RISE KRISHNA SAI GANDHI GROUP OF INSTITUTIONS::ONGOLE
(Approved by AICTE-NEW DELHI, Affiliated to JNTUK KAKINADA)
NH-16, Valluru,-523272, Ongole, Prakasam District, A.P

Department of Computer Science and Engineering

Year: I   **Regulation: R20**   **Academic Year: 2021-22**   **Sem: I**

COURSE : Communicative English		
CO No.	Course Outcomes	Taxonomy Level
After successful completion of this course students will be able to:		
C111.1	Understand social or transactional dialogues spoken by native speakers of English and identify the context, topic, and pieces of specific information.	Understanding
C111.2	Recall the familiar topics and general questions to the students	Remembering
C111.3	Rephrase suitable strategies for note-making to locate specific information.	Understanding
C111.4	Identify the paragraph structure and able to match beginning/sending/heading with paragraph.	Applying
C111.5	Make use of grammatical structure and correct word forms.	Applying

COURSE : Mathematics-I		
CO No.	Course Outcomes	Taxonomy Level
After successful completion of this course students will be able to:		
C112.1	Test the convergence of an infinite series , utilize mean value theorems to real life problems and express a function in terms of	Applying
C112.2	Solve first order and first degree differential equations arising in various Engineering fields.	Applying
C112.3	Solve linear differential equations of higher order and use the knowledge to study LCR Circuits and SHM.	Applying
C112.4	Apply the techniques of multivariable differential calculus to determine extrema and series Expansions of a function of several	Applying
C112.5	Using multiple integrals to find areas, surface areas and volumes.	Applying

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COURSE: Applied Physics		
CO No.	Course Outcomes	**Taxonomy Level**
After successful completion of this course students will be able to:		
C113.1	Explain the properties interference, diffraction, polarization of light in wave form.	Understanding
C113.2	Identify the applications of laser in optical fiber communication.	Applying
C113.3	Interpret the concepts of classical and quantum free electron theories in formation of bands in solids.	Understanding
C113.4	Explain the cause of dielectric and magnetic nature to the materials.	Understanding
C113.5	Explain the cause of conductivity in semiconductors and insulators.	Understanding

COURSE: PPSC		
CO No.	Course Outcomes	**Taxonomy Level**
After successful completion of this course students will be able to:		
C114.1	To use different operators, data types and write programs that use two-way/ multi-way selection.	Applying
C114.2	To select the best loop construct for a given problem.	Applying
C114.3	To design and implement programs to analyze the different pointer applications.	Analyzing
C114.4	To decompose a problem into functions and to develop modular	Analyzing
C114.5	To apply File, I/O operations.	Applying

COURSE : ITWS LAB		
CO No.	Course Outcomes	**Taxonomy Level**
After successful completion of this course students will be able to:		
C115.1	Assemble and disassemble components of a PC	Applying
C115.2	Construct a fully functional virtual machine, Summarize various Linux operating system commands,	Applying
C115.3	Recognize characters & extract text from scanned images, Create audio files and podcast	Applying

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COURSE :ECS Lab		
CO No.	Course Outcomes	Taxonomy Level
After successful completion of this course students will be able to:		
C116.1	Develop phonetic sounds and uses	Applying
C116.2	Recall words stress and syllabic words.	Remembering
C116.3	Classify Rhythm an intonation.	Understanding
C116.4	Utilize the knowledge of contrastive word stress	Applying
C116.5	Compose weak and strong forms	Creating

COURSE : AP Lab		
CO No.	Course Outcomes	Taxonomy Level
After successful completion of this course students will be able to:		
C117.1	Apply the basic concepts of light to determine wavelength of light by Newton's Rings.	Applying
C117.2	Apply the basic concepts of laser and techniques for diffraction grating.	Applying
C117.3	Apply the basic concepts of magnetism to study the variation of B versus H.	Applying
C117.4	Apply the basic concepts of dielectrics to determine dielectric constant by charging and discharging method.	Applying
C117.5	Apply the basic concepts of semiconductor to determine energy gap of semiconductor.	Applying

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COURSE: PPSC Lab		
CO No.	Course Outcomes	Taxonomy Level
After successful completion of this course students will be able to:		
C118.1	Gains knowledge on various concepts of a C Language.	Understanding
C118.2	Able to draw flow charts and write algorithms.	Applying
C118.3	Able to design and development to C problem solving skills.	Applying
C118.4	Able to design and develop modular programming skills.	Applying
C118.5	Able to trace and debug a program.	Applying

Coordinator

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Department of Computer Science and Engineering

Year: I   **Regulation: R20**   **Academic Year: 2021-22**   **Sem: II**

CO No.	SUBJECT: Mathematics-II	Taxonomy Level
After successful completion of this course students will be able to		
C121.1	Solve system of linear algebraic equations using matrix techniques and findEigen values and Eigen vectors.	Applying
C121.2	Use Cayley-Hamilton theorem to find inverse and higher powers of matrices and study the nature of Quadratic forms.	Applying
C121.3	Evaluate a root of algebraic and transcendental equations and a solution forsystem of equations using numerical methods.	Applying
C121.4	Apply Newton's interpolation and Lagrange's interpolation formula to findinterpolating polynomial.	Applying
C121.5	Evaluate the solutions of ordinary differential equations to its analyticalcomputations using different methods.	Applying

CO No.	COURSE: Applied chemistry	Taxonomy Level
After successful completion of this course students will be able to:		
C122.1	Analyze different types of composite materials and the preparation,Properties and applications of the polymers.	Analyzing
C122.2	Apply the knowledge of using redox chemistry in storage devices(batteries) and techniques used for preventing corrosion	Applying
C122.3	Summarize the importance of materials like nano materials, Super conductors, liquid crystals and semiconductors	Understanding
C122.4	Analyze the principles and applications of analytical techniques And different types of nonconventional energy sources	Analyzing
C122.5	Demonstrate the importance of molecular machines and computational chemistry.	Understanding

Department of Computer Science and Engineering

CO No.	COURSE : Python Programming	Taxonomy Level
After successful completion of this course students will be able to:		
C123.1	Develop essential programming skills in computer	Understanding
C123.2	Apply the basics of programming in the Python language	Applying
C123.3	Solve coding tasks related conditional execution, loops	Analyzing
C123.4	Understand the accessing of files and its operations.	Understanding
C123.5	Solve coding tasks related to the fundamental notions and techniques used in object-oriented programming.	Analyzing

CO No.	COURSE : Computer Organization	Taxonomy Level
After successful completion of this course students will be able to:		
C124.1	Analyze different types of composite materials and the preparation,Properties and applications of the polymers.	Analyzing
C124.2	Apply the knowledge of using redox chemistry in storage devices(batteries) and techniques used for preventing corrosion	Applying
C124.3	Summarize the importance of materials like nano materials, Super conductors, liquid crystals and semiconductors	Understanding
C124.4	Analyze the principles and applications of analytical techniques And different types of nonconventional energy sources	Analyzing
C124.5	Demonstrate the importance of molecular machinesand computational chemistry.	Understanding

CO No.	COURSE : Data Structures	Taxonomy Level
After successful completion of this course students will be able to:		
C125.1	Discuss the computational efficiency of the principal algorithms for sorting and searching, by summarizing the properties, interfaces and behaviors of basic abstract data types.	Understanding
C125.2	Understands the concept of dynamic data structures using Singly Linked List and its kinds.	Understanding
C125.3	Implements Stacks and Queues using Arrays and Linked Lists.	Applying
C125.4	Represents the given data using tree applications.	Applying
C125.5	Demonstrate different methods for Graph traversing.	Applying

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CO No.	COURSE : Python Lab	Taxonomy Level
C126.1	Develop essential programming skills in computer programming concepts like data types, containers	Understanding
C126.2	Apply the basics of programming in the Python language Applying	Applying
C126.3	Solve coding tasks related conditional execution, loops Applying	Applying
C126.4	Solve coding tasks related to the fundamental notions and techniques used in object-oriented programming	Applying
C126.5	Learn GUI and Modules to develop case study example	Applying

CO No.	COURSE : Data Structures Lab	Taxonomy Level
C127.1	Using data structures such as arrays and linked list for performing searching and sorting operations.	Applying
C127.2	Programs to demonstrate Stacks and Queues.	Applying
C127.3	Programs to demonstrate algorithmic problems including Tree Traversals, Graph traversals, and shortest paths.	Applying

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CO No.	COURSE: ES	Taxonomy Level
After going through this course the student will be able to:		
C128.1	Explain the concepts of the ecosystem and its functions in the environment.	Understanding
C128.2	Summarize the natural resources and their importance for the sustenance of life & need to conserve the natural resources.	Understanding
C128.3	Demonstrate the values, threats, conservation practices to protect the biodiversity.	Applying
C128.4	Describe various attributes of the pollution and their impacts and measures to reduce pollution along with waste management practices.	Remembering
C128.5	Evaluate social issues both rural and urban environment and the possible means to combat the challenges, with help of environmental legislations of India	Evaluating

Coordinator

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Department of Computer Science and Engineering

Year: II   **Regulation: R20**   **Academic Year: 2021-22**   **Sem: I**

CO No.	Course Name: Mathematics- III	Taxonomy Level
	After successful completion of this course students will be able to:	
C211.1	Interpret the physical meaning of different operators such as gradient, curl and divergence, estimate the work done against a field.	Applying
C211.2	Apply the LaPlace transform for solving differential equations.	Applying
C211.3	Find or compute the Fourier series of periodic signals and be able to apply integral expressions for the Fourier and inverse Fourier transform to a range of non-periodic waveforms.	Applying
C211.4	Formation of partial differential equation and identify solution methods for first order partial differential equations.	Applying
C211.5	Classify higher order partial differential equations and solve heat flow and wave problems.	Applying

CO No.	Course Name: OOPs THROUGH C++	Taxonomy Level
	After successful completion of this course students will be able to:	
C212.1	Compare the procedural and object-oriented paradigm with concepts of streams, classes, functions, data and objects.	Understanding
C212.2	Explain dynamic memory management techniques using pointers, constructors, destructors, etc	Understanding
C212.3	Experiment with the concept of function overloading, operator overloading, virtual functions and polymorphism.	Applying
C212.4	Use of inheritance with the understanding of early and late binding using pointer object.	Applying
C212.5	Demonstrate the use of generic programming, exception handling and Standard Template Library	Understanding

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CO No.	Course Name: Operating System	Taxonomy Level
After successful completion of this course students will be able to:		
C213.1	Describe various generations of operating systems and functions of operating systems.	Understanding
C213.2	Describe the concept of program, process and thread and analyze various CPU scheduling algorithms and compare their performance.	Understanding
C213.3	Solve Inter Process Communication problems using Mathematical equations by various methods.	Applying
C213.4	Compare various Memory Management Schemes especially paging and Segmentation in OS and apply various Page replacement techniques.	Understanding
C213.5	Outline file systems in operating system like UNIX/Linux and Windows.	Understanding

CO No.	Course Name: Software Engineering	Taxonomy Level
After successful completion of this course students will be able to:		
C214.1	Ability to transform an object-oriented design into high quality, executable code.	Creating
C214.2	Compare conventional and agile software methods.	Understanding
C214.3	Skills to design, implement and execute test cases at the unit and integration level.	Applying

CO No.	Course Name: Mathematical Foundation for Computer Science	Taxonomy Level
After successful completion of this course students will be able to:		
C215.1	Demonstrate skills in solving mathematical problems.	Understanding
C215.2	Comprehend mathematical principles and logic.	Understanding
C215.3	Demonstrate knowledge of mathematical modeling and proficiency in using mathematical software.	Understanding
C215.4	Manipulate and analyze data numerically and /or graphically using appropriate software.	Applying
C215.5	Communicate effectively mathematical ideas/results verbally or in writing.	Understanding

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CO No.	Course Name: OOPS Through C++ Lab	Taxonomy Level
	After successful completion of this course students will be able to:	
C216.1	Able to apply the various OOPs concepts with the help of programs.	Applying

CO No.	Course Name: Operating Systems Lab	Taxonomy Level
	After successful completion of this course students will be able to:	
C217.1	Able to use Unix utilities and perform basic shell control of the utilities.	Remembering
C217.2	Able to use Unix file system and file access control.	Understanding
C217.3	Able to use of an operating system to develop software.	Applying
C217.4	Able to use Linux environment efficiently.	Applying
C217.5	Able to solve problems using bash for shell scripting.	Understanding

CO No.	Course Name: software Engineering Lab	Taxonomy Level
	After successful completion of this course students will be able to:	
C218.1	Able to elicit, analyze and specify software requirements through a productive working relationship with various stakeholders of the project.	Analyzing
C218.2	Able to prepare SRS document, design document, test cases and software configuration management and risk management related document.	Understanding
C218.3	Able to develop function-oriented software design using tools like rational rose.	Applying
C218.4	Able to use modern engineering tools necessary for software project management, estimations, time management and software reuse.	Applying
C218.5	Generate test cases for software testing.	Applying

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Department of Computer Science and Engineering

CO No.	Course Name: WAD Using Full Stack Module I	Taxonomy Level
After successful completion of this course students will be able to:		
C219.1	Analyze a web page and identify its elements and attributes.	Understanding
C219.2	Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style sheet	Understanding
C219.3	Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone.	Applying
C219.4	Create web pages using HTML and Cascading Style Sheets.	Creating

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Department of Computer Science and Engineering

Year: II   **Regulation: R20**   **Academic Year: 2021-22**   **Sem: II**

CO No.	Course Name: Probability & Statistics	Taxonomy Level
After successful completion of this course students will be able to:		
C221.1	Compare various discrete probability distributions.	Understanding
C221.2	Compare various continuous probability distributions.	Understanding
C221.3	Find the confidence interval for mean of a population.	Remembering
C221.4	Make use of test of hypothesis for the null hypothesis concerning mean and proportions and perform ANOVA for one way and two-way classification.	Applying
C221.5	Apply correlation and regression lines of two variables for real life problems.	Applying

CO No.	Course Name: Database Management Systems	Taxonomy Level
After successful completion of this course students will be able to:		
C222.1	Describe a relational database and object-oriented database.	Understanding
C222.2	Create, maintain and manipulate a relational database using SQL.	Applying
C222.3	Describe ER model and normalization for database design.	Understanding
C222.4	Examine issues in data storage and query processing and can formulate appropriate solutions.	Understanding
C222.5	Outline the role and issues in management of data such as efficiency, privacy, security, ethical responsibility, and strategic advantage.	Applying

CO No.	Course Name: Formal Languages and Automata Theory	Taxonomy Level
After successful completion of this course students will be able to:		
C223.1	Classify machines by their power to recognize languages.	Understanding
C223.2	Summarize language classes and grammars relationship among them with the help of Chomsky Hierarchy.	Understanding
C223.3	Employ finite state machines to solve problems in computing.	Applying
C223.4	Illustrate deterministic and non-deterministic machines.	Understanding
C223.5	Quote the hierarchy of problems arising in the computer science.	Applying

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CO No.	Course Name: Java Programming	Taxonomy Level
After successful completion of this course students will be able to:		
C224.1	Able to realize the concept of OOP and Java Programming Constructs.	Understanding
C224.2	Able to describe the basic concepts of Java such as operators, classes, objects, inheritance, packages, enumerations and various keywords.	Understanding
C224.3	Apply the concept of exception handling and input or output operations.	Applying
C224.4	Able to design the applications of Java and Java Applet.	Applying
C224.5	Able to analyze and design the concept of event handling and abstract window tool kit.	Applying

CO No.	Course Name: Managerial Economics and Financial Accountancy	Taxonomy Level
After successful completion of this course students will be able to:		
C225.1	Equipped with the knowledge of estimating the demand and demand elasticities for a product and relate economic principles with business practices for getting successful outcomes.	Remembering
C225.2	The knowledge of understanding of the input-output-cost relationships and estimation of the least cost combination of inputs and also make use of cost analysis to find Break Even Point (BEP) of an enterprise in order to avoid losses.	Understanding
C225.3	Understand the nature of different markets and price output determination under various market conditions and also to have the knowledge of different business units.	Understanding
C225.4	Prepare financial statements and the usage of various accounting tools for analysis.	Applying
C225.5	Evaluate various investment project proposals with the help of capital budgeting techniques for decision making.	Evaluating

CO No.	Course Name: Database Management Systems Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C226.1	Utilize SQL to execute queries for creating database and performing data manipulation operations.	Applying
C226.2	Examine integrity constraints to build efficient databases.	Understanding
C226.3	Apply Queries using Advanced Concepts of SQL.	Applying
C226.4	Build PL/SQL programs including stored procedures, functions, cursors and triggers.	Creating

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CO No.	Course Name: R Programming Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C227.1	Access online resources for R and import new function packages into the R workspace.	Understanding
C227.2	Import, review, manipulate and summarize data-sets in R.	Understanding
C227.3	Explore data-sets to create testable hypotheses and identify appropriate statistical tests.	Understanding
C227.4	Perform appropriate statistical tests using R.	Applying
C227.5	Create and edit visualizations with R.	Creating

CO No.	Course Name: Java Programming Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C228.1	Evaluate default value of all primitive data type, Operations, Expressions, Control flow, Strings.	Understanding
C228.2	Determine Class, Objects, Methods, Inheritance, Exception, Runtime Polymorphism, User defined Exception handling mechanism.	Understanding
C228.3	Illustrating simple inheritance, multi-level inheritance, Exception handling mechanism.	Applying
C228.4	Construct Threads, Event Handling, implement packages, developing applets.	Applying

CO No.	Course Name: WAD Using Full Stack Module II	Taxonomy Level
After successful completion of this course students will be able to:		
C229.1	Develop of the major Web application tier- Client-side development.	Applying
C229.2	Participate in the active development of cross-browser applications through JavaScript.	Creating
C229.3	Develop JavaScript applications that transition between states.	Applying

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Department of Computer Science and Engineering

Year: III **Regulation: R19** **Academic Year: 2021-22** **Sem: I**

CO No.	Course Name: Data Warehousing and Data Mining	Taxonomy Level
After successful completion of this course students will be able to:		
C311.1	Design a data warehouse system and perform business analysis with OLAP Tools.	Applying
C311.2	Apply suitable pre-processing and visualization techniques for data analysis.	Applying
C311.3	Apply frequent pattern and association rule mining techniques for data analysis.	Applying
C311.4	Apply appropriate classification techniques for data analysis.	Applying
C311.5	Apply appropriate clustering techniques for data analysis.	Applying

CO No.	Course Name: Computer Networks	Taxonomy Level
After successful completion of this course students will be able to:		
C312.1	Illustrate the OSI and TCP/IP reference model.	Understanding
C312.2	Analyze MAC Layer protocols and LAN technologies.	Analyze
C312.3	Design applications using internet protocols.	Applying
C312.4	Implement routing and congestion control algorithms.	Applying
C312.5	Develop application layer protocols.	Applying

CO No.	Course Name: Compiler Design	Taxonomy Level
After successful completion of this course students will be able to:		
C313.1	Design, develop and implement a compiler for any language.	Understanding
C313.2	Use LEX and YACC tools for developing a scanner and a parser.	Applying
C313.3	Design and implement LL and LR parsers.	Creating
C313.4	Design algorithms to perform code optimization to improve the performance of a program in terms of space and time complexity.	Creating
C313.5	Apply algorithms to generate machine code.	Applying

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CO No.	Course Name: Artificial Intelligence	Taxonomy Level
After successful completion of this course students will be able to:		
C314.1	Outline problems that are amenable to solution by AI methods, and which AI methods may be suited for solving a given problem.	Understanding
C314.2	Apply the language or framework of different AI methods for a given problem.	Applying
C314.3	Implement basic AI algorithms- standard search algorithms or dynamic programming.	Applying
C314.4	Design and carry out an empirical evaluation of different algorithms on problem formalization and state the conclusions that the evaluation supports.	Analyzing

CO No.	Course Name: Software Testing Methodologies	Taxonomy Level
After successful completion of this course students will be able to:		
C315.1	Identify and understand various software testing problems, apply software testing knowledge and engineering methods, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.	Understanding
C315.2	Design and conduct a software test process for a software project.	Creating
C315.3	Analyze the needs of software test automation.	Analyzing
C315.4	Use various communication methods and skills to communicate with their teammates t conduct their practice-oriented software testing projects.	Applying
C315.5	Basic understanding and knowledge of contemporary issues in software testing, such as component-based, web based and object-oriented software testing problems.	Understanding
C315.6	Write test cases for given software to test it before delivery to the customer and write test scripts for both desktop and web-based applications.	Applying

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CO No.	Course Name: Computer Networks Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C316.1	Apply the basics of physical layer in real time applications.	Applying
C316.2	Apply data link layer concepts, design issues and protocols.	Applying
C316.3	Apply network layer routing protocols and IP addressing.	Applying
C316.4	Implement the functions of application layer and presentation layer paradigms and protocols.	Applying

CO No.	Course Name: Artificial Intelligence Tools and Techniques Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C317.1	Identify problems that are amenable to solution by AI methods.	Understanding
C317.2	Identify appropriate AI methods to solve a given problem.	Applying
C317.3	Use language/ framework of different AI methods for solving problems.	Applying
C317.4	Implement basic AI algorithms.	Applying
C317.5	Design and carry out an empirical evaluation of different algorithms on problem formalization and state the conclusions that the evaluation supports.	Applying

CO No.	Course Name: Data Mining Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C318.1	Extend the functionality of R using add-on packages.	Applying
C318.2	Examine data from files and other sources and perform various data manipulation tasks on them.	Understanding
C318.3	Code statistical functions in R.	Creating
C318.4	Use R graphics and tables to visualize results of various statistical operations on data.	Applying
C318.5	Apply the knowledge of R gained to data analytics for real life applications.	Applying

Coordinator

Department of Computer Science and Engineering

Year: III   Regulation: R19   Academic Year: 2021-22   Sem: II

CO No.	Course Name: Web Technologies	Taxonomy Level
After successful completion of this course students will be able to:		
C321.1	Illustrate the basic concepts of HTML and CSS & apply those concepts to design static webpages.	Applying
C321.2	Identify and understand various concepts related to dynamic webpages and validate them using JavaScript.	Applying
C321.3	Outline the concepts of Extensible markup language and AJAX.	Understanding
C321.4	Develop web applications using scripting languages and frameworks.	Applying
C321.5	Create and deploy secure, usable database driven web applications using PHP and RUBY.	Applying

CO No.	Course Name: Distributed Systems	Taxonomy Level
After successful completion of this course students will be able to:		
C322.1	Able to elucidate the foundations and issues of distributed systems.	Understanding
C322.2	Able to illustrate the various synchronization issues and global state for distributed systems.	Understanding
C322.3	Able to illustrate the mutual exclusion and deadlock detection algorithms in distributed systems.	Understanding
C322.4	Able to describe the agreement protocols and fault tolerance mechanisms in distributed systems.	Understanding
C322.5	Able to describe the features of peer-to-peer and distributed shared memory systems.	Understanding

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CO No.	Course Name: Design and Analysis of Algorithms	Taxonomy Level
After successful completion of this course students will be able to:		
C323.1	Describe asymptotic notation used for denoting performance of algorithms.	Understanding
C323.2	Analyze the performance of a given algorithm and denote its time complexity using the asymptotic notation for recursive and non-recursive algorithms.	Applying
C323.3	List and describe various algorithmic approaches.	Understanding
C323.4	Solve problems using divide and conquer, greedy, dynamic programming, back tracking and branch and bound algorithmic approaches.	Applying
C323.5	Apply graph search algorithms to real world problems.	Applying
C323.6	Demonstrate and understanding of NP-Completeness theory and lower bound theory.	Analyzing

CO No.	Course Name: Managerial Economics and Financial Accountancy	Taxonomy Level
After successful completion of this course students will be able to:		
C324.1	Relate economic principles with business practices for getting successful outcomes.	Remembering
C324.2	Make use of cost analysis to find Break Even Point (BEP) of an enterprise to avoid losses.	Applying
C324.3	Compare the price-out determinations under different competitions in the markets and pricing strategies.	Understanding
C324.4	Interpret different forms of business organizations and the new economic environment in the real business.	Understanding
C324.5	Make use of the financial statements and relevant ratios for evaluating company's financial performance to make optimal decisions.	Applying

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CO No.	Course Name: Principles of Communications	Taxonomy Level
After successful completion of this course students will be able to:		
C325.1	Differentiate various analog modulation and de-modulation schemes and their spectral characteristics.	Analyzing
C325.2	Analyze noise characteristics of various analog modulation methods.	Analyzing
C325.3	Analyze various functional blocks of radio transmitters and receivers.	Analyzing
C325.4	Design simple analog systems for various modulation techniques.	Applying

CO No.	Course Name: Web Technologies Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C326.1	Analyze and apply the role of languages like HTML, CSS, XML.	Applying
C326.2	Review JavaScript, PHP, and protocols in the workings of the web and web applications.	Understanding
C326.3	Apply Web Application Terminologies, Internet Tools, E – Commerce and other web services.	Applying
C326.4	Develop and Analyze dynamic Web Applications using PHP &MySQL.	Creating
C326.5	Install & Use Frameworks.	Applying

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Department of Computer Science and Engineering

Year: IV   **Regulation: R16**   **Academic Year: 2021-22**   **Sem: I**

CO No.	Subject: Cryptography and Network Security	Taxonomy Level
After successful completion of this course students will be able to:		
C411.1	Able to understand the basic security goals of cryptography and security networks.	Understanding
C411.2	Able to understand issues in symmetric key and cryptography.	Understanding
C411.3	Able to think and analyze the different techniques in asymmetric encryption.	Analyzing
C411.4	Able to understand the basics of data integrity and digital signature key management.	Understanding
C411.5	Apply the knowledge of data integrity.	Applying
C411.6	Able to learn management of key functions.	Understanding

CO No.	Subject: Software Architecture & Design Patterns	Taxonomy Level
After successful completion of this course students will be able to:		
C412.1	To understand interrelationships, principles and guidelines governing architecture and evolution over time.	Understanding
C412.2	To understand various architectural styles of software systems.	Understanding
C412.3	To understand design patterns and their underlying object-oriented concepts.	Understanding
C412.4	To understand implementation of design patterns and providing solutions to real-world software design problems.	Understanding
C412.5	To understand patterns with each other and understanding the consequences of combining patterns on the overall quality of a system.	Understanding
C412.6	Implement basic applications of SADP.	Applying

CO No.	Subject: Web Technologies	Taxonomy Level
After successful completion of this course students will be able to:		
C413.1	Analyze a web page and identify its elements and attributes.	Analyzing
C413.2	Create web pages using XHTML and Cascading Style Sheets.	Applying
C413.3	Build Dynamic Web pages.	Understanding
C413.4	Write simple client-side scripts using AJAX.	Applying
C413.5	Build web applications using PHP.	Applying
C413.6	Programming through PERL and Ruby.	Applying

Department of Computer Science and Engineering

CO No.	Subject: Managerial Economics and Financial Analysis	Taxonomy Level
After successful completion of this course students will be able to:		
C414.1	Relate economic principles with business practices for getting successful outcomes.	Remembering
C414.2	Make use of cost analysis to find Break Even Point (BEP) of an enterprise in order to avoid losses.	Applying
C414.3	Compare the Price -- out determinations under different competitions in the markets and pricing strategies.	Understanding
C414.4	Interpret different forms of business organizations and the new economic environment in the real business.	Understanding
C414.5	Make use of the financial statements and relevant ratios for evaluating company's financial performance to make optimal decisions.	Applying
C414.6	Illustrate different capital budgeting methods to estimate the best investment decision in business practices.	Understanding

CO No.	Subject: Mobile Computing	Taxonomy Level
After successful completion of this course students will be able to:		
C415.1	Able to understand the basics of mobile computing, radio interface, GSM & GPRS.	Understanding
C415.2	Able to understand issues in MAC Layer.	Understanding
C415.3	Able to think and analysis the different techniques in Network Layer.	Analyzing
C415.4	Able to think and analyze the different techniques mobile transport layer and data base issues.	Analyzing
C415.5	Able to understand the basics of Data Delivery Mechanism in Mobile computing.	Understanding
C415.6	Able to think and develop new mobile applications.	Applying

Department of Computer Science and Engineering

CO No.	Subject: Cloud Computing	Taxonomy Level
After successful completion of this course students will be able to:		
C416.1	Interpret the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing.	Understanding
C416.2	Build the levels of virtualization, structure, memory and I/O devices and data centres.	Understanding
C416.3	Apply the architecture and infrastructure of cloud computing, including Saas, PaaS,IaaS, public cloud, private cloud and hybrid cloud to different problems.	Applying
C416.4	Analyze case studies to derive the best practice model to apply when developing and deploying cloud-based applications.	Analyzing
C416.5	Apply the resource management skills in theory and applications related to cloud computing.	Applying
C416.6	Explain the storage technologies in File system in Cloud environment.	Understanding

CO No.	Subject: Software Architecture & Design Patterns Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C417.1	Able to understand interrelationships, principles and guidelines governing architecture and evolution over time.	Understanding
C417.2	Able to analyze the architecture and build the system from the components.	Analyzing
C417.3	Able to prepare creational patterns that deal with object creation mechanisms, trying to create objects in a manner suitable to the situation.	Applying
C417.4	Able to prepare structural patterns that ease the design by identifying a simple way to realize relationships among entities.	Understanding
C417.5	Able to learn behavioral patterns that identify common communication patterns between objects and realize these patterns.	Understanding
C417.6	Able to classify various case studies.	Understanding

Department of Computer Science and Engineering

CO No.	Subject: Web Technologies Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C418.1	Students will be able to develop static web sites using XHTML and Java Scripts.	Applying
C418.2	Students can implement XML and XSLT for web applications.	Applying
C418.3	Students can develop Dynamic web content using Java Servlets and JSP.	Applying
C418.4	Student will be to develop JDBC connections and implement a complete Dynamic Web Application.	Applying

Coordinator

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Department of Computer Science and Engineering

Year: IV   **Regulation: R16**   **Academic Year: 2021-22**   **Sem: II**

CO No.	Subject: Distributed Systems	Taxonomy Level
After successful completion of this course students will be able to:		
C421.1	Explain the building blocks of distributed system.	Understanding
C421.2	Implement the inter process communication using java programs.	Understanding
C421.3	Implement the RMI communication for distributed environment.	Understanding
C421.4	Explain the OS supports, process and threading.	Understanding
C421.5	Explain the distributed file system.	Understanding
C421.6	Explain distributed deadlock transaction and replication.	Understanding

CO No.	Subject: Management Science	Taxonomy Level
After successful completion of this course students will be able to:		
C422.1	Understand the basic concepts of management science.	Understanding
C422.2	Distinguish all functional management.	Remembering
C422.3	Analyze operations management.	Analyzing
C422.4	Analyze real project management and solve PERT and CPM.	Analyzing
C422.5	Understand the management strategic management.	Understanding
C422.6	Discuss contemporary management practices.	Understanding

CO No.	Subject: Machine Learning	Taxonomy Level
After successful completion of this course students will be able to:		
C423.1	Recognize the characteristics of machine learning that make it useful to real-world problems.	Applying
C423.2	Characterize machine learning algorithms as supervised, semi-supervised, and unsupervised.	Understanding
C423.3	Choose Tree models in Machine Learning.	Applying
C423.4	Choose Linear Models in Machine Learning Like classification, Clustering Algorithms.	Applying
C423.5	Schedule Probabilistic models for categorical data in Machine Learning like regularized regression algorithms.	Applying
C423.6	Describe the concept behind neural networks for learning non-linear functions.	Understanding

Department of Computer Science and Engineering

CO No.	Subject: Concurrent and Parallel Programming	Taxonomy Level
After successful completion of this course students will be able to:		
C424.1	Recall the concurrent and sequential programming constructs.	Remembering
C424.2	Interpret about processes, threads and the issues of concurrent programming and current trends.	Analyzing
C424.3	Experiment with parallel algorithms such as sorting, ranking, searching and traversals.	Applying
C424.4	Interpret parallel programming paradigms using GPU, P threads and STM to develop applications.	Analyzing
C424.5	Implement multi-threaded programs supported by cilk++ that runs across heterogeneous platforms.	Applying
C424.6	Implement C++ massive parallel applications using C++ AMP and GPU.	Applying

CO No.	Subject: Project	Taxonomy Level
After successful completion of this course students will be able to:		
C425.1	Summarize the contemporary scholarly literature, activities, and explored tools for hands-on in the respective project area.	Understanding
C425.2	List out the specific requirements to develop the workable solution for the identified computing problem.	Analyzing
C425.3	Develop a workable computing solution for the identified problem.	Applying
C425.4	Evaluate the performance of the developed solution.	Evaluating
C425.5	Compile the results and findings of the project in written and verbal formats.	Creating
C425.6	Summarize the contemporary scholarly literature, activities, and explored tools for hands-on in the respective project area.	Understanding

Coordinator

Department of CSE – Data Science

Year: I   **Regulation: R20**   **Academic Year: 2021-22**   **Sem: I**

CO No.	Course Name: Communicative English	Taxonomy Level
	After successful completion of this course students will be able to:	
C111.1	Understand social or transactional dialogues spoken by native speakers of English and identify the context	Understanding
C111.2	Understand social or transactional dialogues spoken by native speakers of English and identify the context	Understanding
C111.3	Understand social or transactional dialogues spoken by native speakers of English and identify the context	Understanding
C111.4	Understand social or transactional dialogues spoken by native speakers of English and identify the context	Understanding
C111.5	Understand social or transactional dialogues spoken by native speakers of English and identify the context	Understanding

CO No.	Course Name: Mathematics-I	Taxonomy Level
	After successful completion of this course students will be able to:	
C112.1	Utilize mean value theorems to real life problems	Understanding
C112.2	Solve the differential equations related to various engineering fields	Applying
C112.3	Familiarize with functions of several variables which is useful in optimization	Understanding
C112.4	Apply double integration techniques in evaluating areas bounded by region	Applying
C112.5	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3- dimensional coordinate systems	Understanding

Department of CSE – Data Science

CO No.	Course Name: Applied Chemistry	Taxonomy Level
After successful completion of this course students will be able to:		
C113.1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.	Understanding
C113.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion.	Understanding
C113.3	Synthesize nano materials for modern advances of engineering technology. and Summarize the preparation of semiconductors; analyze the applications of liquid crystals and superconductors.	Applying
C113.4	Analyze the principles of different analytical instruments and their applications. and Design models for energy by different natural sources.	Understanding
C113.5	Obtain the knowledge of computational chemistry and molecular machines	Understanding

CO No.	Course Name: Programming for problem solving using C	Taxonomy Level
After successful completion of this course students will be able to:		
C114.1	To write algorithms and to draw flowcharts for solving	Understanding
C114.2	To convert flowcharts/algorithms to C Programs, compile and debug programs	Understanding
C114.3	To use different operators, data types and write programs that use two-way/ multi-way selection	Applying
C114.4	To select the best loop construct for a given problem	Applying
C114.5	To design and implement programs to analyze the different pointer applications	Applying
C114.6	To decompose a problem into functions and to develop modular reusable code	Applying
C114.7	To apply File I/O operations	Applying

Department of CSE – Data Science

CO No.	Course Name: Computer Engineering Workshop	Taxonomy Level
After successful completion of this course students will be able to:		
C115.1	Assemble and disassemble components of a PC	Understanding
C115.2	Construct a fully functional virtual machine, Summarize various Linux operating system commands	Applying
C115.3	Recognize characters & extract text from scanned images, Create audio files and podcasts	Understanding

CO No.	Course Name: Communicative English Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C116.1	A student analyzing vowels, consonants, pronunciation, phonetic transcription, and common errors gains enhanced communication skills, linguistic awareness, foreign language proficiency, self-correction ability, and improved confidence in public speaking, contributing to academic and professional success.	Applying
C116.2	Student mastering word stress in di-syllabic and poly-syllabic words, recognizing weak and strong forms, and understanding contrastive stress (homographs) achieves refined pronunciation, improved spoken fluency, and heightened awareness of nuanced stress patterns in English.	Understanding
C116.3	Student comprehending stress in compound words, mastering rhythm, intonation, and accent neutralization develops advanced oral proficiency, clear communication skills, and the ability to convey meaning effectively in diverse linguistic contexts.	Applying
C116.4	By listening to short audio texts and adeptly identifying context and specific information to answer questions orally, students develop strong listening comprehension skills, honing their ability to extract and articulate relevant details effectively.	Applying
C116.5	Engaging in newspaper reading to comprehend and identify key terms and structures, students acquire the skills necessary for extracting pertinent information and constructing well-informed reports.	Applying

Department of CSE – Data Science

CO No.	Course Name: Applied Chemistry Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C117.1	The students entering into the professional course have practically very little exposure to lab classes.	Understanding
C117.2	The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis	Understanding
C117.3	student is exposed to different methods of chemical analysis and use of some commonly employed instruments. They thus acquire some experimental skills..	Applying

CO No.	Course Name: PPSC Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C118.1	Gains Knowledge on various concepts of a C language.	Applying
C118.2	Able to draw flowcharts and write algorithms.	Understanding
C118.3	Able design and development of C problem solving skills.	Understanding
C118.3	Able to design and develop modular programming skills.	Applying
C118.4	Able to trace and debug a program.	Creating

Coordinator

Department of CSE – Data Science

Year: I   **Regulation: R20**   **Academic Year: 2021-22**   **Sem: II**

CO No.	Course Name: Mathematics-II	Taxonomy Level
	After successful completion of this course students will be able to:	
C121.1	Develop the use of matrix algebra techniques that is needed by engineers for practical applications	Understanding
C121.2	Solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel	Understanding
C121.3	Evaluate the approximate roots of polynomial and transcendental equations by different algorithms	Understanding
C121.4	Apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals	Understanding
C121.5	Apply numerical integral techniques to different Engineering problems	Understanding
C121.6	Apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations	Applying

CO No.	Course Name: Applied Physics	Taxonomy Level
	After successful completion of this course students will be able to:	
C112.1	Understanding coherent sources, their conditions for sustained interference, coupled with an in-depth analysis of interference vs. diffraction and illustration of light polarization with applications	Understanding
C112.2	Explore radiation emission types and identify fiber applications in medical, communication, and diverse fields ; Apply fiber optic concepts across various domains .	Applying
C112.3	Explain the significance of wave function; Identify the role of classical and quantum free electron theory in the study of electrical conductivity; Classify the energy bands of solids	Understanding
C112.4	plain the applications of dielectric and magnetic materials ;Apply the concept of magnetism to magnetic devices.	Applying
C112.5	Identify the type of semiconductor using Hall effect and Identify applications of semiconductors in electronic devices. Meissner's effect, BCS theory & Josephson effect in super conductors .	Understanding

Department of CSE – Data Science

CO No.	Course Name: Digital Logic Design	Taxonomy Level
After successful completion of this course students will be able to:		
C123.1	An ability to define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation	Understanding
C123.2	An ability to understand the different switching algebra theorems and apply them for logic functions.	Understanding
C123.3	An ability to define the Karnaugh map for a few variables and perform an algorithmic reduction of logic functions.	Applying
C123.4	Students will be able to design various logic gates starting from simple ordinary gates to complex programmable logic devices & arrays.	Understanding
C123.5	Students will be able to design various sequential circuits starting from flip-flop to registers and counters.	Understanding

CO No.	Course Name: Python Programming	Taxonomy Level
After successful completion of this course students will be able to:		
C124.1	Develop essential programming skills in computer programming concepts like data types, containers.	Understanding
C124.2	Apply the basics of programming in the Python language.	Understanding
C124.3	Solve coding tasks related conditional execution, loops.	Applying
C124.4	Solve coding tasks related to the fundamental notions and techniques used in objectoriented programming.	Applying

Department of CSE – Data Science

CO No.	Course Name: Data Structures	Taxonomy Level
	After successful completion of this course students will be able to:	
C125.1	Assemble and disassemble components of a PC	Understanding
C125.2	Discuss the computational efficiency of the principal algorithms for sorting & searching	Applying
C125.3	Use arrays, records, linked structures, stacks, queues, trees, and Graphs in writing programs	Understanding
C125.4	Demonstrate different methods for traversing trees	Understanding

CO No.	Course Name: Applied Physics Lab	Taxonomy Level
	After successful completion of this course students will be able to:	
C126.1	Mastery in experimental techniques: Thin object thickness determination using the wedge method and calculating the radius of curvature with Newton's rings for a plano-convex lens.	Applying
C126.2	Proficiency in optical analysis: Skillful determination of wavelengths in mercury spectrum lines via diffraction grating and finding the dispersive power of a prism.	Understanding
C126.3	Understanding electrical properties: Acquiring knowledge of dielectric constant through charging and discharging methods, and estimating Planck's constant using the photoelectric effect.	Applying
C126.4	Expertise in material characterization: Understanding B-H curve variations through magnetizing magnetic materials and mastering the four-probe method for semiconductor resistivity determination.	Understanding
C126.5	Optical measurement skills: Expertise in determining the numerical aperture and acceptance angle of an optical fiber, and proficiently measuring laser light wavelength using a diffraction grating.	Understanding

Department of CSE – Data Science

CO No.	Course Name: Python Programming Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C127.1	Write, Test and Debug Python Programs.	Understanding
C127.2	Use Conditionals and Loops for Python Programs.	Understanding
C127.3	Use functions and represent Compound data using Lists, Tuples and Dictionaries.	Understanding
C127.3	Use various applications using python.	Applying

CO No.	Course Name: Data Structures Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C128.1	Use basic data structures such as arrays and linked list.	Applying
C128.2	Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths.	Understanding
C128.3	Use various searching and sorting algorithms.	Understanding

Coordinator

Department of CSE – Data Science

Year: II   **Regulation: R20**   **Academic Year: 2021-22**   **Sem: I**

CO No.	Course Name: Mathematics - III	Taxonomy Level
	After successful completion of this course students will be able to:	
C211.1	Interpret the physical meaning of different operators such as gradient, curl and divergence, estimate the work done against a field.	Applying
C211.2	Apply the LaPlace transform for solving differential equations.	Applying
C211.3	Find or compute the Fourier series of periodic signals and be able to apply integral expressions for the Fourier and inverse Fourier transform to a range of non-periodic waveforms.	Applying
C211.4	Formation of partial differential equation and identify solution methods for first order partial differential equations.	Applying
C211.5	Classify higher order partial differential equations and solve heat flow and wave problems.	Applying

CO No.	Course Name: Mathematical Foundation for Computer Science	Taxonomy Level
	After successful completion of this course students will be able to:	
C212.1	Demonstrate skills in solving mathematical problems.	Understanding
C212.2	Comprehend mathematical principles and logic.	Understanding
C212.3	Demonstrate knowledge of mathematical modeling and proficiency in using mathematical software.	Understanding
C212.4	Manipulate and analyze data numerically and /or graphically using appropriate software.	Applying
C212.5	Communicate effectively mathematical ideas/results verbally or in writing.	Understanding

Department of CSE – Data Science

CO No.	Course Name: Fundamentals of Data Science	Taxonomy Level
After successful completion of this course students will be able to:		
C213.1	Apply principles of NumPy and Pandas to the analysis of data. x Make use of various file formats in loading and storage of data. x Identify and apply the need and importance of pre	Understanding
C213.2	Apply principles of NumPy and Pandas to the analysis of data. x Make use of various file formats in loading and storage of data. x Identify and apply the need and importance of pre	Understanding
C213.3	Apply principles of NumPy and Pandas to the analysis of data. x Make use of various file formats in loading and storage of data. x Identify and apply the need and importance of pre	Applying
C213.4	Apply principles of NumPy and Pandas to the analysis of data. x Make use of various file formats in loading and storage of data. x Identify and apply the need and importance of pre	Understanding

CO No.	Course Name: Java Programming	Taxonomy Level
After successful completion of this course students will be able to:		
C214.1	Able to realize the concept of OOP and Java Programming Constructs.	Understanding
C214.2	Able to describe the basic concepts of Java such as operators, classes, objects, inheritance, packages, enumerations and various keywords.	Understanding
C214.3	Apply the concept of exception handling and input or output operations.	Applying
C214.4	Able to design the applications of Java and Java Applet.	Applying
C214.5	Able to analyze and design the concept of event handling and abstract window tool kit.	Applying

Department of CSE – Data Science

CO No.	Course Name: Database Management Systems	Taxonomy Level
After successful completion of this course students will be able to:		
C215.1	Describe a relational database and object-oriented database.	Understanding
C215.2	Create, maintain and manipulate a relational database using SQL.	Applying
C215.3	Describe ER model and normalization for database design.	Understanding
C215.4	Examine issues in data storage and query processing and can formulate appropriate solutions.	Understanding
C215.5	Outline the role and issues in management of data such as efficiency, privacy, security, ethical responsibility, and strategic advantage.	Applying

CO NO.	Course Name: FDS Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C216.1	Perform various operations on numpy arrays	Applying
C216.2	Importing data from different file formats using pandas	Understanding
C216.3	Draw different types of charts using matplotlib	Applying

CO No.	Course Name: Java Programming	Taxonomy Level
After successful completion of this course students will be able to:		
C217.1	Evaluate default value of all primitive data type, Operations, Expressions, Control flow, Strings.	Understanding
C217.2	Determine Class, Objects, Methods, Inheritance, Exception, Runtime Polymorphism, User defined Exception handling mechanism.	Understanding
C217.3	Illustrating simple inheritance, multi-level inheritance, Exception handling mechanism.	Applying
C217.4	Construct Threads, Event Handling, implement packages, developing applets.	Applying
C217.5	Evaluate default value of all primitive data type, Operations, Expressions, Control flow, Strings.	Understanding

Department of CSE – Data Science

CO No.	Course Name: Database Management Systems Lab	Taxonomy Level
	After successful completion of this course students will be able to:	
C218.1	Utilize SQL to execute queries for creating database and performing data manipulation operations.	Applying
C218.2	Examine integrity constraints to build efficient databases.	Understanding
C218.3	Apply Queries using Advanced Concepts of SQL.	Applying
C218.4	Build PL/SQL programs including stored procedures, functions, cursors and triggers.	Creating

Coordinator

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Department of CSE – Data Science

Year: II   **Regulation: R20**   **Academic Year: 2021-22**   **Sem: II**

CO No.	Course Name: Probability & Statistics	Taxonomy Level
After successful completion of this course students will be able to:		
C221.1	Compare various discrete probability distributions.	Understanding
C221.2	Compare various continuous probability distributions.	Understanding
C221.3	Find the confidence interval for mean of a population.	Remembering
C221.4	Make use of test of hypothesis for the null hypothesis concerning mean and proportions and perform ANOVA for one way and two-way classification.	Applying
C221.5	Apply correlation and regression lines of two variables for real life problems.	Applying

CO No.	Course Name: Computer Organization	Taxonomy Level
After successful completion of this course students will be able to:		
C222.1	Illustrate the importance of Data Warehousing, Data Mining and its functionalities and Design schema for real time data warehousing applications.	Understanding
C222.2	Demonstrate on various Data Preprocessing Techniques viz. data cleaning, data integration, data transformation and data reduction and Process raw data to make it suitable for various data mining algorithms.	Applying
C222.3	Choose appropriate classification technique to perform classification, model building and evaluation.	Applying
C222.4	Make use of association rule mining techniques viz. Apriori and FP Growth algorithms and analyze on frequent item sets generation.	Analyzing
C222.5	Identify and apply various clustering algorithm (with open-source tools), interpret, evaluate and report the result.	Evaluating

Department of CSE – Data Science

CO No.	Course Name: Data Warehousing and Data Mining	Taxonomy Level
	After successful completion of this course students will be able to:	
C223.1	Classify machines by their power to recognize languages.	Understanding
C223.2	Summarize language classes and grammars relationship among them with the help of Chomsky Hierarchy.	Understanding
C223.3	Employ finite state machines to solve problems in computing.	Applying
C223.4	Illustrate deterministic and non-deterministic machines.	Understanding
C223.5	Quote the hierarchy of problems arising in the computer science.	Applying

CO No.	Course Name: Formal Languages and Automata Theory	Taxonomy Level
	After successful completion of this course students will be able to:	
C224.1	Classify machines by their power to recognize languages.	Understanding
C224.2	Summarize language classes and grammars relationship among them with the help of Chomsky Hierarchy.	Understanding
C224.3	Employ finite state machines to solve problems in computing.	Applying
C224.4	Illustrate deterministic and non-deterministic machines.	Understanding
C224.5	Quote the hierarchy of problems arising in the computer science.	Applying

CO No.	Course Name: Managerial Economics and Financial Accountancy	Taxonomy Level
	After successful completion of this course students will be able to:	
C225.1	Equipped with the knowledge of estimating the demand and demand elasticities for a product and relate economic principles with business practices for getting successful outcomes.	Remembering
C225.2	The knowledge of understanding of the input-output-cost relationships and estimation of the least cost combination of inputs and also make use of cost analysis to find Break Even Point (BEP) of an enterprise in order to avoid losses.	Understanding
C225.3	Understand the nature of different markets and price output determination under various market conditions and also to have the knowledge of different business units.	Understanding
C225.4	Prepare financial statements and the usage of various accounting tools for analysis.	Applying
C225.5	Evaluate various investment project proposals with the help of capital budgeting techniques for decision making.	Evaluating

Department of CSE – Data Science

CO No.	Course Name: R Programming Lab	Taxonomy Level
	After successful completion of this course students will be able to:	
C226.1	Access online resources for R and import new function packages into the R workspace.	Understanding
C226.2	Import, review, manipulate and summarize data-sets in R.	Understanding
C226.3	Explore data-sets to create testable hypotheses and identify appropriate statistical tests.	Understanding
C226.4	Perform appropriate statistical tests using R.	Applying
C226.5	Create and edit visualizations with R.	Creating

CO No.	Course Name: Data Warehousing and Data Mining Lab	Taxonomy Level
	After successful completion of this course students will be able to:	
C227.1	Design a data mart or data warehouse for any organization.	Understanding
C227.2	Extract knowledge using data mining techniques and enlist various algorithms used in information analysis of Data Mining Techniques.	Applying
C227.3	Demonstrate the working of algorithms for data mining tasks such as association rule mining, classification for realistic data.	Applying
C227.4	Implement and Analyze on knowledge flow application on data sets and Apply the suitable visualization techniques to output analytical results.	Applying
C227.5	Design a data mart or data warehouse for any organization.	Understanding

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Department of CSE – Data Science

CO No.	Course Name: WAD Lab	Taxonomy Level
After successful completion of this course students will be able to:		
C228.1	Develop of the major Web application tier- Client-side development.	Applying
C228.2	Participate in the active development of cross-browser applications through JavaScript.	Creating
C228.3	Develop JavaScript applications that transition between states.	Applying

Coordinator

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