DEPT. OF COMPUTER SCIENCE AND ENGINEERING

R22 Regulation - COURSE OUTCOMES

S. No	CLASS	REGULATION	Subject	Course Code	CO's	Course Oucomes
1	I/I	R-22	Matrices and Calculus	MA101BS	CO-1	Apply the matrix representation of a set of linear equations and to analyse the solution of the system of equations
					CO-2	Able to use the Eigen values and Eigen vectors. Reduce the quadratic form to canonical form using orthogonal transformations
					CO-3	Analyze the nature of sequence and series.
					CO-4	Solve the applications on the mean value theorems. Evaluate the improper integrals using Beta and Gamma functions
					CO-5	Estimate the extreme values of functions of two variables with/ without constraints.
2	I/I	R-22	Engineering Chemistry	CH102BS	CO-1	Describe The knowledge of atomic, molecular and electronic changes, band theory related to conductivity
					CO-2	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost
					CO-3	Apply The required principles and concepts of electrochemistry, corrosion and inunderstanding the problem of water and its treatments. electron chemistry
					CO-4	Analyse The knowledge of confrontational and confirmation analysis of molecules and reaction mechanisms
					CO-5	Explain concepts on basic spectroscopy and application to medical and other fields
3	I/I	R-22	Programming For Problem Solving	CS103ES	CO-1	Able to formulate the algorithm for simple problem and able to translate given algorithm to working and correct program
					CO-2	Demonstrate the use of arrays,structure and pointers
					CO-3	Able to create, read and write to and append to from simple text and binary files
					CO-4	understand about the function and dynamic memory allocation and deal location
					CO-5	Apply different searching and sorting technique on array elements
4	I/I	R-22	Basic Electrical Engineering	EE104ES	CO-1	Analyze and solve electrical circuits using network theorems.
					CO-2	construct and analyze simple AC circuits
					CO-3	Analyze single phase and three phase transformer
					CO-4	Construct and analyze the working principles of Electrical Machines
					CO-5	Investigate the knowledge on batteries and Protective Equipment's.
5	I/I	R-22	Computer Aided Engineering Graphics	ME105ES	CO-1	Apply computer aided drafting tools to create 2D and 3D objects
					CO-2	sketch conics and different types of solids
					CO-3	Apply the knowledge of Sectional views of solids and Development of surfaces of solids
					CO-4	Demonstrate Read and interpret engineering drawings
					CO-5	Conversion of orthographic projection into isometric view and vice versa manually and by using computer aided drafting
6	I/I	R-22	Elements Of Computer Science & Engineering	CS106ES	CO-1	Know the working principles of functional units of a basic Computer
					CO-2	Understand program development, the use of data structures and algorithms in problem solvSing.
					CO-3	Know the need and types of operating system, database systems.
					CO-4	Understand the significance of networks, internet, WWW and cyber security.
					CO-5	Understand Autonomous systems, the application of artificial intelligence.

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7	I/I	R-22	Engineering Chemistry Lab	CH107BS	CO-1	Apply the method like hardness of water and rate of corrosion of mild steel in various conditions.
					CO-2	Students are analyzing the various water samples with different methods and various water treatment methods for industrial usages.
					CO-3	Students are able to able to perform methods such as conductometry, potentiometry and pH metry in order to find out the concentrations or equivalence points of acids and bases
					CO-4	Students are able to create polymers like Bakelite and nylon-6.
					CO-5	Students are able to evaluate the saponification value, surface tension and viscosity of lubricant oils
8	I/I	R-22	Programming For Problem Solving Lab	CS108ES	CO-1	Translate the given algorithm to a working and correct program
					CO-2	Identify and correct logical errors encountered during execution
					CO-3	Manipulate data with arrays strings and structures
					CO-4	creatre read and write to and from simple text and binary files
					CO-5	Modularize the code with functions so that they can be reused
9	I/I	R-22	Basic Electrical Engineering Lab	EE109ES	CO-1	Remember an exposure to basic electrical laws.
					CO-2	Understand the response of different types of electrical circuits to different excitations.
					CO-3	Evaluate the measurement, calculation and relation between the basic electrical parameters
					CO-4	Analyze the basic characteristics of transformers and its connections
					CO-5	Differenciate the performance of different machines using different methods
10	I/II	R-22	Ordinary Differential Equations and Vector Calculus	MA201BS	CO-1	Identify whether the given differential equation of first order is exact or not.
					CO-2	Solve higher differential equation with constant coefficients
					CO-3	Apply the concept to find ordinary differential equations using Laplace transforms techniques
					CO-4	Explain gredients, potential functions, directional derivatives of functions of several variables.
					CO-5	Evaluate the line, surface and volume integrals and converting them from one to another .
11	I/II	R-22	Applied Physics	PH202BS	CO-1	Apply the fundamental concepts on Quantum behavior of matter in its microstate.
					CO-2	Understand the of fundamentals of Semiconductor Physics, Optoelectronics which evaluate the students to apply to various systems like communication, solar cell, photocell etc.,
					CO-3	Analyze the principle, working of various Laser systems and light propagation through Optical Fibers.
					CO-4	Design, Analyze Characterize, and study the properties of materials and to prepare new materials for various engineering applications.
					CO-5	Evaluate the Laws of Electromagnetism and get an exposure on Magnetic and Dielectric materials.
12	I/II	R-22	Engineering Workshop	ME105ES	CO-1	Able to Study and practice on machine tools and their operations
					CO-2	Analyze manufacturing of components using workshop trades including pluming, fitting, carpentry, foundry, house wiring and welding.
					CO-3	Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling.
					CO-4	Apply basic electrical engineering knowledge for house wiring practice.
					CO-5	Ability to design and model different Prototypes in the Carpentry Trade Such as cross Lap Joint and Dovetail Joint.
13	I/II	R-22	English For Skill Enhancement	En204HS	CO-1	Use English Language effectively in spoken and written forms.
					CO-2	Intrupt the given text sand respond appropriately.
					CO-3	Demonstrate confidently in various contexts and different cultures.
					CO-4	Execute basic proficiency in English including reading and listening comprehension, writing and speaking skills.
					CO-5	Apply new oral vocabulary words in context to reinforce meaning.
14	I/II	R-22	Electronic Devices and Circuits	EC205ES	CO-1	Acquire the knowledge of various electronic devices and their use on real life.
					CO-2	Know the applications of various devices.
					CO-3	Evaluate the knowledge of special purpose devices and their applications.
					CO-4	To apply knowledge about the role of voltages and capacitors for electronic application
					CO-5	**To explore concept of** Zener Diode **-** Characteristics,

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15	I/II	R-22	Python Programming Laboratory	CS206ES	CO-1	Develop the application specific codes using python.
					CO-2	Understand Strings, Lists, Tuples and Dictionaries in Python
					CO-3	Verify programs using modular approach, file I/O, Python standard library
					CO-4	Implement Digital Systems using Python
					CO-5	Implement program to implement Half Adder, Full Adder
16	I/II	R-22	Applied Physics Laboratory	PH207BS	CO-1	Understand the characteristics of Photo emitters and Photo detectors
					CO-2	Construct RC & LCR circuit in Series and parallel.
					CO-3	Study the magnetic field variation along the axis of the circular coil carrying current.
					CO-4	Understand the working of Optical fiber and find the values of Numerical Aperture and Bending Losses.
					CO-5	Find the value of Energy gap and Hall coefficient of a given semiconductor material.
17	I/II	R-22	English Language and Communication Laboratory	EN208HS	CO-1	student be able to intrupt nuances of English language through audio- visual experience and group activities
					CO-2	Use Speaking skills clearly with the right accent and intonation
					CO-3	Stdent will organize Speaking skills with clarity and confidence which in turn enhances their employ ability skills
					CO-4	Able to Implement Neutralization of accent for intelligibility
					CO-5	Understand and apply knowledge of human communication and language process.
18	I/II	R-22	IT Workshop	CS209ES	CO-1	Perform Hardware troubleshooting
					CO-2	Understand Hardware components and inter dependencies
					CO-3	Safeguard computer systems from viruses/worms
					CO-4	Document/ Presentation preparation
					CO-5	Perform calculations using spreadsheets
19	I/II	R-22	ENVIRONMENTAL SCIENCE	MC210	CO-1	Gain knowledge about environment and ecosystem
					CO-2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.
					CO-3	Gain knowledge about the conservation of biodiversity and its importance.
					CO-4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.
20	II/I	R-22	Digital Electronics	CS301PC	CO-1	Ability to design and analyze combinational logic circuits using various techniques such as Karnaugh maps, Boolean algebra, and truth tables.
					CO-2	Proficiency in designing and analyzing sequential logic circuits, including flip-flops, counters, and registers.
					CO-3	Ability to simulate digital circuits using software tools such as Verilog, VHDL, or simulation software like LTspice, ModelSim, etc.
					CO-4	Understanding various memory technologies (RAM, ROM, etc.), memory organization, and interfacing memory with digital systems.
					CO-5	Understanding signal integrity issues in digital systems, noise margins, and techniques to mitigate noise.
21	II/I	R-22	Data Structures	CS302PC	CO-1	Ability to select the data structures that efficiently model the information in a problem.
					CO-2	Ability to assess efficiency trade-offs among different data structure implementations or combinations.
					CO-3	Implement and know the application of algorithms for sorting and pattern matching.
					CO-4	Design programs using a variety of data structures, including hash tables, binary and general tree structures, search trees, tries, heaps, graphs, and AVL-trees.
					CO-5	Understanding hashing concepts, collision resolution strategies, and applications of hash tables in implementing associative arrays and dictionaries

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22	II/I	R-22	Computer Oriented Statistical Methods	CS303PC	CO-1	Apply the concepts of probability and distributions to case studies.
					CO-2	Formulate and solve problems involving random variables and apply statistical methods for analyzing experimental data.
					CO-3	Apply concept of estimation and testing of hypothesis to case studies.
					CO-4	Correlate the concepts of one unit to the concepts in other units.
					CO-5	Ability to interpret statistical findings accurately and effectively communicate results to non-technical audiences through written reports and presentations.
23	II/I	R-22	Computer Organization and Architecture	CS304PC	CO-1	Demonstrate an understanding of the design of the functional units of a digital computer system.
					CO-2	Evaluate cost performance and design trade-offs in designing and constructing a computer processor including memory.
					CO-3	Design a pipeline for consistent execution of instructions with minimum hazards.
					CO-4	Recognize and manipulate representations of numbers stored in digital computers
					CO-5	Understanding the basic components of a computer system, including the CPU, memory, I/O devices, and bus architecture.
24	II/I	R-22	Object Oriented Programming through Java	CS305PC	CO-1	Demonstrate the behavior of programs involving the basic programming constructs like control structures, constructors, string handling and garbage collection.
					CO-2	Demonstrate the implementation of inheritance (multilevel, hierarchical and multiple) by using extend and implement keywords
					CO-3	Use multithreading concepts to develop inter process communication.
					CO-4	Understand the process of graphical user interface design and implementation using AWT or swings.
					CO-5	Develop applets that interact abundantly with the client environment and deploy on the server.
25	II/I	R-22	Data Structures Lab	CS306PC	CO-1	Ability to develop C programs for computing and real-life applications using basic elements like control statements, arrays, functions, pointers and strings, and data structures like stacks,queues and linked lists.
					CO-2	Ability to Implement searching and sorting algorithms
					CO-3	Proficiency in debugging and testing programs involving data structures and algorithms, identifying and fixing logical errors, boundary cases, and performance issues.
					CO-4	Understanding the time and space complexity of algorithms through practical experimentation and analysis of different data structures and algorithms implemented in the lab.
					CO-5	Ability to apply data structures to solve various computational problems, including sorting, searching, tree traversal, graph algorithms, and dynamic programming.
26	II/I	R-22	Object Oriented Programming through Java Lab	CS307PC	CO-1	Able to write programs for solving real world problems using the java collection framework.
					CO-2	Able to write programs using abstract classes.
					CO-3	Able to write multithreaded programs.
					CO-4	Able to write GUI programs using swing controls in Java.
					CO-5	Ability to design and implement classes and objects to model real-world entities, including defining attributes, methods, constructors, and access modifiers.

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27	II/I	R-22	Data visualization- R Programming/ Power BI	CS308PC	CO-1	Understand How to import data into Tableau.
					CO-2	Understand Tableau concepts of Dimensions and Measures.
					CO-3	Develop Programs and understand how to map Visual Layouts and Graphical Properties.
					CO-4	Create a Dashboard that links multiple visualizations.
					CO-5	Use graphical user interfaces to create Frames for providing solutions to real world
28	II/I	R-22	Gender Sensitization Lab	MC309	CO-1	Students will have developed a better understanding of important issues related to gender in contemporary India.
					CO-2	Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
					CO-3	Students will acquire insight into the gendered division of labor and its relation to politics and economics.
					CO-4	Men and women students and professionals will be better equipped to work and live together as equals.
					CO-5	tudents will develop a sense of appreciation of women in all walks of life.
29	II/II	R-22	Discrete Mathematics	CS401PC	CO-1	Understand and construct precise mathematical proofs
					CO-2	Apply logic and set theory to formulate precise statements
					CO-3	Analyze and solve counting problems on finite and discrete structures
					CO-4	Describe and manipulate sequences
					CO-5	Apply graph theory in solving computing problems
30	II/II	R-22	Business Economics & Financial Analysis	SM402MS	CO-1	The students will understand the various Forms of Business
					CO-2	The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt.
					CO-3	The Students can study the firm's financial position by analysing the Financial Statements of a Company.
					CO-4	The impact of economic variables on the Business.
					CO-5	Understanding macroeconomic indicators such as GDP, inflation, unemployment, interest rates, fiscal policy, and monetary policy, and their impact on business decisions.
31	II/II	R-22	Operating Systems	CS403PC	CO-1	Will be able to control access to a computer and the files that may be shared
					CO-2	Demonstrate the knowledge of the components of computers and their respective roles in
					CO-3	computing.
					CO-4	Ability to recognize and resolve user problems with standard operating environments.
					CO-5	Gain practical knowledge of how programming languages, operating systems, and architectures interact and how to use each effectively.
32	II/II	R-22	Database Management Systems	CS404PC	CO-1	Gain knowledge of fundamentals of DBMS, database design and normal forms
					CO-2	Master the basics of SQL for retrieval and management of data.
					CO-3	Be acquainted with the basics of transaction processing and concurrency control.
					CO-4	Familiarity with database storage structures and access techniques
					CO-5	

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33	II/II	R-22	Software Engineering	CS405PC	CO-1	Ability to translate end-user requirements into system and software requirements, using e.g.UML,
					CO-2	structure the requirements in a Software Requirements Document (SRD).
					CO-3	Identify and apply appropriate software architectures and patterns to carry out high level design of a system and be able to critically compare alternative choices.
					CO-4	Will have experience and/or awareness of testing problems and will be able to develop a simple testing report
					CO-5	Study distributed database systems and the challenges associated with data distribution and replication.
34	II/II	R-22	Operating Systems Lab	CS406PC	CO-1	Simulate and implement operating system concepts such as scheduling, deadlock management, file management and memory management.
					CO-2	Able to implement C programs using Unix system calls
					CO-3	Will work with threads and understand how to create, manage, and synchronize threads in a multi-threaded environment.
					CO-4	Will experiment with different CPU scheduling algorithms, such as round-robin, priority-based, and shortest job first, and analyze their performance.
					CO-5	Perform various file system operations, including file creation, reading, writing, and deletion, while understanding the impact of different file system structures.
35	II/II	R-22	Database Management Systems Lab	CS407PC	CO-1	Design database schema for a given application and apply normalization
					CO-2	Acquire skills in using SQL commands for data definition and data manipulation.
					CO-3	Develop solutions for database applications using procedures, cursors and triggers
					CO-4	Learn how to design and implement databases based on specific requirements, including creating tables, defining relationships, and ensuring data integrity.
					CO-5	Become proficient in using SQL (Structured Query Language) to perform various database operations
36	II/II	R-22	Real-time Research Project/ Societal Related Project	CS408PC	CO-1	Apply his/her knowledge to understand the industrial applications
					CO-2	Observe the process of problem identification its formulation and solution.
					CO-3	Prepare a detailed report on the work carried
					CO-4	Present in front of the evaluation committee and other participants
					CO-5	
37	II/II	R-22	Node JS/ React JS/ Django	CS409PC	CO-1	Build a custom website with HTML, CSS, and Bootstrap and little JavaScript.
					CO-2	Demonstrate Advanced features of JavaScript and learn about JDBC
					CO-3	Develop Server – side implementation using Java technologies like
					CO-4	Develop the server – side implementation using Node JS.
					CO-5	Design a Single Page Application using React.

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38	II/II	R-22	Constitution of India	MC410	CO-1	Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
					CO-2	Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
					CO-3	Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution
					CO-4	Discuss the passage of the Hindu Code Bill of 1956.
					CO-5	