rules, LCM & HCF concepts to solve problems in Numbers, Apply the concepts of Algebra to solve the problems based on Sets, Relations, Functions and Graphs, Surds & Indices, Logarithms, Quadratic Equations, Inequalities & Progressions
		CO3	Apply Venn diagrams and other applicable diagrams to solve questions in Syllogism, Logical Venn Diagrams, Cubes & Dice. Understand the principles used in forming Number & letter series, Number, letter & word Analogy, Odd man out, Coding & Decoding.
		CO4	Understand the underlying assumptions in the arguments presented in the topics: Statements & conclusions, statements & Arguments (Critical Reasoning), statements & Assumptions, logical connectives, Binary logic.
22UC3209	Problem Solving & Reasoning Skills-2 (Psrs-2)	CO1	Apply the concepts of Unitary method in solving problems in Time & Work, Chain Rule, Pipes & Cisterns. Apply the concept of Average speed and Relative speed to solve the problems related to Time, Speed & Distance, Trains, Boats & Streams, Races & games. Apply the concept of counting principles to solve the problems related to Permutations & Combinations and Probability
		CO2	Apply the concepts of Perimeter, Area, Surface Area & Volume to solve the problems in 2D & 3D Geometry. Apply the concepts of Trigonometry to solve problems related to Heights & Distances. Apply the concepts of Lines, Angles, Triangles, Quadrilaterals & Polygons to solve the problems related to Geometry, Analyzing the data given in the Table, Bar Graph, Pie Chart and Line Graph to solve the problems in Data Interpretation. Data Sufficiency, Statistics, Crypt arithmetic.
		CO3	Apply the fundamental relationships and principles in solving questions in Blood Relations, Directions, Clocks, Calendars, Alphabet Test, Number, ranking & Time sequence test, Seating Arrangements, Mathematical Operations, Data Sufficiency, Nonverbal - series, analogy, classification.
		CO4	Apply the conditions mentioned in the question statement to solve questions in Input & Output, Assertion and Reason, dot situation, embedded figures, figure matrix, mirror and water images, paper cutting, paper folding, pattern completion, rule detection, flowcharts, Puzzles, Sudoku, Duzzles
22EC1202	Digital Design & Computer Architecture	CO1	Build the combinational and programmable digital circuits using logic gates and optimization methods

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			application development using Java Server Page (JSP) in connectionwith JDBS & Servlet
		CO6	Experiment the various design techniques and the Object-Oriented Programming concepts.
		CO7	Analyze the various design techniques to solve any real-world problems by applying the Object-Oriented Programming concepts in Open-Source Environment
22CS2103A	Advanced Object-Oriented Programming (Aoop)	CO1	Apply Design Patterns & Test-Driven Development with Clean coding Techniques.
		CO2	Analyze the Collections & Generics over Object-oriented Programming.
		CO3	Apply the various Concurrent Programming methodologies in Object-oriented Programming.
		CO4	Develop the applications using JDBC, Servlets, JSP.
		CO5	Analyze and experiment the techniques of web application development using Java Server Page (JSP) in connectionwith JDBS & Servlet
		CO6	Experiment the various design techniques and the Object-Oriented Programming concepts.
		CO7	Analyze the various design techniques to solve any real-world problems by applying the Object-Oriented Programming concepts in Open-Source Environment
22CS2205R	Design & Analysis Of Algorithms (Daa)	CO1	Apply concepts of mathematics to find space and time complexities of variousalgorithms including string matching algorithms
		CO2	Analyze the problems that can be solved by using Divide and Conquer andGreedy Method
		CO3	Analyze the problems that can be solved by using Dynamic Programming and Backtracking
		CO4	Analyze the problems that can be solved by using Branch and Bound and NP-Hard Graph problems
		CO5	Generate various design techniques to solve problems
		CO6	Analyze the various design techniques to solve any real-world problems in open source environment
22CS2205A	Design & Analysis Of Algorithms (Daa)	CO1	Apply concepts of mathematics to find space and time complexities of variousalgorithms including string matching algorithms
		CO2	Analyze the problems that can be solved by using Divide and Conquer andGreedy Method
		CO3	Analyze the problems that can be solved by using Dynamic Programming and Backtracking
		CO4	Analyze the problems that can be solved by using Branch and Bound and NP-Hard Graph problems
		CO5	Analyze the various design techniques to solve any real-world problems.
		CO6	Generate various design techniques to solve problems
		CO7	Analyze the various design techniques to solve any real-world problems in open source environment
22CI3004R	Enterprise Programming(Ep)	CO1	Apply the concepts of XML, XSLT and JDBC
		CO2	Develop Enterprise Application using Servlet and JSP
		CO3	Create Enterprise Application using JSP and build Business Logicusing EJB, JNDI and Session Beans
		CO4	Implement the concept of JPA, JAX-RS and JMS to build Web -Services.

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		CO5	Implement the concepts of XML, XSLT, Servlets, JSP, EJB, JPA, JAX-RS and JMS to build large scale and distributable applications
		CO6	To experiment the concept of Enterprise Programming with realworld problems
22CI3004A	Enterprise Programming(Ep)	CO1	Apply the concepts of XML, XSLT and JDBC
		CO2	Develop Enterprise Application using Servlet and JSP
		CO3	Create Enterprise Application using JSF and build Business Logicusing EJB, JNDI and Session Beans
		CO4	Implement the concept of JPA, JAX-RS and JMS to build Web -Services.
		CO5	Implement JAAS specification to build secured Enterprise Applications
		CO6	Implement the concepts of XML, XSLT, Servlets, JSP, EJB, JPA, JAX-RS and JMS to build large scale and distributable applications
		CO7	To experiment the concept of Enterprise Programming with realworld problems
23CI3004P	Enterprise Programming(Ep)	CO1	Apply the concepts of XML, XSLT and JDBC
		CO2	Develop Enterprise Application using Servlet and JSP
		CO3	Create Enterprise Application using JSF and build Business Logicusing EJB, JNDI and Session Beans
		CO4	Implement the concept of JPA, JAX-RS and JMS to build Web -Services.
		CO5	Implement JAAS specification to build secured Enterprise Applications
		CO6	Implement the concepts of XML, XSLT, Servlets, JSP, EJB, JPA, JAX-RS and JMS to build large scale and distributable applications
		CO7	To experiment the concept of Enterprise Programming with realworld problems
22EC2210R	Network Protocols & Security (Nps)	CO1	Apply the knowledge of communication to understand and analyse the physical and data link layer in networks
		CO2	Analyse different Network layer protocols and Routing algorithms
		CO3	Analyse different Transport layer, Session Layer, Presentation Layer and Application Layer Protocols
		CO4	Analyse different cryptography algorithms
		CO5	Analysis of different protocols with different topologies in networks
		CO6	Analysis of different enterprise network protocols using Cisco Packet Tracer
22EC2210A	Network Protocols & Security (Nps)	CO1	Apply the knowledge of communication to understand and analyse the physical and data link layer in networks
		CO2	Analyse different Network layer protocols and Routing algorithms
		CO3	Analyse different Transport layer, Session Layer, Presentation Layer and Application Layer Protocols
		CO4	Analyse different cryptography algorithms
		CO5	Analyse different enterprise network Protocols
		CO6	Analysis of different protocols with different topologies in networks
		CO7	Analysis of different enterprise network protocols using Cisco Packet Tracer
22EC2210P	Network Protocols & Security (Nps)	CO1	Apply the knowledge of communication to understand and analyse the physical and data link layer in networks decisions in uncertain environments

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		CO3	Apply and analyse various Machine Learning algorithms, Examine CNN and Deep Learning techniques
		CO4	Apply various Data Visualization Techniques, Analyse Data analytics techniques, Discover the insights from complex datasets.
		CO5	Evaluate performance measures, different types of data analytics including descriptive, diagnostic, predictive and prescriptive analytics.
		CO6	Examine AI for Data science lab in the python environment.
22CS2104R	Operating Systems (Os)	CO1	Understanding the basic algorithms for process and CPU scheduling, Operating Systems Basics, Functionalities, Types of Operating Systems.
		CO2	Understands Virtualization overview, paging, Segmentation and Translation Look Aside Buffer.
		CO3	Understands Concurrency and threads code, Thread API, Locks, Locked Data Structures, Condition Variables, Mutex, Semaphores, Monitors, Deadlock
		CO4	Classify I/O Devices, Hard Disk Drives, Redundant Disk Arrays(RAID), Files.
		CO5	Apply Unix System Calls. Use C Programming Language to implement Operating System Concepts
22CS2104A	Operating Systems (Os)	CO1	Understanding the basic algorithms for process and CPU scheduling, Operating Systems Basics, Functionalities, Types of Operating Systems.
		CO2	Understands Virtualization overview, paging, Segmentation and Translation Look Aside Buffer.
		CO3	Understands Concurrency and threads code, Thread API, Locks, Locked Data Structures, Condition Variables, Mutex, Semaphores, Monitors, Deadlock
		CO4	Classify I/O Devices, Hard Disk Drives, Redundant Disk Arrays(RAID), Files
		CO5	Understanding the basic algorithms for process and CPU scheduling, Operating Systems Basics, Functionalities, Types of Operating Systems.
		CO6	Apply Unix System Calls. Use C Programming Language to implement Operating System Concepts
22CS2104P	Operating Systems (Os)	CO1	Understanding the basic algorithms for process and CPU scheduling, Operating Systems Basics, Functionalities, Types of Operating Systems.
		CO2	Understands Virtualization overview, paging, Segmentation and Translation Look Aside Buffer.
		CO3	Understands Concurrency and threads code, Thread API, Locks, Locked Data Structures, Condition Variables, Mutex, Semaphores, Monitors, Deadlock
		CO4	Classify I/O Devices, Hard Disk Drives, Redundant Disk Arrays (RAID), Files
		CO5	Understanding the basic algorithms for process and CPU scheduling, Operating Systems Basics, Functionalities, Types of Operating Systems.
		CO6	Apply Unix System Calls. Use C Programming Language to implement Operating System Concepts
22CI2001	Adaptive Software Engineering(Ase)	CO1	Understand the fundamental concept of software and software engineering, as well as the nature of the process, including numerous software models with reverse engineering.
		CO2	Apply the demands of users and which methodology will be best suited to meet those needs. They employ extreme software models to elicit and analyze user requirements.

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			needs. They can also use agile methodologies to design and develop project-based software
		CO3	Apply various software methodologies of Scrum, Kanban and SAFe Methodology for developing user-friendly software and also, they can be able to analyze various software projects by using project Monitoring Tools such as JIRA, Design Patterns - Architectural Patterns - Model Driven Architecture.
		CO4	Analyze numerous testing methodologies for testing diverse software, as well as risk management, project planning, and estimating to design and analyze any software project.
22AD2102R	Database Management Systems (Dbms)	CO1	Choose the functional components of DBMS and Design an ER Model for a database.
		CO2	Utilize a relational model for a database & Implement SQL concepts and relational algebra.
		CO3	Examine the PL/SQL programs, normalization techniques, indexing to construct and access database
		CO4	List the importance of transaction Processing, concurrency control and recovery techniques.
		CO5	Categorize a database and implement SQL queries and PL/SQL programs to do various operations on data.
22AD2102A	Database Management Systems (Dbms)	CO1	Choose the functional components of DBMS and Design an ER Model for a database.
		CO2	Utilize a relational model for a database & Implement SQL concepts and relational algebra.
		CO3	Examine the PL/SQL programs, normalization techniques, indexing to construct and access database
		CO4	List the importance of transaction Processing, concurrency control and recovery techniques.
		CO5	Categorize the MongoDB to perform CRUD, Indexing, Aggregation, Replication, Sharding, Performance analysis for distributed Databases
		CO6	Assume the MongoDB and implement SQL queries and PL/SQL programs to do various operations on data.
22AD2102P	Database Management Systems (Dbms)	CO1	Choose the functional components of DBMS and Design an ER Model for a database.
		CO2	Utilize a relational model for a database & Implement SQL concepts and relational algebra.
		CO3	Examine the PL/SQL programs, normalization techniques, indexing to construct and access database
		CO4	List the importance of transaction Processing, concurrency control and recovery techniques.
		CO5	Categorize the MongoDB to perform CRUD, Indexing, Aggregation, Replication, Sharding, Performance analysis for distributed Databases
		CO6	Assume the MongoDB and implement SQL queries and PL/SQL programs to do various operations on data.
22CS2002R	Automata Theory & Formal Languages (Atfl)	CO1	Design finite machines, regular expressions, and regular grammar for regular languages and to prove existence of non-regular languages.
		CO2	Design Context Free Grammars for Context Free Languages and simplify them for optimisation
		CO3	Design Push Down Automata for CFL and to prove existence of non-Context Free languages.

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			Deployment using Infrastructure as Code using Pipeline.
		CO3	Analyze the need for Containerization in Devops and Examine the Kubernetes Pod Configuration.
		CO4	Inspect about continuous monitoring and container orchestration process
		CO5	Analyze managing services and applications in a swarm
		CO6	Inspect and deploy an application associate with various tools in devops.
		CO7	Analyze about continuous improvement with devops culture.
22CI2203	Management Information Systems (Mis)	CO1	Illustrate the basic concepts and technologies used in the field of management information systems from technical,socio-ethical and business perspective.
		CO2	Apply various knowledge representation methods with different technology infrastructure and business intelligence.
		CO3	Analyse and interpret the roles that various types of information systems play in supporting various business functional areas
		CO4	Distinguish the relationships between concepts of information systems, organization, management, and strategy
22CPD3101R	FundamentalsOf Mobile Application Development (Fmad)	CO1	Apply the basics of kotlin object-oriented programming language
		CO2	Apply the concepts of XAML Concepts and Designing of different widgets for android
		CO3	Develop the Mobile app with Views, Layouts, and Navigation on Android
		CO4	Apply the concepts of the database and Memory storage concept to build the dynamic Android applications
		CO5	Develop the Mobile Application using XAML and Kotlin in Android Environment
		CO6	Design and Develop the Mobile Application using different real time Problems
22CPD3101A	FundamentalsOf Mobile Application Development (Fmad)	CO1	Apply the basics of kotlin object-oriented programming language
		CO2	Apply the concepts of XAML Concepts and Designing of different widgets for android
		CO3	Develop the Mobile app with Views, Layouts, and Navigation on Android
		CO4	Apply the concepts of the database and Memory storage concept to build the dynamic Android applications
		CO5	Develop the Mobile Apps With Android Basics and MongoDB Concepts
		CO6	Develop the Mobile Application using XAML and Kotlin in Android Environment
		CO7	Design and Develop the Mobile Application using different relatime Problems
22CPD3101P	FundamentalsOf Mobile Application Development (Fmad)	CO1	Apply the basics of kotlin object-oriented programming language
		CO2	Apply the concepts of XAML Concepts and Designing of different widgets for android
		CO3	Develop the Mobile app with Views, Layouts, and Navigation on Android

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		CO4	Apply the concepts of the database and Memory storage concept to build the dynamic Android applications
		CO5	Develop the Mobile Apps with Android Basics and Mongo dB Concepts
		CO6	Develop the Mobile Application using XAML and Kotlin in Android Environment
		CO7	Design and Develop the Mobile Application using different real time Problems
22CPD3202	React Native For Android And Ios Development (Rnaid)	CO1	Apply the basics of React Native and its architecture. Implement navigation between screens and handle user interactions.
		CO2	Build cross-platform mobile applications for Android and iOS using React Native. Create and manage UI components and layouts in React Native.
		CO3	Apply state and handle data in React Native applications. Integrate APIs and fetch data from external sources.
		CO4	Design and Develop React Native applications. Deploy React Native applications to Android and iOS devices.
		CO5	Build and deploy competent mobile development solutions.
22CPD3203	Framework Based Cross Platform App Development (Fbcad)	CO1	Learn and apply overview on DART and Flutter Technologies
		CO2	Apply Beautiful Mobile Screens using Different Widgets
		CO3	Apply the REST API Using Node.js
		CO4	Develop the Dynamic Mobile application Using Rendering with Different Databases
		CO5	Develop the Concept of Flutter and Dart and develop and host on different platforms
22CPD3304R	Secure Mobile Application Development (Smad)	CO1	Learn user-centered design principles and best practices to create effective and engaging mobile app interfaces in Flutter.
		CO2	Apply the user research and user testing to inform their design decisions and create designs that meet user needs and preferences
		CO3	Apply the concepts of animations and motion design in Flutter, enhancing the user experience and making the app more engaging and intuitive.
		CO4	Design and develop prototype and wireframe in Flutter to test their designs and gather user feedback.
		CO5	Design and develop Collaborate effectively with developers and other stakeholders to bring their UI/UX designs to life in Flutter.
22CPD3304A	Secure Mobile Application Development (Smad)	CO1	Apply the concepts of the Kotlin and Jet Compose and Core UI controls
		CO2	Apply the concepts of state management using compose
		CO3	apply the concepts Views, View Models and rendering data from the database.
		CO4	Developing Security and authentication techniques in apps
		CO5	Implement CRUD operations (Create, Read, Update, Delete)

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			Delete) using MongoDB with Node.js, ensuring efficient datamanagement
		CO6	Design and develop secure mobile applications and deploy using Jet Compose
		CO7	Design and Develop the Secure mobile application
22CPD3304P	Secure Mobile Application Development (Smad)	CO1	Apply the concepts of the Kotlin and Jet Compose and Core UI controls
		CO2	Apply the concepts of state management using compose
		CO3	apply the concepts Views, View Models and rendering data from the database.
		CO4	Developing Security and authentication techniques in apps
		CO5	Implement CRUD operations (Create, Read, Update, Delete) using MongoDB with Node.js, ensuring efficient data management
		CO6	Design and develop secure mobile applications and deploy using Jet Compose
		CO7	Design and Develop the Secure mobile application
22CPD3405M	Principles OfUx/UI Design (Uxd)	CO1	Understand and discuss about User Experience and user Interface Process
		CO2	Apply User interface and differentiate from User Experience and principles of User Interface
		CO3	Analysing and distinguishing about components of UI Design process with interactive Devices
		CO4	Determine graphic design techniques and psychology principles of User Experience
		CO5	Designing wire frames using Adobe XD, UX Pressia and whimsical
22CPD3405MA	Principles OfUx/UI Design (Uxd)	CO1	Understand and discuss about User Experience and user Interface Process
		CO2	Apply User interface and differentiate from User Experience and principles of User Interface
		CO3	Analysing and distinguishing about components of UI Design process with interactive Devices
		CO4	Determine graphic design techniques and psychology principles of User Experience
		CO5	Designing wire frames using Adobe XD, UX Pressia and whimsical
22CPD3406M	Meta React Native Specialization (Mrns)	CO1	apply the skills required to create apps across different platforms and devices
		CO2	apply the programming fundamentals, how to create a user interface (UI) and best practices for designing the UI.
		CO3	design and develop in React Native, React, JavaScript, GitHub repositories and version control.
		CO4	Implement project-based portfolio that demonstrates your skills to employers.
22CPD3406MA	Meta React Native Specialization (Mrns)	CO1	apply the skills required to create apps across different platforms and devices
		CO2	apply the programming fundamentals, how to create a user interface (UI) and best practices for designing the UI.
		CO3	design and develop in React Native, React, JavaScript, GitHub repositories and version control.
		CO4	Implement project-based portfolio that demonstrates

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			your skills to employers.
		CO5	Designing cross-platform mobile app development
22CPD3507	Advanced Mobile Application Development (Samad)	CO1	Learn and Apply Kotlin and Design Basic Features of the Android XAML Code
		CO2	Apply the concepts of the Android with Kotlin and access the different mobile sensors
		CO3	apply the REST API using Node.js and AWS MongoDB
		CO4	Developing Security and authentication techniques in apps
		CO5	Design and Develop the Android with Dynamic Mobile Applications and Hosting in Google Play Console
22CPD3508	Cross- Platform UserExperience Design (Cpue)	CO1	Learn user-cantered design principles and best practices to create effective and engaging mobile app interfaces in Flutter.
		CO2	Apply the user research and user testing to inform their design decisions and create designs that meet user needs and preferences
		CO3	Apply the concepts of animations and motion design in Flutter, enhancing the user experience and making the app more engaging and intuitive.
		CO4	"Design and develop prototype and wireframe in Flutter to test their designs and gather user feedback.
		CO5	Design and develop Collaborate effectively with developers and other stakeholders to bring their UI/UX designs to life in Flutter.
22MIS3101R	EnterpriseResource Planning	CO1	Understanding the Foundational concepts of ERP.
		CO2	Identify various modules within an ERP system
		CO3	Apply the ERP Implementation Processes and Methodologies
		CO4	Apply the ERP selection which suits business applications
		CO5	Demonstrate the ERP system's user interface, navigation, and basic functionalities.
		CO6	Apply the Business Process execution and reporting
22MIS3101A	EnterpriseResource Planning	CO1	Understanding the Foundational concepts of ERP.
		CO2	Identify various modules within an ERP system
		CO3	Apply the ERP Implementation Processes and Methodologies
		CO4	Apply the ERP selection which suits business applications
		CO5	Demonstrate the ERP system's user interface, navigation, and basic functionalities.
		CO6	Apply the Business Process execution and reporting
		CO7	Apply ERP Evaluation criteria
22MIS3101P	EnterpriseResource Planning	CO1	Understanding the Foundational concepts of ERP.
		CO2	Identify various modules within an ERP system
		CO3	Apply the ERP Implementation Processes and Methodologies
		CO4	Apply the ERP selection which suits business applications
		CO5	Demonstrate the ERP system's user interface, navigation, and basic functionalities.

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		CO6	Apply the Business Process execution and reporting
		CO7	Apply ERP Evaluation criteria
22MIS3202	Information Systems Analysis And Design (Isad)	CO1	Illustrate basics of Information systems by effectively gathering requirements
		CO2	Apply the concepts of CASE tools by acquiring the advanced knowledge in developing prototypes
		CO3	Use your ability to effectively implement System Engineering principles and ensure Software Quality Assurance(SQA)
		CO4	Apply Knowledge to Prepare Data and Files for System Implementation and to Manage System Implementation
		CO5	Develop different types of diagrams using the given software
22MIS3203	Data Warehousing & Mining (Dwm)	CO1	Illustration of Warehouse & Mining, ETL, OLAP & OLTP, Data Cube Operations and Data Warehouse architecture
		CO2	Demonstration of Data Preprocessing through different methods
		CO3	Apply Different Classification Algorithms to Segregate Input data into different class levels and find out Hidden relationship between transactional dataset using Association Rule Mining.
		CO4	Analyse different Clustering Models using the predefined dataset.
		CO5	Implementation of warehousing and mining algorithms using suitable tools and programming languages
22MIS3304R	Data Analytics & Visualization (Dav)	CO1	Understand and apply the basic concepts of Data Science and its application
		CO2	Apply various statistical tools for testing hypothesis
		CO3	Apply time series data through various tools in Data Science
		CO4	Draw data visualization for different types of data
		CO5	Apply and analyse Time Series Data Visualization in Python.
		CO6	Analysis of Population dataset (1955–2020) and visualizing by proper methods
22MIS3304A	Data Analytics & Visualization (Dav)	CO1	Understand and apply the basic concepts of Data Science and its application
		CO2	Apply various statistical tools for testing hypothesis
		CO3	Apply time series data through various tools in Data Science
		CO4	Draw data visualization for different types of data
		CO5	Analysis of clustering and classification techniques
		CO6	Apply and analyse Time Series Data Visualization in Python.
		CO7	Analysis of Population dataset (1955–2020) and visualizing by proper methods
22MIS3304P	Data Analytics & Visualization (Dav)	CO1	Understand and apply the basic concepts of Data Science and its application
		CO2	Apply various statistical tools for testing hypothesis
		CO3	Apply time series data through various tools in Data Science
		CO4	Draw data visualization for different types of data
		CO5	Analysis of clustering and classification techniques
		CO6	Apply and analyse Time Series Data Visualization in Python.

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			Python.
		CO7	Analysis of Population dataset (1955–2020) and visualizing by proper methods
22MIS3405M	Information Systems Auditing, Controls & Assurance (Isacs)	CO1	Understand Information System Auditing, Controls & Assurance for developing software project
		CO2	Apply software system Auditing, System Controls & its Assurance and illustrate convincing solutions
		CO3	Analyse Importance of MIS-Management Reporting Systems
		CO4	Analyse Types of Groupware-Enterprise Communication Tools
22MIS3405MA	Information Systems Auditing, Controls & Assurance (Isacs)	CO1	Understand Information System Auditing, Controls & Assurance for developing software project
		CO2	Apply software system Auditing, System Controls & its Assurance and illustrate convincing solutions
		CO3	Analyse Importance of MIS-Management Reporting Systems
		CO4	Analyse Types of Groupware-Enterprise Communication Tools
		CO5	Evaluate the reporting systems and DSS applications of DSS Geographic Information Systems (GIS)
22MIS3406M	Productivity And System Development(Psd)	CO1	Understand the Productivity Tools to improve productivity and system development in real time
		CO2	Apply the System Design and Development the productivity of the system in project
		CO3	Apply the various computer productivity programs for developing the system in real time usage
		CO4	Analyze the Careers in Information Systems to improve the productivity of the system
22MIS3406MA	Productivity And System Development (Psd)	CO1	Understand the Productivity Tools to improve productivity and system development in real time
		CO2	Apply the System Design and Development the productivity of the system in project
		CO3	Apply the various computer productivity programs for developing the system in real time usage
		CO4	Analyze the Careers in Information Systems to improve the productivity of the system
		CO5	Analyze the careers in system development to create project and meet deadlines in time
22MIS3507	E-Commerce Design & Development	CO1	Discuss the critical e-commerce business models and prevailing strategies.
		CO2	Identify the key features of payment mechanism over internet.
		CO3	Relate the e-commerce security solutions for safe electronic transactions, the approaches for electronic publishing and advertising challenges on web
		CO4	Distinguish various end-to-end transaction flows of major electronic payment types including Credit/Debit Cards, Real-time and Delayed Bank Payments, Digital Wallets, and Closed Loop Systems.
		CO5	Experiment the contents required to build an e-


			commerce website
22SDCI01R	Python Full Stack Development(Pfsd)	CO1	To apply suitable design techniques to implement given real-world problems by problem-solving, logic building, and building web applications
		CO2	Apply end-to-end web applications using Flask as the primary web framework, covering topics such as routing and deployment.
		CO3	Apply Python and Django framework to develop web applications using model, views, templates, URLs, forms, and databases.
22SDCI01A	Python Full Stack Development (Pfsd)	CO1	To apply suitable design techniques to implement given real-world problems by problem-solving, logic building, and building web applications
		CO2	Apply end-to-end web applications using Flask as the primary web framework, covering topics such as routing and deployment.
		CO3	Apply Python and Django framework to develop web applications using model, views, templates, URLs, forms, and databases.
22SDCI01P	Python Full Stack Development (Pfsd)	CO1	To apply suitable design techniques to implement given real-world problems by problem-solving, logic building, and building web applications
		CO2	Apply end-to-end web applications using Flask as the primary web framework, covering topics such as routing and deployment.
		CO3	Apply Python and Django framework to develop web applications using model, views, templates, URLs, forms, and databases.
22SDCS02R	Mern Stack Web Development (Mswd)	CO1	Build responsive front-end app using ReactJS libraries, MUI and bootstrap.
		CO2	Build MongoDB database and perform CRUD operations and queries
		CO3	Build express server upon Node environment with RESTFull APIs
		CO4	Build full stack web applications using the MongoDB, Express JS, React & Node JS Full Stack framework
22SDCS02A	Mern Stack Web Development (Mswd)	CO1	Build responsive front-end app using ReactJS libraries, MUI and bootstrap.
		CO2	Build MongoDB database and perform CRUD operations and queries
		CO3	Build express server upon Node environment with RESTFull APIs
		CO4	Build full stack web applications using the MongoDB, Express JS, React & Node JS Full Stack framework
22SDCS02P	Mern Stack Web Development (Mswd)	CO1	Build responsive front-end app using ReactJS libraries, MUI and bootstrap.
		CO2	Build MongoDB database and perform CRUD operations and queries
		CO3	Build express server upon Node environment with RESTFull APIs
		CO4	Build full stack web applications using the MongoDB, Express JS, React & Node JS Full Stack framework
22SDCS03R	Java Full Stack	CO1	Apply the java full stack concepts and implement them

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	Development + Microservices (Jfsd)		practices on, Hibernate, Spring DI, Spring IoC, Spring MVC, Spring JDBC and Hiberanate
		CO2	Apply the java full stack concepts and implement the practices on Spring Boot MVC, google maps, 2 step verification, sending mail and sms, captcha generation, bar code and qr code scanning, Spring Cloud and Spring Microservices.
		CO3	Apply the Java Concepts like Hibernate, Spring, Spring Boot, Spring Cloud and Microservices to Develop the FeatureRich Java Full Stack Application.
22SDCS03A	Java Full Stack Development + Microservices (Jfsd)	CO1	Apply the java full stack concepts and implement the practices on, Hibernate, Spring DI, Spring IoC, Spring MVC, Spring JDBC and Hiberanate
		CO2	Apply the java full stack concepts and implement the practices on Spring Boot MVC, google maps, 2 step verification, sending mail and sms, captcha generation, bar code and qr code scanning, Spring Cloud and Spring Microservices.
		CO3	Apply the Java Concepts like Hibernate, Spring, Spring Boot, Spring Cloud and Microservices to Develop the FeatureRich Java Full Stack Application.
22SDCS03P	Java Full Stack Development + Microservices (Jfsd)	CO1	Apply the java full stack concepts and implement the practices on, Hibernate, Spring DI, Spring IoC, Spring MVC, Spring JDBC and Hiberanate
		CO2	Apply the java full stack concepts and implement the practices on Spring Boot MVC, google maps, 2 step verification, sending mail and sms, captcha generation, bar code and qr code scanning, Spring Cloud and Spring Microservices.
		CO3	Apply the Java Concepts like Hibernate, Spring, Spring Boot, Spring Cloud and Microservices to Develop the FeatureRich Java Full Stack Application.
22SDCI05R	Cloud Devops (Cdp)	CO1	Apply a test scenario that are appropriate for software development in many fields
		CO2	Create a test plan dependent on document leveraging test automation tools
		CO3	Create an automated testing tools and test plan based on documents
22SDCI05A	Cloud Devops (Cdp)	CO1	Apply a test scenario that are appropriate for software development in many fields
		CO2	Create a test plan dependent on document leveraging test automation tools
		CO3	Create an automated testing tools and test plan based on documents
22SDCI05P	Cloud Devops (Cdp)	CO1	Apply a test scenario that are appropriate for software development in many fields
		CO2	Create a test plan dependent on document leveraging test automation tools
		CO3	Create an automated testing tools and test plan based on documents
22SDCI04R	Advanced Android Mobile Application With Cloud-Based Web	CO1	Apply Android app development tools like Android Studio and Kotlin to create robust, feature-rich applications.

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	Services --(Aama)		
		CO2	APPLY and Develop the Jetpack Compose concepts and apply them on Jetpack Consume APIs
		CO3	Design and develop advanced mobile app features, such as push notifications, location-based services, and in-app purchasing on cloud data bases.
22SDCI04A	Advanced Android Mobile Application With Cloud-Based Web Services --(Aama)	CO1	Apply Android app development tools like Android Studio and Kotlin to create robust, feature-rich applications.
		CO2	APPLY and Develop the Jetpack Compose concepts and apply them on Jetpack Consume APIs
		CO3	Design and develop advanced mobile app features, such as push notifications, location-based services, and in-app purchasing on cloud data bases.
22SDCI04P	Advanced Android Mobile Application With Cloud-Based Web Services --(Aama)	CO1	Apply Android app development tools like Android Studio and Kotlin to create robust, feature-rich applications.
		CO2	APPLY and Develop the Jetpack Compose concepts and apply them on Jetpack Consume APIs
		CO3	Design and develop advanced mobile app features, such as push notifications, location-based services, and in-app purchasing on cloud data bases.
22TBCI01	Robotic Process Automation (Rpa)	CO1	Understand the RPA Foundations and RPA Skills.
		CO2	Apply Process Methodologies and Requirements for RPA Environment Planning.
		CO3	Analyze the Process and Methodology of BOT Development.
		CO4	Apply the methods for Deploy, Monitoring and Data Preparation in RPA
		CO5	Analyze how to implementation of BOT Development Process and Verification using the RPA Tools [UiPath].


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