GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY::NELLORE
Department of Computer Science and Engineering
COURSE OUTCOMES
Academic Year: 2022-23

Course Outcomes (IV CSE) I Semester ACY: 2022-23 Regulation :: R19		
INTERNET OF THINGS(19A05701T)		
No	**Course Outcome**	**Taxonomy**
C411.1	Choose the Sensors and Actuators for an IOT application.	Analyse
C411.2	Interpret the design principles that govern connected devices.	Understand
C411.3	Develop simple application using Raspberry pi and arduino.	Apply
C411.4	Evaluate and develop a solution for a given application using APIs	Analyse
C411.5	Build the business model in an IOT application	Understand
C411.6	Interpret the manufacturing techniques	Understand
SOFTWARE TESTING(19A05702T)		
No	**Course Outcome**	**Taxonomy**
C412.1	Understand the basic testing procedures	Understand
C412.2	List transaction flows, data flow testing, their techniques and implementation comments in software testing	Remember
C412.3	Understand domains and interface testing and their testability tips.	Understand
C412.4	develop paths, regular expressions and logic-based testing	Create
C412.5	Design and implement state graph, state testing, good state graph, bad state graph and their testability tips	Create
C412.6	Describe graph matrices, matrix properties and node reduction algorithm	Understand
CLOUD COMPUTING(19A05703a)		
No	**Course Outcome**	**Taxonomy**
C413.1	Understand Cloud Computing characteristics, models and different technologies in cloud Computing	Understand
C413.2	Differentiate various Cloud Computing Services	Apply
C413.3	Identify multiple Cloud Application design methodologies	Remember
C413.4	Apply Python language for accessing different cloud services	Apply
C413.5	Analyze Cloud Application Development in Python	Analyze
C413.6	Compare various Cloud Computing Applications	Analyze
BASICS OF CIVIL ENGINEERING(19A01704b)		
No	**Course Outcome**	**Taxonomy**
C414.1	Identify the traditional materials that are used for building constructions.	Understand
C414.2	Draw the plans of the buildings based on the principles of building planning.	Remember
C414.3	Know the importance of the building bye-laws.	Remember
C414.4	Identify the sources of dampness and its ill effects on buildings and its prevention.	Understand
C414.5	Know the cost-effective construction in mass housing schemes.	Understand
C414.6	Know the importance of surveying in planning of the buildings.	Understand
MANAGEMENT SCIENCE(19A52701b)		
No	**Course Outcome**	**Taxonomy**
C415.1	Explain the basic concepts of management in modern contexts.	Understand
C415.2	Define organization structures and principles.	Analyze
C415.3	Demonstrate production and marketing aspects.	Apply
C415.4	Outline the roles and responsibilities of Human Resource Manager.	Apply

C415.5	Prepare strategies in the modern management.	Create
C415.6	Describe the modern management practices based on the requirement of the projects.	Understand

SOFTWARE TESTING LAB(19A05702P)		
No	**Course Outcome**	**Taxonomy**
C416.1	Demonstrate the basic testing procedures	Understand
C416.2	Describe the bug tracking in testing	Understand
C416.3	Apply testing using Win runner tool	Apply
C416.4	Analyze the Selenium and Bugzilla tools to perform testing	Apply
C416.5	formulate test cases and test suites	Create
C416.6	Construct and test simple programs.	Create

Internet of Things Lab(19A05701P)		
No	**Course Outcome**	**Taxonomy**
C417.1	Choose the Sensors and Actuators for an IOT application.	Remember
C417.2	Develop simple applications using raspberry pi and Arduino.	Apply
C417.3	Select protocols for a specific IOT application	Remember
C417.4	Experiment with embedded boars for creating IOT prototyping	Apply
C417.5	formulate test cases and test suites, Utilize the Cloud platform and APIs for an IOT application	Apply
C417.6	Design a solution for a given IOT application	Create

Industrial Training And Skill Development (19A05705)		
C418.1	Describe tools and technologies encountered during industrial training	Remember
C418.2	Understanding the process of using tools and techniques for solving real time problems	Understand
C418.3	Participate in the real time projects as team member or individual in industrial training.	Apply
C418.4	Applying engineering knowledge and technical skills in real time Project	Apply
C418.5	Develop Communication, Interpersonal and Technical skills needed for placement	Apply
C418.6	Build professional work reports and presentations.	Apply

Course Outcomes (IV CSE) II Semester ACY: 2022-23		Regulation :: R19
DevOps (19A05801a)
No	**Course Outcome**	Apply
C421.1	Apply the Software Development life cycle process for different Software's Development and IT operations.	Apply
C421.2	Illustrate the DevOps Orchestration and DevOps delivery pipeline	Apply
C421.3	Demonstrate the DevOps Technologies and Tool stack implementation for different software projects.	Apply
C421.4	Demonstrate continuous development and deployment, automation of configuration management, inter-team collaboration, and IT service agility.	Analyse
C421.5	Analyze the DevOps Maturity Model and Assessment.	Apply
C421.6	Demonstrate the DevOps in real time projects.	Apply
Disaster Management (19A01802a)
No	**Course Outcome**	**Taxonomy**
C422.1	To know about the natural hazards and its management	Understand
C422.2	To know about the fire hazards and solid waste management	Understand
C422.3	To know about the regulations of building codes and land use planning related to risk and vulnerability	Remember
C422.4	To know about the technological aspects of disaster management	Apply
C422.5	To understand about the factors for disaster reduction	Understand
C422.6	To impart the education related to risk reduction in schools and communities	Apply
Project Work (19A05803)
No	**Course Outcome**	**Taxonomy**
C423.1	Identify the problem of Social/Industrial relevance to be solved	Understand
C423.2	Summarize the existing technology, its merits and demerits used to solve the problem	Analyse
C423.3	Design the appropriate solution using the sophisticated hardware and/or software	CREATE
C423.4	Compare the results of the proposed solution with the existing solution	EVALUATE
C423.5	Demonstrate the project along with the complete documentation report of the project	EVALUATE
C423.6	Show the interpersonal, professional and work with team skills	APPLY

III-CSE I Semester ACY: 2022-23 Regulation ::R20		
Computer Networks(20A05501T)		
No	**Course Outcome**	**Taxonomy**
C311.1	Illustrate Hardware, Software Components, Parameters of a Network, which are used to find efficiency of network.	Analyse
C311.2	Explain Design Issues and Services of Data Link Layer	Understand
C311.3	Apply various Error Detection and Correction Techniques used for data transmission in real time Applications.	Apply
C311.4	Classify routing protocols and analyse how to assign IP addresses for given Network	Analyse
C311.5	Describe Transport Layer Design Issues and Protocols of Transport Layer.	Understand
C311.6	Describe Application Layer Design Issues and Protocols of Application Layer.	Understand
Artificial Intelligence(20A05502T)		
No	**Course Outcome**	**Taxonomy**
C312.1	Design Intelligent Agents.	Create
C312.2	Apply searching techniques for solving a problem.	Apply
C312.3	Develop Natural Language Interface for Machines.	Create
C312.4	Implementing programs that translate from one language to another language.	Apply
C312.5	Explain the techniques that provide robust object recognition in restricted context.	Understand
C312.6	Design mini robots.	Create
Formal Languages and Automata Theory (20A05503)		
No	**Course Outcome**	**Taxonomy**
C313.1	Enumerate the basic properties of deterministic and nondeterministic finite automata and also compare Moore and Mealy Machines.	Remember
C313.2	Interpret the basic concepts of Regular expressions, regular languages and pumping lemma for Regular Languages.	Understand
C313.3	Demonstrate context free grammar for various languages, normal forms and pumping lemma for CFL's	Apply
C313.4	Interpret and design different types of PDA and also explain the relationship among language classes and grammars with the help of Chomsky Hierarchy	Understand
C313.5	Solve the computational model using Turing Machine and variations of Turing machine.	Apply
C313.6	Examine the concepts of decidable and undecidable problems	Apply
Big Data Technologies (20A05504c)		
No	**Course Outcome**	**Taxonomy**
C314.1	Understand the elements of Big Data	Understand
C314.2	Use different technologies to tame Big Data	Apply
C314.3	Using Map Reduce and HBase to process given data	Apply
C314.4	Implementing Map Reduce Program and Customizing Map Reduce Execution	Apply

C314.5	Testing and Debugging Map Reduce Application	Analyze
C314.6	Develop applications using Hive and NoSQL	Apply

3D Printing Technology(20A03505)

No	Course Outcome	Taxonomy
C315.1	Introduction of 3D- printing and various techniques for processing of CAD models for rapid prototyping .	Understand
C315.2	Understand and apply fundamentals of rapid prototyping techniques.	Understand
C315.3	Use appropriate tooling for rapid prototyping process.	Apply
C315.4	Use rapid prototyping techniques for reverse engineering.	Apply
C315.5	Identify various pre-processing, processing and post processing errors in RP processes.	Understand
C315.6	Applications of rapid prototype in different sections.	Apply

Computer Networks Lab (20A05501P)

No	Course Outcome	Taxonomy
C316.1	Explain the different types of networks.	Understand
C316.2	Describe the software and hardware components of a network	Understand
C316.3	Explain the working of networking commands supported by operating system	Understand
C316.4	Design the Network simulator 2/3	Create
C316.5	Develop the use of networking functionality supported by JAVA	Apply
C316.6	Apply with computer networking tools.	Apply

Artificial Intelligence Lab (20A04304P)

No	Course Outcome	Taxonomy
C317.1	Implement searching algorithms for solving a given problem.	Create
C317.2	Build Intelligent Agents and Chatbots.	Apply
C317.3	Develop Natural Language Interface for Machines.	Create
C317.4	Implementing programs that translates from one language to another language.	Apply
C317.5	Design Chatbot and virtual assistant	Create
C317.6	Design mini robots.	Create

Advanced Web Application Development (20A05506)

No	Course Outcome	Taxonomy
C318.1	Install XAMPP/WAMP and Develop a Student Database	Apply
C318.2	Develop dynamic websites using PHP and MySQL	Apply
C318.3	Handle Authentication using Sessions, JWT.	Apply
C318.4	Secure Web applications from common attacks like Injection, XSS.	Apply
C318.5	Integrate Libraries to dynamically generate documents, spreadsheets, PDFs, etc.	Apply
C318.6	Host Websites in traditional web hosting platforms and also Cloud based infrastructure	Apply

Evaluation of Community Service Project(20A05507)

No	Course Outcome	Taxonomy
C319.1	To enhance comprehension of the challenges faced by vulnerable and marginalized segments of society	Understand
C319.2	To initiate team processes with the student groups for societal change.	Analyse
C319.3	To provide students an opportunity to familiarize themselves with urban /rural community they live in.	Create
C319.4	To enable students to engage in the development of the community.	Evaluate

C319.5	To plan activities based on the focused groups.	Evaluate
C319.6	To know the ways of transforming the society through systematic programme implementation	Apply

III-CSE-II SEMESTER	ACY: 2022-23	Regulations::R20

COMPILER DESIGN (20A05601T)

No	Course Outcome	Taxonomy
C321.1	Discuss the major phases of compilers and use the knowledge of the Lex tool.	Understand
C321.2	Develop the parsers and experiment with the knowledge of different parsers design.	Apply
C321.3	Describe intermediate code representations using syntax trees and DAG's as well as use this knowledge to generate intermediate code.	Understand
C321.4	Classify various storage allocation strategies.	Analyze
C321.5	Examine the design issues of code generator and generate machine code from the source code of a language.	Analyze
C321.6	Summarize various optimization techniques and Implement these in dataflow analysis.	Evaluate

MACHINE LEARNING (20A05602T)

No	Course Outcome	Taxonomy
C322.1	Understand machine learning techniques to solve the given problem.	Understand
C322.2	Understand various aspects of model selection and feature engineering.	Understand
C322.3	Solve the classification problems using various machine learning techniques.	Apply
C322.4	Analyse the performance of different regression techniques on various types of data sets.	Analyze
C322.5	Analyse the performance of various clustering techniques to deal with unlabelled data.	Analyze
C322.6	Apply the principle of Apriori algorithm on real-time data sets to find frequent patterns.	Apply

INTERNET OF THINGS(20A05603T)

No	Course Outcome	Taxonomy
C323.1	Interpret the design principles that govern connected devices	Understand
C323.2	Develop simple applications using Raspberry Pi and Arduino.	Apply
C323.3	Analyse various types of M2M communication protocols and IOT architectures.	Analyse
C323.4	Illustrate and develop a solution for a given application using APIs	Understand
C323.5	Distinguish various types of manufacturing techniques and storage models in IOT.	Analyse
C323.6	Demonstrate various IOT solutions using sensors, actuators and devices.	Understand

SOFTWARE TESTING (20A05604A)

No	Course Outcome	Taxonomy

C324.1	Interpret the basic concepts of software testing and its essentials.	Understand
C324.2	Identify Transaction Flows, Transaction Flow Testing Technique and Strategies in Dataflow Testing.	Apply
C324.3	Develop test techniques for domain and interface testing.	Apply
C324.4	Develop paths, regular expressions and logic-based testing.	Apply
C324.5	Analyze the state, implement state graph and state testing,	Analyze
C324.6	Develop graph matrices and Node Reduction Algorithm, Building Tools .	Apply

BASIC VLSI DESIGN (20A04606)

No	Course Outcome	Taxonomy
C325.1	Explain the MOS fabrication flow and Design layers used in the process sequenc	Understand
C325.2	Explain the Basic Electrical Properties of MOS and Bi-CMOS Circuits	Understand
C325.3	Estimate the sheet resistance, square capacitance, propagation delays inverter delays in MOS circuits	Understand
C325.4	Apply the design Rules to draw the Stick diagrams and layout of a given MOS circuits	Apply
C325.5	Analyze the behaviour of static and dynamic logic circuits	Analyze
C325.6	Select the various CAD tools for Design and Simulation in to the Practical aspects and testability.	Analyze

COMPILER DESIGN (20A05601P)

No	Course Outcome	Taxonomy
C326.1	Design and implement fundamental concepts of finite Automata	Apply
C326.2	Design and implement a lexical analyzer for given language	Apply
C326.3	Use LEX and YACC tools for developing a scanner and a parser	Apply
C326.4	Design and implement LL and LR parsers	Apply
C326.5	Design algorithms to perform code optimization in order to improve the performance of program	Apply
C326.6	Design and implement code generation for given expression.	Apply

MACHINE LEARNING (20A05602P)

No	Course Outcome	Taxonomy
C327.1	Understand the Mathematical and statistical prospectives of machine learning algorithms through python programming.	Understand
C327.2	Apply the basics of learning problems with hypothesis and version spaces	Apply

C327.3	Apply appropriate datasets to the classification techniques	Apply
C327.4	Apply clustering techniques to deal with unlabelled data for correct predictions	Apply
C327.5	Use visualization tool to deal with regression-based algorithms.	Apply
C327.6	Experiment End – to – End machine learning systems.	Apply

INTERNET OF THINGS (20A05603P)		
No	**Course Outcome**	**Taxonomy**
C328.1	Choose the Sensors and Actuators for an IOT application	Remember
C328.2	Develop simple applications using raspberry pi and Arduino.	Apply
C328.3	Select protocols for a specific IOT application	Remember
C328.4	Experiment with embedded boars for creating IOT prototyping	Apply
C328.5	Utilize the Cloud platform and APIs for an IOT application	Apply
C328.6	Build a solution for a given IOT application	Apply

SOFT SKILLS (20A52401)		
No	**Course Outcome**	**Taxonomy**
C329.1	Memorize various elements of effective communicative skills	Understand
C329.2	Interpret people at the emotional level through emotional intelligence	Understand
C329.3	Apply critical thinking skills in problem solving	Apply
C329.4	Analyze the needs of an organization for team building	Analyze
C329.5	Judge the situation and take necessary decisions as a leader	Analyze
C329.6	Develop social and work- life skills as well as personal and emotional wee-being	Analyze

INTELLECTUAL PROPERTY RIGHTS AND LAW (20A99601)		
No	**Course Outcome**	**Taxonomy**
C3210.1	Use intellectual property rights for product development	Apply
C3210.2	Illustrate Rights Afforded by Copyright Law	Apply
C3210.3	Illustrate the Patent Infringement and Litigation	Apply
C3210.4	Apply Trade Mark registration process and maintenance	Apply
C3210.5	Demonstrate the trade secret law implantation for developing a product.	Apply
C3210.6	Use the concepts of Cyber Law implantation for developing a product	Apply

II-CSE-I SEMESTER	ACY: 2022-23	Regulations::R20

Discrete Mathematics & Graph Theory (20A54304)

No	Course Outcome	Taxonomy
C211.1	Apply basic logic statements using truth tables and properties of logic and find the PCNF and PDNF	Apply
C211.2	Describe the properties of sets ,functions	Understand
C211.3	Describe the properties of algebraic structures	Understand
C211.4	Apply the fundamental principle of counting and identify the relationship between permutation and combination	Apply
C211.5	Determine the recurrence relation using generating functions	Apply
C211.6	Understand the concepts of graphs and Apply the concepts of functions to identify the isomorphic graphs ,DFS,BFS and spanning trees	Apply

Digital Electronics& Microprocessors(20A04304T)

No	Course Outcome	Taxonomy
C212.1	Differentiate various number systems, binary codes	Understand
C212.2	Solve the Boolean Expressions using Boolean algebra and k-maps.	Apply
C212.3	Implement different combinational and Sequential circuits.	Apply
C212.4	Explain the internal architecture and organization of the 8086 microprocessor.	Understand
C212.5	Demonstrate the assembly level language programming for 8086 and 8051	Apply
C212.6	Describe the architecture, hardware details and memory organization of 8051 microcontroller.	Understand

Advanced Data Structures & Algorithms(20A05301T)

No	Course Outcome	Taxonomy
C213.1	Analyze the complexity of algorithms and apply asymptotic notations.	Analyse
C213.2	Illustrate the concepts of Binary Search Trees, AVL Trees and B Trees	Analyse
C213.3	Illustrate the concepts of Red Black Trees, Splay Trees and Hashing.	Analyse
C213.4	Develop Divide & Conquer , Greedy Method algorithms for various real-time applications. .	Apply
C213.5	Develop dynamic programming and Backtracking algorithms for various real-time applications.	Apply
C213.6	Interpret the concepts of NP-Hard and NP-Complete problems	Analyse

Object Oriented Programming Through Java(20A05302T)

No	Course Outcome	Taxonomy

No	Course Outcome	Taxonomy
C214.1	Understand the syntax, semantics of Java Programming Language and apply object oriented programming principles to real world problems	Understand
C214.2	Apply code reusability through inheritance, packages and interfaces	Apply
C214.3	Develop User defined Exceptions in real world problems	Apply
C214.4	Develop applications by using parallel streams for better performance	Apply
C214.5	Use multithreading and collection framework for real world problems	Apply
C214.6	Build GUI using applets, swings and access the database using JDBC	Apply

Computer Organization(20A05303)

No	Course Outcome	Taxonomy
C215.1	Describe the fundamental organisation of a computer system.	Understand
C215.2	Explain addressing modes, instruction formats and program control statements	Understand
C215.3	Demonstrate Arithmetic Operations on signed and unsigned numbers and design of Control Unit.	Apply
C215.4	Differentiate about types of Memory.	Analyse
C215.5	Describe the basic Concepts of Input/Output devices.	Understand
C215.6	Explain fundamental Concepts of Pipelining and Large Computer System.	Understand

Digital Electronics& Microprocessors Lab (20A04304P)

No	Course Outcome	Taxonomy
C216.1	Verify Logic circuit using basic concepts of Boolean Algebra.	Understand
C216.2	Design any Logic circuit using basic concepts of PLDs.	Evalute
C216.3	Design any Logic circuit using basic concepts of PAL	Create
C216.4	Design any Logic circuit using basic concepts of PLA	Create
C216.5	Implementation of 8086 Microprocessor.	Remember
C216.6	Development of 8051 Microcontroller	Create

Advanced Data Structures and Algorithms Lab (20A05301P)

No	Course Outcome	Taxonomy
C217.1	Appropriately use non-linear data structure operations for a given problem	Apply
C217.2	Implement appropriate sorting/searching technique for solving a given problem	Apply
C217.3	Develop divide and conquer algorithms to solve various computing problems.	Apply
C217.4	Demonstrate different greedy method algorithms to solve problem	Apply
C217.5	Develop Back Tracking algorithms to solve real world problem	Apply

C217.6	Illustrate dynamic programming algorithms for various real-time applications	Apply

Object Oriented Programming Through Java Lab(20A05302P)

No	Course Outcome	Taxonomy
C218.1	Demonstrate the installation and usage of java software	Apply
C218.2	Illustrate the programming constructs in java	Apply
C218.3	Demonstrate the Object oriented concepts in java	Apply
C218.4	Demonstrate the concepts of Exception Handling and Multithreading in java	Apply
C218.5	Illustrate the concept of Files in java	Apply
C218.6	Illustrate the usage of AWT , Swings and JDBC	Apply

Web application Development(20A05304)

No	Course Outcome	Taxonomy
C219.1	Construct web sites with valid HTML, CSS, JavaScript	Apply
C219.2	Create responsive Web designs that work on phones, tablets, or traditional laptops and wide- screen monitors	Apply
C219.3	Develop websites using jQuery to provide interactivity and engaging user experiences	Apply
C219.4	Understand the HTTP & Browser Developer Tools & Developer Tools	Understand
C219.5	Embed Google chart tools in a website for better visualization of data	Apply
C219.6	Design and develop web applications using Content Management Systems like Word Press	Apply

Environmental Science(20A99201)

No	Course Outcome	Taxonomy
C2110.1	Gain the knowledge about environment , natural resources and different techniques involved in its conservation.	Understand
C2110.2	Get the information about different eco-systems and its functions	Understand
C2110.3	Recognize the types of bio-diversity along with values and conservation methods.	Analyse
C2110.4	Gain the knowledge about various environmental pollutions and able to design the environmental friendly process in engineering.	Apply
C2110.5	Gain the knowledge about sustainable development concept and practice it in life, society and Industry.	Apply
C2110.6	Understand the both impacts of population growth on environment and needed measures to protect the environment .	Understand

II-CSE-II SEMESTER	ACY: 2022-23		Regulations::R20

Deterministic & Stochastic Statistical Methods(20A54404)

No	Course Outcome	Taxonomy
C221.1	Apply logical thinking to problem- solving in context	APPLY
C221.2	Employ methods relatedto these concepts in a variety of data science application	Apply
C221.3	Use appropriate tecnology to aid problem solving and data analysis	Apply
C221.4	The bayesian processof inference in probabilistic reasoning system.	Understand
C221.5	Demonstrate skills in unconstrained optimization	Apply
C221.1	Apply logical thinking to problem- solving in context	APPLY

Database Management Systems(20A05401T)

No	Course Outcome	Taxonomy
C222.1	Interpret the basic concepts of Database Management system and Relational Database Model	Understand
C222.2	Apply the concepts of SQL and PL/SQL to real world problems	Apply
C222.3	Design a database using E-R Model	Apply
C222.4	Apply different normal forms to design the database	Apply
C222.5	Interpret the concepts of Query Processing and Optimization	Understand
C222.6	Induct knowledge on transactions and concurrency control techniques	Understand

Operating Systems(20A05402T)

No	Course Outcome	Taxonomy
C223.1	Explain the role of Operating System, its functions and types	Understand
C223.2	Illustrate the concepts of process, Multi processing, Thread and Multi threading.	Apply
C223.3	Compare the performance of various CPU scheduling algorithms	Analyse
C223.4	Outline different ways to handle the deadlocks and process synchronization	Apply
C223.5	Compare and contrast various memory management techniques	Analyse
C223.6	Describe the concepts of File system, I/O management, protection and security	Understand

Software Engineering(20A05403T)

No	Course Outcome	Taxonomy
C224.1	Illustrate the different software process models and able to categorize the types of soft wares	Apply
C224.2	Use the requirements analysis and specification for software development	Apply

C224.3	Sketch Software Design for product implementation.	Apply
C224.4	Apply Coding guidelines for conventional and object oriented programming.	Apply
C224.5	Apply Testing guidelines for conventional and object oriented programming.	Apply
C224.6	Use various non functional requirements for design and development of product or process.	Apply

Managerial Economics & Financial Analysis(20A52301)

No	Course Outcome	Taxonomy
C225.1	Explain the role and responsibilities of a managerial economist in modern business scenario	Understand
C225.2	Applythe demand of a product by using demand forecasting methods.	Apply
C225.3	Calculate the Break Even Point (BEP) with the help of production and cost analysis.	Apply
C225.4	Explain their learnings about competitive markets and business economic environment.	Understand
C225.5	Apply the process of selection of investment alternatives using different appraisal methods.	Apply
C225.6	Examine the process of preparing financial statements to know financial position of the firm.	Analyse

Database Management SystemsLab(20A05401P)

No	Course Outcome	Taxonomy
C226.1	Implement the commands of DDL, DML, DCL, TCL and DQL.	Apply
C226.2	Implement queries involving Joins, Set Operations, Aggregate functions and Strings	Apply
C226.3	Implement programs on PL/SQL	Apply
C226.4	Implement Procedures, Functions, Cursors and Triggers using PL/SQL	Apply
C226.5	Construct E-R Model for different database applications	Apply
C226.6	Implement a Database for real world application	Apply

Operating SystemsLab(20A05402P)

No	Course Outcome	Taxonomy
C227.1	Demonstrate UNIX commands	Apply
C227.2	Illustrate the concepts of process, multiprocessing, thread, and multithreading, shared memory.	Apply
C227.3	Implement interprocess communication between two processes.	Apply
C227.4	Illustrate the concepts of memory management	Apply
C227.5	Implement Bankers Algorithms to Avoid and prevent the Dead Lock	Apply
C227.6	Illustrate the file organization techniques	Apply

GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY::NELLORE
Department of Computer Science and Engineering
COURSE OUTCOMES
Academic Year: 2022-23

Software Engineering Lab(20A05403P)		
No	**Course Outcome**	**Taxonomy**
C228.1	Illustrate the different software process models and able to categorize the types of soft wares	Apply
C228.2	Use the requirements analysis and specification for software development	Apply
C228.3	Sketch Software Design for product implementation	Apply
C228.4	Apply Coding guidelines for conventional and object oriented programming.	Apply
C228.5	Apply Testing guidelines for conventional and object oriented programming.	Apply
C228.6	Use various non functional requirements for design and development of product process.	Apply
Exploratory Data Analysis with R(20A05404)		
No	**Course Outcome**	**Taxonomy**
C229.1	Demonstrate the Installation of R and Plotting data in R	Apply
C229.2	Illustrate the Shape Of Data and Probability Distributions in R	Apply
C229.3	Analyse Exploratory Data Analysis And Testing Hypotheses in R	Analyse
C229.4	Describe Predicting Continuous Variables and Correlation in R	Understand
C229.5	Demonstration on a Statistical Model for a Linear Relationship in R	Apply
C229.6	Apply Type Functions And Statistical Functions In R	Apply
Design Thinking for Innovation (20A99401)		
No	**Course Outcome**	**Taxonomy**
C2110.1	Explain about Design and Process of Product Development.	Understand
C2110.2	Describe about benefits,Principles,innovation and various design ideas	Understand
C2110.3	Identify the Idea generation techniques and methods used for Product development	Remember
C2110.4	Explain the design thinking process in IT and Agile software development.	Understand
C2110.5	Use TILES toolkit and cloud implementation for Design thinking activities in IT.	Apply
C2110.6	Describe about design techniques related to Variety of Software services.	Understand

GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY
Department of Electronics and Communication Engineering

Course Outcomes

Batch: 2022-26   **A.Y: 2022-23**

S. No	Course Outcomes Statement	Taxonomy
Course Outcomes (I Year- I Sem)		
Linear Algebra and Calculus (22A0001T)		
C111.1	Solve the system of linear equations to find the eigen values and eigenvectors	Apply
C111.2	Explain the mean value theorems to analyze the behavior of functions and translate the given function as a series of Taylor's and Maclaurin's with remainders.	Understand
C111.3	Apply the technique of partial differentiation to find the Jacobian and the extreme values of functions of several variables.	Apply
C111.4	Apply the techniques of multiple integrals to find the areas and volumes.	Apply
C111.5	Calculate the values of improper integrals using Beta and Gamma functions.	Understand
Applied Physics (22A0001T)		
C112.1	Describe the importance of Interference, Diffraction and Polarization in the Engineering	Understand
C112.2	Demonstrate the properties of lasers and fiber optics to various applications in science	Understand
C112.3	Explain the fundamental concepts and theory related to Dielectric and Magnetic Materials	Remember
C112.4	Illustrate the functioning of Semiconductors in Electronic Devices	Understand
C112.5	Discuss the principles and theory related to Superconductors and explore their properties	Understand
C112.6	Explain the Electromagnetic wave propagation and its power in Non-conducting medium	Understand
Communicative English (22A0013T)		
C113.1	The Learner will able to speak and write grammatically accurate sentences through applications of principles of English grammar	Apply
C113.2	The Learner acquires the ability to understand the academic text from multiple dimensions employing ethical and logical reasoning based on accurate comprehension	Understand
C113.3	The Learner gains evaluation potential by employing standard reading strategies to grasp the core essence and spirit of the text.	Evaluate
C113.4	The Learner will gain mastery on writing skills through the application of relevant guidelines.	Analyze
C113.5	The Learner imbibes spoken skills through consistent practice of functions English Expressions.	Apply
C Programming & Data Structures (22A0518T)		
C114.1	Interpret the basic concepts of C-programming language	Understand
C114.2	Develop programs using Functions, Pointers, Strings, Structures and Unions	Apply
C114.3	Interpret the basic concept of Data Structures and perform operations on different types of Linked lists	Understand
C114.4	Interpret the concept of Stack and Queue and make use of them in real world problems	Apply
C114.5	Illustrate the concept of Trees and Graphs	Understand
C114.6	Demonstrate programs on Sorting and Searching	Apply

	Engineering Drawing (22A0302T)	
C115.1	Explain the principles of Engineering Graphics and sketch the various curves used.	Understand
C115.2	Draw the Projections of points in different Quadrants.	Understand
C115.3	Draw the projections of lines and planes in auxiliary planes.	Understand
C115.4	Draw the projections of solids in different orientations.	Apply
C115.5	Draw the sectional views of simple solids in different orientations.	Apply
C115.6	Draw the sectional development of simple solids in different orientations.	Apply
	Communicative English Lab (22A0014P)	
C116.1	Analyze the English speech sounds, stress, and intonation for better Listening practice.	Analyze
C116.2	Apply communication skills through various language learning activities.	Apply
C116.3	Evaluate and examine technical comprehensions passages from different dimensions.	Evaluate
C116.4	Application of writing skills through design and preparation of professional Resume & Email.	Apply
C116.5	Build the ability of using language effectively to face interviews and public speaking.	Apply
	Applied Physics Lab (22A0008P)	
C117.1	Determine the radius of a curvature and / or thickness of thin wire using microscope with the help of interference concept	Apply
C117.2	Evaluate the wavelength of various colors of grating and also dispersive power of prism by spectrometer using the principle of diffraction	Analyze
C117.3	Evaluate wavelength of light source and particle size with He-Ne laser using the principle of diffraction Estimate the numerical aperture of a given optical fiber and hence to find its acceptance angle	Apply
C117.4	Estimate the dielectric constant of a given material	Analyze
C117.5	Examine the hysteresis loss of the magnetic material by B- H curve and Estimate the magnetic field of a circular coil carrying current along the axis	Apply
C117.6	Measure the type of conductivity ,hall voltage and hall coefficient of a given semiconductor using hall effect and also measure the energy band gap of a given semiconductor material	Analyze
	C Programming & Data Structures Lab(22A0519P)	
C118.1	Develop programs using the basic concepts of C-programming language	Apply
C118.2	Develop programs using Functions, Pointers, Strings, Structures and Unions	Apply
C118.3	Make use of Stacks and Queues in real world problems	Apply
C118.4	Develop programs involving various operations on Linked lists	Apply
C118.5	Develop programs using Trees and graphs	Apply
C118.6	Demonstrate programs on Sorting and Searching	Apply

GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY
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Course Outcomes

Batch: 2021-25   **A.Y: 2022-23**

S. No	Course Outcomes Statement	Taxonomy
Course Outcomes (II Year- I Sem)	
S. No	**Course Outcomes Statement**	**Taxonomy**
Complex Variable and Transforms (20A54302)	
C211.1	Find the analytic functions using C-R equations, the image using conformal mapping and bi-linear transformation.	Apply
C211.2	Use Cauchy's theorem, Cauchy's integral formula and Cauchy's residues theorem to evaluate complex integrations and expansion of complex functions using Taylor's and Laurent's series.	Apply
C211.3	Define Laplace and inverse Laplace transforms of various functions and solve ordinary differential equations using Laplace transform.	Apply
C211.4	Determine Fourier series of periodic functions in a given interval and Parseval's formula- Complex form of Fourier series.	Apply
C211.5	Find the Fourier Transform of certain functions.	Understand
C211.6	Solve the difference equations using Z-Transforms.	Apply
Signals and Systems (20A04301T)	
C212.1	Describe the mathematical representation and description of continuous-time and discrete time signals and systems.	Understand
C212.2	Discuss the mathematical representation of continuous and discrete time signals using Fourier series.	Understand
C212.3	Illustrate the spectral characteristics of continuous-time aperiodic signals using Fourier Transform.	Apply
C212.4	Demonstrate the Continuous-time signals and systems using Laplace transforms.	Apply
C212.5	Analyze the filter characteristics and physical realization of LTIsystem.	Analyze
C212.6	Outline the discrete-time signals and systems using DTFT and Z- transforms.	Analyze
Electrical Engineering (20A02303T)	
C213.1	Able to acquire knowledge about how to determine the transient response of R-L, R-C, R-L-C series circuits for D.C and A.C excitations.	Apply
C213.2	Able to solve the problems on R L C circuits for different excitations using different approaches.	Apply
C213.3	Analyze the complex circuits of R L C circuits	Analyze
C213.4	Able to solve the problems the e.m.f. generated on DC Generator	Apply
C213.5	Able to acquire knowledge about how to determine the efficiency and regulation of single phase transformer.	Apply
C213.6	Able to acquire knowledge about how to determine the efficiency and regulation synchronous machine.	Apply
Analog Circuits (20A04302T)	
C214.1	Understand the characteristics of differential amplifiers, feedback and power amplifiers.	Understand
C214.2	Examine the frequency response of multistage and differential amplifier circuits using BJT & MOSFETs at low and high frequencies.	Apply
C214.3	Investigate different feedback and power amplifier circuits based on the application	Apply
C214.4	Derive the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillator circuits	Create
C214.5	Evaluate the performance of different tuned amplifiers and multivibrators	Evaluate

C214.6	Design analog circuits for the given specifications and application	Create

Managerial Economics & Financial Analysis (20A52301)

C215.1	Explain the role and responsibilities of a managerial economist in modern business scenario.	Understand
C215.2	Predict the demand of a product by using demand forecasting methods.	Apply
C215.3	Calculate the Break Even Point (BEP) with the help of production and cost analysis.	Apply
C215.4	Explain about competitive market structures and business economic environment.	Understand
C215.5	Intrepet the financial statements to know financial position of the firm.	Apply
C215.6	Discuss the sources of capital and allocation of funds for business undertaking.	Understand

Simulation Lab (20A04301P)

C216.1	Explain to simulate the signals and sequences.	Understand
C216.2	Compute the Fourier transform of a given signal and plot its magnitude and phase spectrum.	Understand
C216.3	Illustrate Sampling theorem,	Apply
C216.4	Interpret the Filter characteristics.	Apply
C216.5	Calculate the parameters of a Complex Gaussian noise.	Analyze
C216.6	Examine to plot the pole-zero diagram in S-plane/Z-plane of given signal/sequence.	Analyze

Analog Circuits Lab (20A04302P)

C217.1	Know about the usage of equipment/components/software tools used to conduct the experiments in analog circuits	Understand
C217.2	Conduct the experiment based on the knowledge acquired in the theory about various analog circuits using BJT/MOSFET	Understand
C217.3	Analyze the given analog circuit to find required important metrics of it theoretically	Analyze
C217.4	Draw the relevant graphs between important metrics of the system from the observed measurements.	Understand
C217.5	Compare the experimental results with that of theoretical ones and infer the conclusions	Evaluate
C217.6	Design the circuit for the given specifications	Create

Universal Human Values (20A52201)

C218.1	Understand the need, concept and content of value-education individual's life and modifies their aspiration for happiness & prosperity.	Understand
C218.2	Comprehend the term self-exploration and its application for self-evaluation and development.	Understand
C218.3	Reconstruct the concepts about different values and discriminate between them.	Understand
C218.4	Understand the concept of co-existence & evaluate the program to ensure self regulation.	Understand
C218.5	Identify the holistic perception of harmony at level of self, family, society, nature.	Understand
C218.6	Apply professional ethics in their future profession & contribute for making a value based society	Remember

Course Outcomes

Batch: 2020-24   **A.Y: 2022-23**

S. No	Course Outcomes Statement	Taxonomy
Course Outcomes (III Year- I Sem)	
Control Systems Engineering (20A04501)	
C311.1	Determine the transfer function for a given system using block diagram and signal flow graph methods	Apply
C311.2	Formulate Mathematical Model for physical systems and control systems concepts	Evaluate
C311.3	Compute the time response of systems and steady state errors	Evaluate
C311.4	Determine the absolute and relative stability of a system using RH Criterion and root loci concepts	Apply
C311.5	Design closed-loop control system to satisfy dynamic performance specifications using frequency response	Analyse
C311.6	Describe the state variable representation of physical system and solve the state equation	Understand
Digital Signal Processing (20A04502T)	
C312.1	Understand the basic concepts of discrete-time signals and systems, classify systems based on their properties.	Understand
C312.2	Determine the frequency response for the given LTI systems using difference equations and also plot its pole-zero.	Apply
C312.3	Analyze discrete-time signals and systems using discrete time Fourier transform (DFT) and Fast Fourier transform (FFT).	Analyze
C312.4	Design and implement digital filters (FIR & IIR) for the given specifications	Design
C312.5	Compare the digital filters and also realize the various filters for different structures in discrete-time systems	Evaluate
C312.6	Understand and develop the sampling rate conversion techniques, find the quantization errors in digital signal processing.	Understand
Microprocessors and Microcontrollers (20A04503T)	
C313.1	Explain the Architecture, Register sets and Memory organization of 8086 Microprocessors.	Understand
C313.2	Understand the Instruction set, Addressing modes and Assembler directives of 8086 Microprocessor	Apply
C313.3	Demonstrate memory and I/O interfacing with various peripheral devices with 8086 Microprocessor	Analyze
C313.4	Explain the Architecture and features of 8051 Microcontroller.	Design
C313.5	Explain the Interfacing of I/O peripherals of 8051 Microcontroller.	Evaluate
C313.6	Develop Various Programs of 8086 Microprocessor & 8051 Microcontroller.	Understand
Computer Architecture & Organization (20A04504a)	
C314.1	Understand the basics of instructions sets and their impact on processor design.	Understand
C314.2	Understand the Instruction set, Addressing modes and Assembler directives of 8086 Microprocessor.	Apply
C314.3	Evaluate performance in designing and constructing a computer processor	Evaluate

	including memory.	
C314.4	Design a pipeline for consistent execution of instructions with minimum hazards.	Apply
C314.5	Understanding various representations of numbers stored in digital computers.	Understand
C314.6	Applying various Arithmetic operations with examples using algorithms	Apply
Java Programming (20A05505a)		
C315.1	Understand the syntax, semantics of Java Programming Language and apply object-oriented programming principles to real world problems	Understand
C315.2	Apply code reusability through inheritance, packages and interfaces	Apply
C315.3	Develop User defined Exceptions in real world problems	Apply
C315.4	Develop applications by using parallel streams for better performance.	Remember
C315.5	Use multithreading and collection framework for real world problems	Apply
C315.6	Build GUI using applets, swings and access the database using JDBC	Apply
Digital Signal Processing Lab (20A04502P)		
C316.1	Demonstrate DSP and its applications using MATLAB software	Understand
C316.2	Examine the frequency response of discrete-time LTI systems	Apply
C316.3	Designs of IIR, FIR digital filters for the given specifications also observe the frequency response.	Evaluate
C316.4	Learn the architecture details of floating point DSPs.	Apply
C316.5	Implement DSP algorithms in software using CCS with DSP floating point Processor.	Understand
C316.6	Analyze the basic signals and also find the discrete Fourier transform (DFT) for discrete-time signals/sequences.	Apply
Microprocessors and Microcontrollers Lab (20A04503P)		
C317.1	Design and implement programs on 8086 microprocessor	Understand
C317.2	To provide solid foundation on interfacing the external devices to the processor according to the user requirements	Apply
C317.3	Design and implement 8051 microcontroller based systems	Evaluate
C317.4	To Understand the concepts related to I/O and memory interfacing	Apply
C317.5	To learn about interfacing stepper motor working and its interfacing	Understand
C317.6	To learn about generation of waveforms using microcontroller	Apply
PCB Design and Prototype development (20A04509)		
C318.1	Demonstrate the performance of PCB Design and Prototype Development.	Apply
C318.2	Analyze the Fundamentals of basic electronics: Component identification, Component symbols & their footprints	Analyze
C318.3	Calculate the PCB layers, Design rule checking, Track width selection, Component selection, Routing and completion of the design.	Apply
C318.4	Describe the various Types of PCB, Classes of PCB Design Terminology in PCB Design	Understand
C318.5	Analyze the various PCB Design Flow, Placement and routing, Steps involved in layout design, Artwork generation Methods - manual and CAD.	Create
C318.6	Evaluate General design factors for digital and analogue circuits, Layout and Artwork making for Single-side, double-side and Multilayer Boards, Design for manufacturability, Design-specification standards	Evaluate

Course Outcomes

Batch: 2019-23   **A.Y: 2022-23**

S. No	Course Outcomes Statement	Taxonomy
Course Outcomes (IV Year- I Sem)		
Microwave And Optical Communications (19A04701T)		
C411.1	Understand the wave propagation in waveguides, principle of operation of optical sources, detectors, and microwave active and passive devices.	Understand
C411.2	Apply the boundary conditions of the waveguides to solve for field expressions in waveguides	Apply
C411.3	Derive the field expressions for different modes of the waveguides, and Scattering matrix for passive microwave devices	Evaluate
C411.4	Differentiate Linear bean tubes and crossed field tubes in terms of operation and performance	Apply
C411.5	Remember various types of fibers, modes, configurations and signal degradations.	Evaluate
C411.6	Analyze signal degradation in optical fibers and compare the performance of various optical sources and detectors.	Understand
VLSI Design (19A04702T)		
C412.1	Explain the CMOS fabrication flow and Basic Electrical Properties of CMOS Circuits	Understand
C412.2	Apply the design Rules to draw the Stick diagrams and layout of a given CMOS circuits	Apply
C412.3	Estimate the sheet resistance, square capacitance and propagation delays in CMOS• circuits and Scaling of MOS Circuits	Understand
C412.4	Analyze the behavior of amplifier circuits with various loads	Analyze
C412.5	Analyze the behavior of static and dynamic logic circuits	Analyze
C412.6	Analyze the various test generation methods for static and dynamic CMOS circuits	Analyze
Embedded Systems (19A04703c)		
C413.1	Explain the Basic concepts of Embedded systems.	Understand
C413.2	Explain the role of firmware, and other system components to design the quality embedded system.	Understand
C413.3	Explain the interfacing of various communication and I/O devices to an embedded system	Understand
C413.4	Differentiate ISRs & device driver functions	Understand
C413.5	Explain the mechanism to create multiple tasks and IPC functions to enable communication of signals, semaphores and messages from ISRs.	Understand
C413.6	Build RTOS based embedded system using Keil RTX embed platform	Create
Cyber Security (19A05704b)		
C414.1	Illustrate the broad set of technical, social & political aspects of Cyber Security and security management methods to maintain security protection	Analyse
C414.2	Assess the vulnerabilities and threats posed by criminals, terrorist and	Evaluate

	nation states to national infrastructure.	
C414.3	Identify the nature of secure software development and operating systems	Remember
C414.4	Demonstrate the role security management in cyber security defense	Apply
C414.5	Modify the legal and social issues at play in developing solutions.	Apply
C414.6	Elaborate on the Emerging topics.	Evaluate
Management Science (19A52701b)		
C415.1	Discuss the basic concepts of management in modern contexts.	Analyse
C415.2	Analyse the organization chart & structure for an enterprise.	Evaluate
C415.3	Demonstrate production and marketing aspects.	Remember
C415.4	Apply Managerial and operative functions of HRM	Apply
C415.5	Formulate strategies for successful completion of the project	Apply
C415.6	Understand modern management techniques	Evaluate
Microwave & Optical Communications Lab (19A04701P)		
C416.1	Identify and demonstrate the working of various microwave components.	Understand
C416.2	Describe the characteristics of directional couplers	Apply
C416.3	Determine the losses of optical fiber links	Analyze
C416.4	Analyze the characteristics of reflex klystron by conducting experiments and measuring various parameters	Analyze
C416.5	verify the negative characteristics of Gunn diode oscillator	Understand
C416.6	determine the numerical aperture of given optical fiber	Understand
VLSI Laboratory (19A04702P)		
C417.1	Explain the develop of HDL source code for the given problem/experiment	Understand
C417.2	Analyze the obtained results of the given experiment/problem	Analyze
C417.3	Simulate the given circuit with suitable simulator and verify the results	Understand
C417.4	Explain how to use FPGA/CPLD hardware tools in the lab	Understand
C417.5	Design and implement the experiments using FPGA/CPLD hardware tools	Create
C417.1	Analyze the design summary of hardware used for the given experiments using FPGA/CPLD	Analyze

Course Outcomes

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S. No	Course Outcomes Statement	Taxonomy
Course Outcomes (I Year- II Sem)		
Differential Equations and Vector Calculus (22A0002T)		
C121.1	Solve the linear differential equations with constant coefficients by appropriate method.	Understand
C121.2	Apply a range of techniques to find solutions of standard partial differential equations	Apply
C121.3	Apply the method of separation of variables to find the solution of one-dimensional wave equations.	Apply
C121.4	Calculate gradient, divergence, curl of point functions and directional derivative of scalar point function.	Understand
C121.5	Apply Green's, Stokes and Divergence theorem in the evaluation of line, double and triple integrals.	Apply
Chemistry (22A0006T)		
C122.1	Apply the molecular orbital theory for Diatomic molecules to predict the structure and bonds	Apply
C122.2	Explain the breaking of orbital degeneracy in transition metal complexes due to the presence of ligands.	Understand
C122.3	Demonstrate the conductors, semiconductors and insulator by using band theory	Understand
C122.4	Describe the basic principles of different batteries , potentiometry, conductometry,	Understand
C122.5	understand the mechanism and applications of different polymers in electronic devices.	Understand
C122.6	Apply the electromagnetic radiation to the spectroscopy methods for the analysis of Different compounds	Apply
Fundamentals of Electrical Circuits (22A0201T)		
C123.1	Explain types of networks and Network Reduction Techniques	Understand
C123.2	Analyze Magnetic Circuits and Coupled circuits.	Analyze
C123.3	Analysis of electrical networks using graph theory and duality and dual networks	Analyze
C123.4	Analyze RLC circuits with AC Excitation	Analyze
C123.5	Analyze the power, voltage and current for different network configurations.	Analyze
C123.6	Apply theorems for finding the solutions of network problems	Apply
Electronic Devices & Circuits (22A0401T)		
C124.1	Describe the principle of operation and characteristics of Semiconductor diodes, BJTs and MOSFETs	Understand
C124.2	Design the diode applications such as rectifiers, clippers and clampers.	Apply
C124.3	Design amplifiers using BJTs, and MOSFETs.	Apply
C124.4	Compare the Diodes, BJTs and MOSFETs by construction, operation and applications	Analyze
C124.5	Outline performance of biasing circuits of BJTs and MOSFETs	Analyze
C124.6	Solve the problems related to Semiconductor diodes, BJTs, and MOSFETs	Apply

Chemistry Lab (22A0011P)		
C125.1	Determine the cell constant and conductance of solutions and the strength of an acid by conductometry	Understand
C125.2	Synthesize of advanced polymer materials	Create
C125.3	Measure the strength of an acid present in secondary battery and Ferrous ion using volumetric analysis	Remember
C125.4	Identify the potentials and EMFs of solutions by Potentiometry	Apply
C125.5	Find some organic and inorganic compounds by instrumental methods	Remember
C125.6	Synthesize of nano materials by simple methods	Create
Fundamentals of Electrical Circuits Lab (22A0202P)		
C126.1	Analyze network parameters and types of networks	Analyze
C126.2	Analyze RLC circuits and coupled circuits	Analyze
C126.3	Analyze Resonance for different circuits.	Analyze
C126.4	Apply theorems for finding the solutions of network problems	Apply
C126.5	Apply Maximum power transfer theorems for finding the solutions of DC & AC Networks	Apply
C126.6	Analyze coupled circuits	Analyze
Electronic Devices & Circuits Lab (22A0402P)		
C127.1	Understand the operation and characteristics of basic electronic devices	Apply
C127.2	Design the Diode applications like Rectifiers, Clippers and Clampers for the given specifications	Apply
C127.3	Analyze the Characteristics of Diodes, BJTs, MOSFET	Apply
C127.4	Design BJT based amplifiers for the given specifications	Apply
C127.5	Design MOSFET based amplifiers for the given specifications	Apply
C127.6	Simulate Diode, BJT and MOSFET applications in PSPICE /Multisim	Apply
Electronics Workshop (22A0403P)		
C128.1	Describe the electronic workshop tools	Remember
C128.2	Explain the electronic measuring instruments	Understand
C128.3	Identify the discrete electronic components and IC's	Remember
C128.4	Demonstrate and examine the electronic components and IC's	Apply
C128.5	Examine the signal in Cathode Ray Oscilloscope	Apply
C128.6	Describe the EDA Tool	Understand
IT Workshop (22A0502P)		
C129.1	Apply the Disassemble and Assemble a Personal Computer and prepare the computer ready to use	Apply
C129.2	Analyze the Documents using Word processors and Prepare spreadsheets for calculations using excel sheets	Analyze
C129.3	Analyze the Slide presentations using the presentation too	Analyze
C129.4	Illustrate the Interconnect of two or more computers for information sharing.	Apply
C129.5	Analyze the Access Internet and Browse it to obtain the required informaton.	Analyze
C129.6	illustrate the Latex and its installation and different IDEs	Apply

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Course Outcomes

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S. No	Course Outcomes Statement	Taxonomy
Course Outcomes (II Year- II Sem)		
Probability Theory & Stochastic Processes (20A54403)		
C221.1	Understanding the concepts of Probability, Random Variables, Random Processes and their characteristics	Understand
C221.2	Learn how to deal with multiple random variables, conditional probability, joint distribution and statistical independence.	Apply
C221.3	Formulate and solve the engineering problems involving random variables	Apply
C221.4	Formulate and solve the engineering problems involving random processes.	Apply
C221.5	Analyze various probability density functions of random variables.	Evaluate
C221.6	Derive the response of linear system for Gaussian noise and random signals as inputs.	Understand
Digital Logic Design (20A04303T)		
C222.1	Understand the properties of Boolean algebra, other logic operations, and minimization of Boolean functions	Understand
C222.2	Analyze the concepts of minimization of Boolean functions using karnaugh map	Analyze
C222.3	Analyze the Combinational logic circuits	Analyze
C222.4	Analyze the Sequential logic circuits	Analyze
C222.5	Realization of FSM and PLDs	Understand
C222.6	Develop digital circuits using HDL and verilog	Analyze
EM Waves and Transmission Lines (20A04401)		
C223.1	Describe vector algebra, coordinate systems ,fundamentals of electrostatic fields, electric field intensity duo to point, line, sheet and volume charges	Understand
C223.2	Calculate magnetic field intensity using Biot-Savart's law and Ampere's law	Apply
C223.3	Derive Maxwell's equations for time varying fields.	Apply
C223.4	Analyze electric and magnetic fields in single and double media. Analyze boundary conditions of EM fields for dielectric-dielectric, dielectric-conductor, propagation of EM field in good conductor & dielectric.	Analyse
C223.5	Describe the propagation of EM waves that incident obliquely and normally on a perfect dielectric and conductor.	Understand
C223.6	Analyze the concept of transmission lines & their applications.	Analyse
Communication Systems (20A04402T)		
C224.1	Explain various modulation and demodulation techniques in communication systems	Understand
C224.2	Describe different types of noise and predict it effect on various analog communication systems.	Analyze
C224.3	Explain various pulse modulation schemes – PAM, PCM, Delta Modulation, DPCM	Understand
C224.4	Describe baseband pulse transmission system	Understand
C224.5	Analyze the probability of error in Digital Pass band Transmission systems.	Analyze
C224.6	Compare the performance of the different digital modulation techniques-BPSK,QPSK, BFSK and M-array system	Analyze
Linear and Digital IC Applications (20A04403T)		
C225.1	Explain the Classification, building blocks and characteristics of linear integrated circuits.	Understand

C225.2	Discuss the various applications of linear and Non- linear OP-AMP.	Understand
C225.3	Solve the application based problems using Active Filters, Timer and Phase Locked Loops.	Apply
C225.4	Analyze various applications based circuits of Voltage Regulator and Converters.	Analyze
C225.5	Design the circuits using CMOS logic.	Create
C225.6	Design of various Combinational and Sequential Circuits.	Create
Soft Skills (20A52401)		
C226.1	Memorize various elements of effective communicative skills.	Remember
C226.2	Interpret people at the emotional level through emotional intelligence.	Understand
C226.3	Apply critical thinking skills in problem solving.	Apply
C226.4	Analyze the needs of an organization for team building.	Analyze
C226.5	Judge the situation and take necessary decisions as a leader.	Evaluate
C226.6	Develop social and work-life skills as well as personal and emotional well-being.	Create
Digital Logic Design Lab (20A04303P)		
C227.1	Understand the properties of Boolean algebra, other logic operations, and minimization of Boolean functions	Understand
C227.2	Analyze the concepts of minimization of Boolean functions using karnaugh map	Analyze
C227.3	Analyze the Combinational logic circuits	Analyze
C227.4	Analyze the Sequential logic circuits	Analyze
C227.5	Realization of FSM and PLDs	Understand
C227.6	Develop digital circuits using HDL and verilog	Analyze
Communication Systems Lab (20A04402P)		
C228.1	Explain the usage of equipment/components used to conduct the experiments in analog and Digital modulation techniques.	Understand
C228.2	Demonstrate the experiment about various modulation and demodulation schemes to find the important metrics of the communication system experimentally.	Understand
C228.3	Analyze the performance of analog modulation scheme to find the important metrics of the system theoretically.	Analyze
C228.4	Analyze the performance of digital modulation scheme to find the important metrics of the system theoretically.	Analyze
C228.5	Draw the relevant graphs between important metrics of the system from the observed measurements.	Apply
C228.6	Compare the experimental results with that of theoretical ones and infer the conclusions.	Analyze
Linear and Digital IC Applications Lab (20A04403P)		
C229.1	Explain the Classification, building blocks and characteristics of linear integrated circuits.	Understand
C229.2	Discuss the various applications of linear and Non- linear OP-AMP.	Understand
C229.3	Solve the application based problems using Active Filters, Timer and Phase Locked Loops.	Apply
C229.4	Analyze various applications based circuits of Voltage Regulator and Converters.	Analyze
C229.5	Design the circuits using CMOS logic.	Create
C229.6	Design of various Combinational and Sequential Circuits.	Create

Course Outcomes

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S. No	Course Outcomes Statement	Taxonomy
	Course Outcomes (III Year- II Sem)	
	Antennas & Microwave Engineering (20A04601T)	
C321.1	Learn about the antenna's basics and wire antennas.	Remember
C321.2	Gain knowledge on few types of antennas, their operation and applications.	Analyse
C321.3	Understand the uses of antenna arrays and analyze waveguides and resonators	Understand
C321.4	Analyze various microwave components	Analyse
C321.5	Understand the principles of different microwave sources..	Understand
C321.6	Gain knowledge on microwave semiconductor devices and microwave measurements.	Analyse
	VLSI Design (20A04602T)	
C322.1	Describe Electrical Properties of MOS and BiCMOS Circuits	Remember
C322.2	Determine Lambda(λ)-based design rules for wires, contacts and Transistors	Apply
C322.3	Calculate Driving large Capacitive Loads, Wiring Capacitances for CMOS	Apply
C322.4	Design & develop for Full-custom and Semi-custom devices	Create
C322.5	Describe testing combinational logic –testing sequential logic	Understand
C322.6	Analyze practical design for test guide lines – scan design techniques	Analyze
	Communication Networks (20A04603T)	
C323.1	Understand the basics of data communication, networking, internet and their importance.	Understand
C323.2	Analyse the services and features of various protocol layers in data networks.	Analyze
C323.3	Differentiate wired and wireless computer networks	Understand
C323.4	Analyse TCP/IP and their protocols.	Analysis
C323.5	Recognize the different internet devices and their functions.	Understand
C323.6	Student shall understand the principles and operations behind various application layer protocols like HTTP, SMTP, FTP.	Understand
	Embedded System Design (20A04604b)	
C324.1	Describe the History of embedded systems, Classification of embedded systems based on generation and complexity, Purpose of embedded systems.	Understand
C324.2	Describe Core of the embedded system-general purpose and domain specific processors, ASICs, PLDs, COTs, I/O components.	Understand
C324.3	Describe the Onboard communication interfaces-I2C, SPI, CAN, parallel interface; External communication interfaces-RS232 and RS485, USB, infrared, Bluetooth, Wi-Fi, ZigBee, GPRS, GSM.	Understand
C324.4	Describe the Embedded firmware design approaches-super loop based approach, operating system based approach	Understand

C324.5	Describe the Operating system basics, types of operating systems, tasks, process and threads, multiprocessing and multitasking, task scheduling	Understand
C324.6	Describe the Task Synchronization: Task Communication /Synchronization Issues, Task Synchronization Techniques	Understand

Principles of Operating Systems (20A05605a)		
C325.1	Describe the fundamental organization of a computer systems	Understand
C325.2	Explain about Operating systems functions	Understand
C325.3	Differentiate between process and thread and classify scheduling algorithm	Understand
C325.4	Determine Synchronization and deadlock problems	Apply
C325.5	Describe about various memory management schemes	Understand
C325.6	Explain file systems concepts and I/O management	Understand

Antennas & Microwave Engineering Lab (20A04601P)		
C326.1	Understand the working, different microwave components and sources in a microwave bench	Understand
C326.2	Verify the characteristics of various microwave components using microwave bench setup	Create
C326.3	Understand the Radiation pattern of different Antennas	Understand
C326.4	Verify the bandwidth and power of various Antennas	Create
C326.5	Design and study of various antennas	Create
C326.6	Analyze performance characteristics of Antennas	Analyse

VLSID Lab (20A04602P)		
C327.1	Understand how to use Microwind software tools in the lab.	Understand
C327.2	Sketch the different circuits by using CMOS and perform AC, DC analysis.	Apply
C327.3	Apply Verilog source code for the given problem/experiment, and simulate the given circuit with suitable simulator and verify the results.	Evaluate
C327.4	Analyze the CMOS inverter, MOS amplifiers and differential amplifier results of the given experiment/problem.	Apply
C327.5	Assess the characteristics of NMOS and PMOS transistors and find the parametric sweep.	Understand
C327.6	Design and verify the experiments in 180nm technology also draw the layout diagrams.	Apply

Communication Networks Lab (20A04603P)		
C328.1	Identify and use various networking components Understand different transmission media and design cables for establishing a network	Understand
C328.2	Implement any topology using network devices	Create
C328.3	Analyze performance of various communication protocols.	Analyze
C328.4	Understand the TCP/IP configuration for Windows and Linux	Understand
C328.5	Compare routing algorithms	Analyze
C328.6	Learn the major software and hardware technologies used on computer networks	Analyze

Course Outcomes

Batch: 2019-23   **A.Y: 2022-23**

S. No	Course Outcomes Statement	Taxonomy
Course Outcomes (IV Year- II Sem)		
Advanced 3G and 4G Wireless Mobile Communications (19A04801a)		
C421.1	Describe Introduction to 3G and 4G standards, Tele traffic Theory, Large Scale Path Loss.	Understand, Apply
C421.2	Determine eSmall Scale Fading and Multipath, Diversity Techniques	Apply
C421.3	Describe Code Division Multiple Access: Introduction to CDMA, spread spectrum and LFSR	Understand, Apply
C421.4	Multiple Input Multiple Output Systems, Orthogonal Frequency Division Multiplexing.	Analyze
C421.5	Describe the Orthogonal Frequency Division Multiplexing	Understand
C421.1	MIMO-OFDM,3G and 4G Standards, WCDMA, LTE/ LTE Advanced and WiMAX.	Understand, Apply and Analyze
Disaster Management (19A01802a)		
C422.1	To know about the natural hazards and its management	Understand
C422.2	To know about the fire hazards and solid waste management	Understand
C422.3	To know about the regulations of building codes and land use planning related to risk and vulnerability	Understand
C422.4	To know about the technological aspects of disaster management	Understand
C422.5	To understand about the factors for disaster reduction	Understand
C422.6	To impart the education related to risk reduction in schools and communities	Understand
Project (19A04803)		
C423.1	Identify the problem of social relevance to be solved.	Understand
C423.2	Summarize the existing technology, its merits and demerits used to solve the problem.	Analyze
C423.3	Design the appropriate solution using the sophisticated hardware or software.	Create
C423.4	Compare the results of the proposed solution with the existing solution.	Evaluate
C423.5	Demonstrate the project along with the complete documentation report of the project.	Evaluate
C423.6	Show the interpersonal, professional and work with team skills.	Apply

Course Outcomes

CAY : 2022-23	REG : R20		Year /Sem: II -I

SNO	Course Outcome Statement	Taxonomy
SPECIFIC LEARNING OUTCOMES – **Complex Variables & Transforms**		
C211.1	Find the analytic functions using C-R equations, the image using conformal mapping and bi-linear transformation.	Apply
C211.2	Use Cauchy's theorem, Cauchy's integral formula and Cauchy's residues theorem to evaluate complex integrations and expansion of complex functions using Taylor's and Laurent's series.	Apply
C211.3	Define Laplace and inverse Laplace transforms of various functions and solve ordinary differential equations using Laplace transform.	Apply
C211.4	Determine Fourier series of periodic functions in a given interval and Parseval's formula- Complex form of Fourier series.	Apply
C211.5	Find the Fourier Transform of certain functions.	Understand
C211.6	Solve the difference equations using Z-Transforms.	Apply
SPECIFIC LEARNING OUTCOMES – **Electrical Circuits Analysis**		
C212.1	Understand the concepts of Locus diagrams and resonance with parameters variation	Understand
C212.2	Apply Network Reduction Techniques for finding two port parameters	Apply
C212.3	Analyse of RL.RC and RLC circuits with AC Excitation	Analyse
C212.4	Analyse of RL.RC and RLC circuits with DC Excitation	Analyse
C212.5	Analyse Fourier series and Fourier Transform of Non sinusoidal sources	Analyse
C212.6	Analysis Different types of Filters and Equalizers.	Analyse
SPECIFIC LEARNING OUTCOMES – **DC Machines & Transformers**		
C213.1	Understand the concepts of magnetic circuits.	Understand
C213.2	Able to understand the construction, operation and armature windings of a DC generator	Understand
C213.3	Able to understand the operation of a DC motors.	Understand
C213.4	Able to analyze speed control of DC motors, testing methods and parallel operation of DC machines	Analyze
C213.5	Analyse single phase transformers circuits.	Apply
C213.6	Analyse three phase transformers circuits.	Analyze
SPECIFIC LEARNING OUTCOMES – **Digital Logic Design**		

C214.1	Understand the properties of Boolean algebra, other logic operations, and minimization of Boolean functions	Understand
C214.2	Analyze the concepts of minimization of Boolean functions using karnaugh map	Analyze
C214.3	Analyze the Combinational logic circuits	Analyze
C214.4	Analyze the Sequential logic circuits	Analyze
C214.5	Realization of FSM and PLDs	Understand
C214.6	Develop digital circuits using HDL and verilog	Analyze
SPECIFIC LEARNING OUTCOMES – **Managerial Economics and Financial Analysis**		
C215.1	Explain the role and responsibilities of a managerial economist in modern business scenario.	Understand
C215.2	Applythe demand of a product by using demand forecasting methods.	Apply
C215.3	Calculate the Break Even Point (BEP) with the help of production and cost analysis.	Apply
C215.4	Explain their learnings about competitive markets and business economic environment.	Understand
C215.5	Apply the process of selection of investment alternatives using different appraisal methods	Apply
C215.6	Examine the process of preparing financial statements to know financial position of the firm.	Analyze
SPECIFIC LEARNING OUTCOMES – **Electrical Circuit Analysis Lab**		
C216.1	Explain Various Resonance Phenomenon Circuits	Apply
C216.2	Understand and Analyze Various Current Locus Diagrams	Analyse
C216.3	Apply Experimentally for finding Two port parameters	Apply
C216.4	Experimentally verify AC and DC circuits.	Apply
C216.5	Analyse Various circuits using DC Excitation	Analyse
C216.6	Analyse Various circuits using AC Excitation	Analyse
SPECIFIC LEARNING OUTCOMES – **DC Machines & Transformers Lab**		
C217.1	Conduct and analyze load test on DC generators	Apply
C217.2	Understand and analyze magnetization characteristics of DC shunt Generator	Understand
C217.3	Understand and analyze speed control techniques of DC machines	Understand
C217.4	Understand and analyze efficiency of DC machines by direct method	Understand
C217.5	Understand and analyze efficiency of DC machines by indirect method.	Understand
C217.6	Understand to predetermine efficiency and regulation of single phase Transformers	Understand
SPECIFIC LEARNING OUTCOMES – **Digital Logic Design Lab**		
C218.1	Understand the pin configuration of various digital ICs used in the	Understand

	lab	
C218.2	analyze the logic circuits	Analyze
C218.3	Conduct the experiment and verify the properties of various logic circuits	Analyze
C218.4	Analyze the sequential and combinational circuits	Analyze
C218.5	Design of any sequential circuit using Hardware/ HDL	Apply
C218.6	Design of any combinational circuit using Hardware/ HDL	Apply
SPECIFIC LEARNING OUTCOMES – **Skill oriented Course –I (Python)**		
C219.1	Interpret the basic concepts, modular approaches to solve the problems.	Understand
C219.2	Apply the concepts of conditional execution, recursion, built in functions, turtle to solve the problems	Apply
C219.3	Define and demonstrate the use of built-in String functions	Remember
C219.4	Apply python programs to read and write data from/to files.	Apply
C219.5	Summarize various data structures like Lists, Dictionaries, Tuples and its applications.	Understand
C219.6	Identify Python classes, objects, inheritance, goodies	Apply
SPECIFIC LEARNING OUTCOMES – **Universal Human Values**		
C2110.1	Understand the need, concept and content of value-education individual's life and modifies their aspiration for happiness & prosperity	Understand
C2110.2	Comprehend the term self-exploration and its application for self-evaluation and devolpment.	Understand
C2110.3	Reconstruct the concepts about different values and discriminate between them.	Understand
C2110.4	Understand the concept of co-existence & evaluate the program to ensure self regulation.	Understand
C2110.5	Identify the holistic perception of harmony at level of self, family, society, nature .	Understand
C2110.6	ofessional ethics in their future profession & contribute for making a value based society	Remember

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Department of Electrical and Electronics Engineering

Course Outcomes

CAY : 2022-23	Reg : R20	SEM : I	Year : III

SNO	Course Outcome Statement	Taxonomy
SPECIFIC LEARNING OUTCOMES – Power Systems Architecture		
C311.1	Remember and understand the concepts of conventional and nonconventional power generating systems	Remember
C311.2	Apply the economic aspects to the power generating systems.	Apply
C311.3	Analyse the transmission lines and obtain the transmission line parameters and constants.	Analyse
C311.4	Design and Develop the schemes to improve the generation and capability of transmission line to meet the day to day power requirements.	Analyse
C311.5	Design of Distribution Feeders, Voltage Drop and power loss in A.C. Distributors.	Analyse
C311.6	Explain different types of Substations, Various arrangements in Substations	Remember
SPECIFIC LEARNING OUTCOMES – Control Systems		
C312.1	Evaluate the transfer function model for physical systems and control system components	Evaluate
C312.2	Determine the transfer function for a given system using block diagram and signal flow graph methods	Apply
C312.3	Compute the time response of systems and steady state errors	Apply
C312.4	Determine the absolute and relative stability of a system using RH and Root loci concepts.	Analyze
C312.5	Analyse the stability of the system and design compensation networks	Analyze
C312.6	Describe the state variable representation of physical system and solve the state equation	Apply
SPECIFIC LEARNING OUTCOMES – Measurements & Sensors		
C313.1	Understand the operation of different instruments, different types of errors and their compensation and analyze the different operation of extension range ammeters and voltmeters	Understand
C313.2	Understand the concepts of measurement of active and reactive powers using wattmeters, Distinguish between low and high power factor ranges in watt meters and working of different types of power factor meters	Understand
C313.3	Understand the working principles and construction of different types of Energy meters and Distinguish between CTs and PTs, Determination of ration and phase angle errors	Understand
C313.4	Distinguish between DC and AC potentiometers, Design the various voltage and current measuring instruments for the various electric / magnetic field applications and Identify errors in measurements and to mitigate them for desired precision and	Apply

	accuracy	
C313.5	Understand the bridge configurations and their applications for various ranges of resistance measurement, unknown parameters of Inductance, unknown parameters of Capacitance using the bridges, and Identify errors in measurements and to mitigate them for desired precision and accuracy	Evaluate
C313.6	Analyze different characteristics of periodic and a periodic signals using CRO and Know about Digital Instruments and sensors	Analyse

SPECIFIC LEARNING OUTCOMES – Power Electronics Drives

C314.1	Understand the Electrical Drive system and its components and their importance	Understand
C314.2	Understand the dynamics of Electrical drives	Understand
C314.3	Analyze the speed control of DC motor with single phase and three phase controlled rectifiers	Analyze
C314.4	Apply the knowledge of Choppers for speed control of DC Motors.	Apply
C314.5	Understand the speed control of induction motor with variable voltage and frequency control	Understand
C314.6	Understand the speed control of synchronous motor drives Using Inverters	Understand

SPECIFIC LEARNING OUTCOMES – Java Programming

C315.1	Demonstrate the installation and usage of Java software	Understand
C315.2	Illustrate the programming constructs in java	Understand
C315.3	Demonstrate the object oriented concepts in java	Understand
C315.4	Demonstrate the concepts of exception handling and multithreading in java	Understand
C315.5	Illustrate the concept of files in java	Apply
C315.6	Illustrate the usage of AWT, Swings and JDBC	Apply

SPECIFIC LEARNING OUTCOMES – Control Systems Lab

C316.1	Design the controllers/compensators to achieve desired specifications	Apply
C316.2	Understand the effect of location of poles and zeros on transient and steady state behavior of systems	Understand
C316.3	Assess the performance, in terms of time domain specifications, of first and second order systems.	Evaluate
C316.4	Design PID controllers for given control system model	Apply
C316.5	Determine the response of a given control system model	Apply
C316.6	Use MATLAB/SIMULINK software for control system analysis and design	Apply

SPECIFIC LEARNING OUTCOMES – Measurements & Sensors Lab

C317.1	Calibrate various electrical measuring/recording instruments	Evaluate
C317.2	Determine ratio error and phase angle error of CT	Apply
C317.3	Accurately determine the values of inductance and capacitance using a.c bridges	Understand
C317.4	Accurately determine the values of very low resistances	Apply
C317.5	Analysis based on comparing true and actual value of potentio meter and power factor meter.	Analyse
C317.6	Measure reactive power in 3-phase circuit using single wattmeter	Evaluate

SPECIFIC LEARNING OUTCOMES – Soft skills

C318.1	Understand the context, topic, and pieces of specific information from	Understand

	social or transactional dialogues spoken by native speakers of English	
C318.2	Apply grammatical structures to formulate sentences and correct word forms	Applying
C318.3	Analyze discourse markers to speak clearly on a specific topic in informal discussions	Analyzing
C318.4	Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.	Evaluate
C318.5	Create a coherent paragraph interpreting a figure/graph/chart/table	Create
C318.6	Develop better speaking skills among students through participation in structured talks/oral presentations.	Create
SPECIFIC LEARNING OUTCOMES – Evaluation of Community Service Project		
C319.1	Students should understand the living conditions of the people who are around them	Understand
C319.2	Students should understand societal consciousness, attitudinal change, sensibility, responsibility and accountability.	Understand
C319.3	Students should understand the aware of their inner strength and help them to find new /out of box solutions to the social problems.	Understand
C319.4	Students should understand how to be as socially responsible citizens	Understand
C319.5	Develop activities in the community in coordination with public and government authorities.	Apply
C319.6	Develop a holistic life perspective among the students.	Apply

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GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY::NELLORE

Department of Electrical and Electronics Engineering

Course Outcomes

CAY : 2022-23	Reg : R19	SEM : I	Year : IV

SNO	Course Outcome Statement	Taxonomy
SPECIFIC LEARNING OUTCOMES – Measurements & Sensors		
C411.1	Understand the operation of different instruments, different types of errors and their compensation and analyze the different operation of extension range ammeters and voltmeters	Understand
C411.2	Understand the concepts of measurement of active and reactive powers using wattmeters, Distinguish between low and high power factor ranges in watt meters and working of different types of power factor meters	Understand
C411.3	Understand the working principles and construction of different types of Energy meters and Distinguish between CTs and PTs, Determination of ration and phase angle errors	Understand
C411.4	Distinguish between DC and AC potentiometers, Design the various voltage and current measuring instruments for the various electric / magnetic field applications and Identify errors in measurements and to mitigate them for desired precision and accuracy	Apply
C411.5	Understand the bridge configurations and their applications for various ranges of resistance measurement, unknown parameters of Inductance, unknown parameters of Capacitance using the bridges, and Identify errors in measurements and to mitigate them for desired precision and accuracy	Evaluate
C411.6	Analyze different characteristics of periodic and a periodic signals using CRO and Know about Digital voltmeters measurement of speed using Tachometer and to distinguish between analog and digital ones	Analyse
SPECIFIC LEARNING OUTCOMES – Power Systems Protection		
C412.1	Understand the operation & Importance of Fuses & Circuit breakers	Understand
C412.2	Solve numerical problems for arc interruption and recovery in circuit breakers	Understand
C412.3	Discuss the principles of operation of electromagnetic relays, static relays and microprocessor based relays	Understand
C412.4	Analyse the protection system for transformers & generator	Analyse
C412.5	Determine the unprotected percentage of generator winding under fault occurrence	Apply
C412.6	Identify various types of the relays in protecting feeders, lines and bus bars	Remember

SPECIFIC LEARNING OUTCOMES – Power System Operation and Control		
C413.1	Design an optimal operation setup of power system which minimizes operation costs and meet desired needs.	Analyse
C413.2	Illustrate about thermal and hydro power plants operation in meeting the load demand optimally.	Analyse
C413.3	Discuss single area load frequency control and two area load frequency control.	Understand
C413.4	Apply the techniques to control power flows, frequency and voltage	Apply
C413.5	Differentiate pricing mechanism of electric energy and trading of power under deregulated environment.	Understand
C413.6	Assess the significance of power system restructuring and learn the Security Analysis, Contingency Analysis.	Evaluate
SPECIFIC LEARNING OUTCOMES – Principals of Digital Signal Processing		
C414.1	Classify various types of discrete time signals and systems	UNDERSTAND
C414.2	Use discrete Fourier Transforms (DFT) to a processing system to give the desired output.	APPLY
C414.3	Determine FFT algorithms in rapid frequency-domain analysis.	APPLY
C414.4	Analyse IIR and FIR filters using different structures	Analyse
C414.5	Design digital filters to meet specific magnitude and phase requirements	Create
C414.6	Illustrate multirate DSP techniques for various applications of DSP by sampling rate conversion.	APPLY
SPECIFIC LEARNING OUTCOMES – Management Science		
C415.1	Explain the basic concepts of management in modern contexts	Understand
C415.2	Discuss the organization structures and principles	Understand
C415.3	Outline the production and marketing aspects	Analyze
C415.4	Explain the roles and responsibilities of Human Resource Manager	Understand
C415.5	Prepare and implement strategies in the modern management	Create
C415.6	Outline the modern management practices	Analyze
SPECIFIC LEARNING OUTCOMES – Power Systems & Simulation Laboratory		
C416.1	Determination of sequence impedance and sub transient reactance of synchronous machine	Apply
C416.2	Conduct experiments to analyze LG, LL, LLG, LLLG faults	Analyse
C416.3	Estimate the parameters of three winding transformer equivalent circuit	Evaluate
C416.4	Develop MATLAB program for formation of Y and Z buses	Analyse
C416.5	Develop MATLAB programs for gauss-seidel and fast decoupled load flow studies.	Analyse
C416.6	Develop the SIMULINK model for single area load frequency control problem	Analyse
SPECIFIC LEARNING OUTCOMES – Measurements Laboratory		

C417.1	Calibrate various electrical measuring/recording instruments	Evaluate
C417.2	Determine ratio error and phase angle error of CT	Apply
C417.3	Accurately determine the values of inductance and capacitance using a.c bridges	Understand
C417.4	Accurately determine the values of very low resistances	Apply
C417.5	Analysis based on comparing true and actual value of potentio meter and power factor meter.	Analyse
C417.6	Measure reactive power in 3-phase circuit using single wattmeter	Evaluate
SPECIFIC LEARNING OUTCOMES – Industrial Training /Research Project		
C418.1	Demonstrate a sound technical knowledge of their selected project topic.	Apply
C418.2	Able to identify the problem, formulate a prospective solution	Understand
C418.3	Design engineering solutions to the given problem using a systems approach.	Create
C418.4	Conduct experiments or simulation and collect observation for the engineering project	Analyse
C418.5	Develop a prototype of the project by distribution of tasks among the team	Create
C418.6	Communicate with engineers and the community at large in written an oral forms	Create

Coordinator   HoD

Department of Electrical and Electronics Engineering

COURSE OUTCOMES

CAY : 2021-22	Reg : R20	SEM : II	Year : II

SNO	COURSE OUTCOME STATEMENT	Taxonomy
SPECIFIC LEARNING OUTCOMES – Numerical Methods & Probability theory		
C221.1	Use the numerical techniques find solution of algebraic and transcendental Equations.	Apply
C221.2	Determine the interpolating value of the function using Numerical techniques.	Apply
C221.3	Evaluate definite integrals using Newton cotes Formula.	Apply
C221.4	Utilize numerical methods to find numerical solution of ordinary and partial differential equations.	Apply
C221.5	Explain the basic concepts of probability, random variables and solve real time problems using Baye's theorem.	Understand
C221.6	Apply probability distributions like Bionomial, Poisson and Normal distributions to solve statistical problems	Apply
SPECIFIC LEARNING OUTCOMES – Analog Electronic Circuits		
C222.1	List various types of feedback amplifiers, oscillators and large signal amplifiers	Remember
C222.2	Explain the operation of various electronic circuits and linear ICs	Understand
C222.3	Apply various types of electronic circuits to solve engineering problems	Apply
C222.4	Analyze various electronic circuits and regulated power supplies for proper understanding	Analyze
C222.5	Infer choice of transistor configuration in a cascade amplifier	Understand
C222.6	Construct electronic circuits for a given specification	Apply
SPECIFIC LEARNING OUTCOMES – Power Electronics		
C223.1	Articulate the basics of power electronic devices	Understand
C223.2	compare voltages and currents, active and reactive power inputs to converter with and without freewheeling diode for 1Ø and 3Ø converters.	Apply
C223.3	Understand the concepts of various control strategies, types of choppers and analyze their principle operation, waveforms of	Understand

	voltages and currents at different loads.	
C223.4	Understand the construction, working of single phase and three phase voltage inverters with their waveforms.	Understand
C223.5	Understand the concept of AC voltage controllers	Understand
C223.6	Understand the concept of Cyclo Converters	Understand

SPECIFIC LEARNING OUTCOMES – AC Machines

C224.1	Understand the basics of ac machine windings, construction, principle of working, equivalent circuit of induction and synchronous machines	Understand
C224.2	Analyze the phasor diagrams of induction and synchronous machine	Analyze
C224.3	Understand the constructional features, principle involved, equivalent circuit of single phase induction motor and various starting methods and its applications	understand
C224.4	Analyze the parallel operation of alternators, synchronization and load division of synchronous generators	Analyze
C224.5	Apply the concepts to determine V and inverted V curves and power circles of synchronous motor	apply
C224.6	Analyze the various methods of starting in both induction and synchronous machines	Analyze

SPECIFIC LEARNING OUTCOMES – Electro Magnetic Field Theory

C225.1	Acquires the Knowledge to understand basic principles, concepts and fundamental laws of electric fields.	Understand
C225.2	To describe static electric fields, their behavior in different media and associated Maxwell's equations.	Understand
C225.3	Acquires the Knowledge to understand basic principles, concepts and fundamental laws of magnetic fields.	Understand
C225.4	To describe static magnetic fields, their behavior in different media and associated Maxwell's equations.	Understand
C225.5	Acquires the knowledge to understand time- varying fields and interaction between electricity and magnetism.	Understand
C225.6	Acquires the knowledge to calculate the quantities associated with uniform plane wave motion in different media of transmission.	Apply

SPECIFIC LEARNING OUTCOMES – Analog Electronics Laboratory

C226.1	Analyze various amplifier circuits	Analyze
C226.2	Construct multistage amplifiers	Apply
C226.3	Construct OPAMP based analog circuits	Apply
C226.4	Understand working of logic gates	Understand
C226.5	Construct and implement Combinational circuits	Apply
C226.6	Construct and implement Sequential logic circuits	Apply

SPECIFIC LEARNING OUTCOMES – Power Electronics Laboratory

C227.1	Understand the various characteristics of power electronic devices with gate firing circuits and forced commutation techniques.	Understand
C227.2	Analyze the operation of single-phase half & fully-controlled converters and inverters with different types of loads.	Analyze
C227.3	Analyze the operation of DC-DC converters, single-phase AC Voltage controllers,	Analyze
C227.4	Analyze various power electronic converters using PSPICE	Analyze

	software.	
C227.5	Analyze the operation cyclo converters with different loads.	Analyze
C227.6	Analyze the operation DC choppers with different loads.	Analyze
SPECIFIC LEARNING OUTCOMES – AC Machines Laboratory		
C228.1	Analyze load test, no-load and blocked-rotor tests for construction of circle diagram and equivalent circuit determination in a single phase induction motor	Analyze
C228.2	understand and analyze speed control techniques of three phase induction motor	Apply
C228.3	understand to predetermine regulation of a three-phase alternator by synchronous impedance and MMF method	understand
C228.4	understand to predetermine regulation of a three-phase alternator by Zero Power Factor method	understand
C228.5	Determine Xd and Xq salient pole synchronous machine	Apply
C228.6	Evaluate and analyze V and inverted V curves of 3 phase synchronous motor	Evaluate
SPECIFIC LEARNING OUTCOMES – Circuits Simulation & Analysis Using Pspice		
C229.1	Analyse various DC & AC circuits using PSPICE software	Analyse
C229.2	Analyse single-phase half controlled converters	Analyse
C229.3	Analyse single-phase fully controlled converters	Analyse
C229.4	Analyse single-phase Square wave and PWM inverters	Analyse
C229.5	Analyse three-phase Square wave and PWM inverters	Analyse
C229.6	Analyse single-phase AC Voltage controllers with different loads.	Analyse
SPECIFIC LEARNING OUTCOMES – Design Thinking For Innovation		
C2210.1	Understand the concepts related to design thinking	Understand
C2210.2	Understand the fundamentals of Design Thinking and innovation	Understand
C2210.3	Apply the design thinking techniques for solving problems in various sectors	Apply
C2210.4	Analyse to work in a multidisciplinary environment	Analyse
C2210.5	Evaluate the value of creativity	Evaluate
C2210.6	Understand specific problem statements of real time issues	Understand

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GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY::Nellore

Department of Electrical and Electronics Engineering

COURSE OUTCOMES

CAY : 2022-23	Reg: R20	SEM : II	Year : III

SNO	COURSE OUTCOME STATEMENT	Taxonomy
SPECIFIC LEARNING OUTCOMES – Power System Analysis		
C321.1	Form the Zbus and Ybus of a given power system network	Apply
C321.2	Conduct load flow studies using GS and NR methods	Apply
C321.3	Make Calculations for various types of faults	Apply
C321.4	Determine the transient stability by equal area criterion	Apply
C321.5	Determine steady state stability power limit	Apply
C321.6	Distinguish between different types of buses used in load flow solution.	Understand
SPECIFIC LEARNING OUTCOMES – Digital Computer Platforms		
C322.1	Understand the basic architecture & pin diagram of 8086 microprocessor, 8051 Microcontroller, DSP Processor and FPGA Processors	Understand
C322.2	Apply the concepts to design Assembly language programming to perform a given task.	Apply
C322.3	Understand the Interrupt service routines for all interrupt types	Understand
C322.4	Understand the Real time applications by writing Assembly Language Programs for the Digital Signal Processors	Understand
C322.5	Analyze Xilinx programming for Spartan FPGA boards and use Interrupts for real-time control applications	Analyze
C322.6	Analyze various real time systems by using various controllers	Analyze
SPECIFIC LEARNING OUTCOMES – Digital Signal Processing		
C323.1	Understand the basic concepts of discrete-time signals and systems, classify systems based on their properties.	Understand
C323.2	Determine the frequency response for the given LTI systems using difference equations and also plot its pole-zero.	Apply
C323.3	Analyze discrete-time signals and systems using discrete time Fourier transform(DFT) and Fast Fourier transform(FFT).	Analyze
C323.4	Design and implement digital filters (FIR & IIR) for the given specifications.	Design
C323.5	Compare the digital filters and also realize the various filters for different structures in discrete-time systems.	Evaluate
C323.6	Understand and develop the sampling rate conversion techniques, find the quantization errors in digital signal processing.	Understand
SPECIFIC LEARNING OUTCOMES – HVDC and FACTS		
C324.1	Understand the necessity of HVDC systems as emerging transmission networks	Understand
C324.2	Analyze the Graetz circuit with various conditions.	Analyze
C324.3	Apply various control schemes for the control of power flow in HVDC system.	Apply
C324.4	Understand the Operation of converters and Transformer Connections in HVDC .	Understand

C324.5	Analyze the Operation of various Shunt devices and their control.	Analyze
C324.6	Understand Principle of operation and Characteristics of UPFC and IPFC.	Understand

SPECIFIC LEARNING OUTCOMES – Principles of Operating Systems

C325.1	Describe the fundamental organization of a computer systems	Understand
C325.2	Explain about Operating systems functions	Understand
C325.3	Differentiate between process and thread and classify scheduling Algorithms	Understand
C325.4	Determine Synchronization and deadlock problems	Apply
C325.5	Describe about various memory management schemes	Understand
C325.6	Explain file systems concepts and I/O management	Understand

SPECIFIC LEARNING OUTCOMES – Power Systems Analysis Lab

C326.1	Determination of sequence impedance and sub transient reactance of synchronous machine	Apply
C326.2	Conduct experiments to analyze LG, LL, LLG, LLLG faults	Analyze
C326.3	Estimate the parameters of three winding transformer equivalent circuit	Evaluate
C326.4	Develop MATLAB program for formation of Y and Z buses	Analyze
C326.5	Develop MATLAB programs for gauss-seidel Newton Raphson and fast decoupled load flow studies.	Analyze
C326.6	Develop the SIMULINK model load frequency control problem	Analyze

SPECIFIC LEARNING OUTCOMES – Digital Computing Platforms Lab

C327.1	Understand the basic concepts to write assembly language programming on 8086 Microprocessors.	Understand
C327.2		
C327.3	Analyze various device configurations and Interfacing of various devices with 8086.	Analyze
C327.4	Analyze the parallel and serial communication between two microprocessors using USART.	Analyze
C327.5	Understand the basic concepts to write programming on 8051 Microcontroller	Understand
C327.6	Understand various device configurations and Interfacing of various devices with 8051	Understand

SPECIFIC LEARNING OUTCOMES – Digital Signal Processing Lab

C328.1	Demonstrate DSP and its applications using MATLAB software	Understand
C328.2	Examine the frequency response of discrete-time LTI systems.	Apply
C328.3	Design of IIR, FIR digital filters for the given specifications also observe the frequency response.	Analyze
C328.4	Learn the architecture details of floating point DSPs	Understand
C328.5	Implement DSP algorithms in software using CCS with DSP floating point Processor	Evaluate
C328.6	Analyze the basic signals and also find the discrete Fourier transform (DFT) for discrete-time signals/sequences.	Understand

SPECIFIC LEARNING OUTCOMES – Applications of Soft Computing Tools in Electrical Engineering

329.1	Analyse the transient response of Electrical Network and Power System using equal area criterion.	Analyse
329.2	Apply the concepts to design models of Transformers through MATLAB	Apply
329.3	Analyse various converters through MATLAB.	Analyse
329.4	Analyse Sine-PWM techniques for various inverters through MATLAB	Analyse
329.5	Analyse the faults by using Zbus Matrix	Analyse

329.6	Analyse real time models using MATLAB	Analyse
SPECIFIC LEARNING OUTCOMES – Intellectual Property Rights & Patents		
3210.1	Understand the details of IPR law	Understand
3210.2	Understand the details of Cyber law	Understand
3210.3	Illustrate the copy right law	Remember
3210.4	Discuss about registration process associated with trademarks	Understand
3210.5	Discuss about maintenance and litigations associated with trademarks	Understand
3210.6	Understand the trade secret law	Understand

Coordinator   HoD

COURSE OUTCOMES

CAY : 2022-23	SEM : II	R19	Year : IV

SNO	COURSE OUTCOME STATEMENT	Taxonomy
SPECIFIC LEARNING OUTCOMES – ELECTRICAL DISTRIBUTION SYSTEM AUTOMATION		
C421.1	Understand basics of distribution systems and substations	Understand
C421.2	Understand about modelling of various loads	Understand
C421.3	Perform distribution load flow solutions	Apply
C421.4	Understand about installation of capacitors at various locations	Understand
C421.5	Evaluate power loss and feeder cost	Apply
C421.6	Know the principles of SCADA, Automation distribution system and management	Understand
SPECIFIC LEARNING OUTCOMES – ELECTRONICS INSTRUMENTATION		
C422.1	Understand the different methods for measurement of various electrical quantities.	Understand
C422.2	Compare the various measuring techniques for measuring voltage.	Analyse
C422.3	Use oscilloscope to determine frequency and phase of a sinusoidal signal.	Apply
C422.4	Select specific instruments for specific measurement function.	Analyse
C422.5	Compare different types of bridge circuits.	Analyse
C422.6	Analyze various measuring techniques for both electrical and nonelectrical quantities.	Analyse
SPECIFIC LEARNING OUTCOMES – Project Work		
C423.1	Demonstrate a sound technical knowledge of their selected project topic.	Apply
C423.2	Able to identify the problem, formulate a prospective solution	Understand
C423.3	Design engineering solutions to the given problem using a systems approach.	Create
C423.4	Conduct experiments or simulation and collect observation for the engineering project	Analyse
C423.5	Develop a prototype of the project by distribution of tasks among the team	Create
C423.6	Communicate with engineers and the community at large in written an oral forms	Create

Coordinator   HoD

S.NO	COURSE OUTCOMES	TAXONOMY
Specific Learning Outcomes-Operations Research (19A03701)		
C411.1	Formulate the mathematical models and obtain optimum solution using graphical method and simplex method.	Understand
C411.2	Solve the Linear Programming Problem by Big-M, Two- Phase Techniques and in duality method.	Apply
C411.3	Determine the Optimal solution in Transportation Problems and Assignment Problems.	Apply
C411.4	Solve the n-jobs-2-machines,3-machines, Solve the games with Pure and Mixed Strategy	Apply
C411.5	Choose the best strategy for successfully face the competition and identifying the suitable Queuing Model.	Apply
C411.6	Solve complex problems by Dynamic Programming Techniques and explain various types of maintenance, economic replacement policies.	Apply
Specific Learning Outcomes-Metrology & Measurements (19A03702T)		
C412.1	Discuss the concept of limits, fits and jigs.	Understand
C412.2	Describe the concept of measuring standard measurands using comparators.	Understand
C412.3	Demonstrate the measurement of surface profiles.	Understand
C412.4	Explain the different types of machine tool alignment test.	Understand
C412.5	Demonstrate the dynamic quantities using transducers.	Understand
C412.6	Demonstrate the mechanical quantities using transducers.	Understand
Specific Learning Outcomes-Solar and Wind Energy (19A03703d)		
C413.1	Describe about solar radiation and its measurement	Understand
C413.2	summarize different solar collectors and solar energy conversion systems	Understand
C413.3	Demonstrate the performance of a solar cell array system	Apply
C413.4	Interpret the wind energy sources assessment	Understand
C413.5	Explain about different Wind Energy Conversion Systems	Understand
C413.6	Explain basics of designing of aerofoil to suit for different environmental conditions	Apply
Specific Learning Outcomes-Cyber Security (19A05704b)		
C414.1	Illustrate the broad set of technical, social &Political aspects of Cyber security and security management methods to maintain security protection.	Understand
C414.2	Assess the Vulenrabilities and threats posed by criminals,terrorist and nation states to national infrastructure	Evaluate
C414.3	Identify the nature of secure software development and operating systems	Remember

	Demonstrate the role security management in cyber security defense	Apply
C414.4		
C414.5	Modify the legal and social issues at play in developing Solutions	Apply
C414.6	Elaborate on the Emerging topics	Evaluate
Specific Learning Outcomes-Management Science (19A52701b)		
C415.1	Explain the basic concepts of management in modern contexts.	Understand
C415.2	Define organization structures and principles.	Remember
C415.3	Demonstrate production and marketing aspects.	Apply
C415.4	Outline the roles and responsibilities of Human Resource Manager.	Analyze
C415.5	Formulate strategies in the modern management.	Create
C415.6	Compare the modern management practices based on the requirement of the projects.	Evaluate
Specific Learning Outcomes-Metrology & Measurements Lab (19A03702P)		
C416.1	Demonstrate and measure the linear, angular and gear profiles	Apply
C416.2	Conduct the alignment test on machine tools.	Apply
C416.3	Measure the flatness of the surface by using leveling tools.	Apply
C416.4	Measure the temperature& displacement by using transducers.	Apply
C416.5	Measure the speed, pressure, and strain by using transducers.	Apply
C416.6	Measure the angular measurement &flow measurement by using transducers	Apply
Specific Learning Outcomes-CAD / CAM Lab (19A03602P)		
C417.1	Use CAD tools for 2D & 3D drawings of Mechanical Components.	Apply
C417.2	Show the 3D solid Models in to 2D drawing and orthographic views.	Apply
C417.3	Model the simple machine parts and assemble from part drawings using standard CAD packages	Apply
C417.4	Describe the CNC control in modern manufacturing system	Apply
C417.5	Describe CNC part Programming and apply in manufacturing on CNC Turning machine.	Apply
C417.6	Demonstrate the NC Codes for CNC machine.	Apply
Specific Learning Outcomes-IOT Lab (19A05406P)		
C418.1	Discuss the concept of Arduino or Raspberry controllers	Understand
C418.2	Describe the same board as in (1), read data from a sensor. Experiment with both analog and digital sensors.	Apply
C418.3	Control any two actuators connected to the development board using Bluetooth.	Apply
C418.4	Create any cloud platform account, explore IoT services and register a thing on the platform.	Apply
C418.5	Control an actuator through cloud.	Apply
C418.6	Create a mobile app to control an actuator.	Apply

S.NO	COURSE OUTCOMES	TAXONOMY
Specific Learning Outcomes- CAD/CAM (20A03501)		
C311.1	Describe the cycles in CAD, CAM and CAD/CAM systems which are used in the real time industry.	Understand
C311.2	Describe the tools used in Geometric modelling and various computer aided design considerations.	Understand
C311.3	Describe the NC tools, process held in the manufacturing units	Understand
C311.4	Demonstrate the Numerical Control programming in turning milling machines.	Understand
C311.5	Assess the quality of products using group technology technique.	Apply
C311.6	Describe the various process plans held in the industry and learning about MRP.	Understand
Specific Learning Outcomes- Design of Machine Members (20A03502)		
C312.1	Design curved beam machine elements like crane hooks, C-clamps, machine frames.	Apply
C312.2	Describe various concepts of design of power transmission elements.	Understand
C312.3	Design helical springs for two wheel vehicle and laminated springs for trucks.	Apply
C312.4	Design various types of rolling contact bearings and sliding contact bearings.	Apply
C312.5	Design spur and helical gears for different input conditions.	Apply
C312.6	Analyze the forces acting and the failure criteria to be adopted for various I C engine parts.	Analyse
Specific Learning Outcomes- Metrology and Measurements (20A03503T)		
C313.1	Explain the concept of limits, fits and tolerances	Understand
C313.2	Demonstrate the concept of measuring standard measurements using comparators.	Understand
C313.3	Demonstrate the measurement of surface profiles.	Understand
C313.4	Outline the principles of linear and angular measurement tools used for industrial applications	Apply
C313.5	Calibrate the dynamic quantities using transducers.	Apply
C313.6	Calibrate the mechanical quantities using transducers.	Apply
Specific Learning Outcomes- Automation & Robotics (20A03504a)		
C314.1	Classify the types of hardware components of automation and control system	Understand
C314.2	Design a simple material handling system for low cost manufacturing	Analyze
C314.3	Design a simple gripper for robot	Apply
C314.4	Compare the types of actuators used in robot manipulator	Understand
C314.5	Understand the requirements of features of robot programming	Apply
C314.6	Demonstrate the various applications of robots in manufacturing	Understand
Specific Learning Outcomes- Java Programming (20A05505a)		
C315.1	Understand the syntax, semantics of Java Programming Language and apply object-oriented programming principles to real world problems	Understand

C315.2	Apply code reusability through inheritance, packages and interfaces	Apply
C315.3	Develop User defined Exceptions in real world problems	Apply
C315.4	Develop applications by using parallel streams for better performance.	Remember
C315.5	Use multithreading and collection framework for real world problems	Apply
C315.6	Build GUI using applets, swings and access the database using JDBC	Apply
Specific Learning Outcomes- Metrology and Measurements Laboratory (20A03503P)		
C316.1	Demonstrate and measure the linear, angular and gear profiles	Apply
C316.2	Conduct the alignment test on machine tools.	Apply
C316.3	Measure the flatness of the surface by using leveling tools.	Apply
C316.4	Measure the temperature& displacement by using transducers.	Apply
C316.5	Measure the speed, pressure, and strain by using transducers.	Apply
C316.6	Measure the angular measurement &flow measurement by using transducers	Apply
Specific Learning Outcomes- Computer Aided Modeling Laboratory (20A03506)		
C317.1	Use CAD tools for 2D & 3D drawings of Mechanical Components.	Apply
C317.2	Show the 3D solid models into 2D drawing and orthographic views.	Apply
C317.3	Model the simple machine parts and assemble from part drawings using standard CAD packages.	Apply
C317.4	Describe the CNC control in modern manufacturing system.	Apply
C317.5	Describe CNC part programming and apply in manufacturing on CNC Turning machine.	Apply
C317.6	Demonstrate the NC Codes for CNC Machine.	Apply
Specific Learning Outcomes- Innovation through IoT (20A03507)		
C318.1	Introduction to Micro Controllers.	**Analyze**
C318.2	Introduction and applications of IoT , Cloud services & Software Agents.	**Analyze**
C318.3	Introduction to Design & Concepts of IoT: Using the concepts of IoT, Implement the 5 stages (Empathize, Define, Prototype, Ideate, Test)	Create
C318.4	Conduct survey and identify the problem on the above experiments, either individual/group and to avail problem statements for further development.	**Create**
C318.5	With the help of problem statement in experiment 6, draw product/system after applying CREATE (Combine, Rearrange, Enhance, Adapt, Turn around, Eliminate) Tool.	**Create**
C318.6	Story boarding of design ideas to transform ,'information about needs' into design concepts.	**Create**

CO.NO	COURSE OUTCOMES	Taxonomy
Specific learning outcomes – Complex Variables, Transforms and PDE (20A54303)		
C211.1	Find the analytic functions using C-R equations, the image using conformal mapping and bi-linear transformation.	Apply
C211.2	Use Cauchy's theorem, Cauchy's integral formula and Cauchy's residues theorem to evaluate complex integrations and expansion of complex functions using Taylor's and Laurent's series.	Apply
C211.3	Define Laplace and inverse Laplace transforms of various functions and solve ordinary differential equations using Laplace transform.	Apply
C211.4	Determine Fourier series of periodic functions in a given interval and Parseval's formula- Complex form of Fourier series.	Apply
C211.5	Construct the partial differential equations and solve first order and second order PDEs by Lagrange's method and method of separation of variables respectively	Apply
C211.6	Solve one dimensional wave, heat and Laplace equations.	Apply
Specific Learning Outcomes –Fluid Mechanics & Hydraulic Machines 20A01302T		
C212.1	Describe the importance of various fluid properties which are at rest and in motion.	Understand
C212.2	Apply the general governing equations to estimate flow quantities.	Apply
C212.3	Design the pipe line network based on frictional loss estimate.	Apply
C212.4	Explain the Hydroelectric Power plant with the available water resources and requirement of power.	Understand
C212.5	Evaluate the performance characteristics of hydraulic turbines	Evaluate
C212.6	Evaluate the performance characteristics of Centrifugal Pumps	Evaluate
Specific Learning Outcomes – Manufacturing Processes (20A03301T)		
C213.1	Differentiate various metal casting processes by understanding its defects and remedies.	Understand
C213.2	Describe the nature of various plastic deformation techniques used in hot and cold working of metals.	Understand
C213.3	Explain the different welding processes for defect free joints.	Understand
C213.4	Explain the steps involved in making of ceramics, processing of plastics.	Understand
C213.5	Describe the principle and steps involved in powder metallurgy.	Understand
C213.6	Demonstrate the principle and working of unconventional machining processes.	Understand
Specific Learning Outcomes –Thermodynamics 20A03302		
C214.1	Explain the concepts of thermodynamic systems, state, properties, processes, work transfer and heat transfer	Understand
C214.2	Estimate the thermodynamic properties of substances at a given state using the tables or equations of state.	Apply
C214.3	Analyze systems using first law and second law of thermodynamics.	Analyze
C214.4	Quantify the performance of power generation systems and heat pumps based on cycles	Apply
C214.5	Estimate the quality of energy transferred through thermodynamic systems.	Analyze

C214.6	Solve problems on performance of air standard cycles using a systematic approach	Apply
Specific Learning Outcomes – 20A01305T Mechanics of Materials		
C215.1	Measure the strength of different kind of engineering materials based on the magnitudes of induced stress and strain values under the effect of axial and thermal loads.	UNDERSTAND
C215.2	Analyse the principal stresses and the components of stress on different planes, under the effect of different Loads in biaxial stress element, by using both the analytical and Mohr's circle method.	APPLY
C215.3	Estimate the maximum shear force and maximum bending moment induced in different types of beams for different lateral loadings conditions through the graphical representation shear force and bending moment at various lateral sections, additionally the shear stress and bending stress distribution in different cross sections of beams is also determined.	UNDERSTAND
C215.4	Compute the slope and deflection produced in beam under different lateral loading conditions, along with the strain energy and its allied parameters stored in the beams by applying the Castigliano's theorem.	APPLY
C215.5	Calculate the shear strength of the solid and hallow shafts which are subjected to torsional loading in power transmission, besides the stresses and deformations produced in the springs.	UNDERSTAND
C215.6	Analyse the columns through the estimation of buckling load, by using the Euler's concept of buckling. Calculate different stresses and strains in thin cylinders in the identification of safe design for boiler shells	APPLY
Specific Learning Outcomes – 20A01302P Fluid Mechanics &Hydraulic Machines Lab		
C216.1	Demonstrate the knowledge on various flow measuring instruments.	Apply
C216.2	Evaluate the coefficient of discharge of flow through pipes.	Evaluate
C216.3	Evaluate the major and minor losses for conduit flows.	Evaluate
C216.4	Analyse the performance characteristics of hydraulic turbines.	Analyse
C216.5	Analyse the performance characteristics of hydraulic pumps.	Analyse
C216.6	Analyse the percentage of error in discharge in flow through pipes.	Analyse
Specific Learning Outcomes – Manufacturing Processes Lab (20A03301P)		
C217.1	To calculate the pouring and solidification time during casting process.	Apply
C217.2	To illustrate the strength and permeability of sand used in moulding process.	Apply
C217.3	To produce defect free joints by applying TIG &MIG welding process.	Apply
C217.4	To produce defect free joints by applying special welding process.	Apply
C217.5	To model press working operations by using simple dies.	Apply
C217.6	To demonstrate the working principle of nontraditional manufacturing processes.	Understand
Specific Learning Outcomes – 20A01305P Mechanics of Materials Lab		
C218.1	Determine Young's Modulus of solids under tensile & compressive loads.	Apply
C218.2	Calculate the Young's Modulus of beams under bending loads.	Apply
C218.3	Determine the shear modulus of solids under torsional loads.	Apply

C218.4	Calculate the strength of solids under impact loads.	Apply
C218.5	Evaluate the behavior of helical springs under static loads.	Evaluate
C218.6	Estimate the hardness of solids under gradual loads.	Evaluate

Specific Learning Outcomes – Application Development with Python 20A05305

C219.1	Apply the basic concepts, modular approach to solve the problems.	Apply
C219.2	Design the programs using conditional execution, recursion, built in functions, turtle	Create
C219.3	Design programs to manipulate strings	Create
C219.4	Apply python programs to read and write data from/to files.	Apply
C219.5	Design the programs by choosing appropriate data structures like lists, dictionaries, tuples.	Create
C219.6	Apply object oriented programming concepts	Apply

Specific Learning Outcomes – 20A99201 Environmental Science

C2110.1	Describe the multidisciplinary nature of environmental studies and various renewable and non-renewable resources.	Understand
C2110.2	Understand flow and bio-geo- chemical cycles and ecological pyramids.	Understand
C2110.3	Understand various causes of pollution and solid waste management and related preventive measures.	Understand
C2110.4	Explain about the rainwater harvesting, watershed management, ozone layer depletion and waste land reclamation.	Understand
C2110.5	Demonstrate the casus of population explosion, value education	Understand
C2110.6	Explain various welfare programmes.	Understand

CO.NO	COURSE OUTCOMES	Taxonomy
Specific learning outcomes –Disaster Management (19A01802a)		
C421.1	Recite the the natural hazards and its management.	Remember
C421.2	Explain the fire hazards and solid waste management	Understand
C421.3	Interpret the regulations of building codes and land use planning related to risk and vulnerability.	Understand
C421.4	Explain the technological aspects of disaster management	Understand
C421.5	Describe the education related to risk reduction in schools and communities	Remember
C421.6	Understand about the factors for disaster reduction	Understand
Specific Learning Outcomes – Total Quality Management (19a03801d)		
C422.1	Understand the basic concepts of Total quality Management	Understand
C422.2	Explain the quality council its importance in real time application	Understand
C422.3	Apply the Quality control techniques in organization towards quality improvement	Apply
C422.4	Understanding the quality principle in measuring the performance	Understand
C422.5	Apply the quality tools in improving the process of production	Apply
C422.6	Understand the importance of quality standards in production	Understand
Specific Learning Outcomes – Project Work (19A03803)		
C423.1	Prepare the abstract represents showing prospective solution of problem	Understand
C423.2	Refer the literature from various sources to arrive at the problem	Understand
C423.3	Design the required module of the selected project as per specifications	Apply
C423.4	Attain and analyse the results of the designed module	Apply
C423.5	Develop a prototype of the project with the distribution of tasks among the team	Analyze
C423.6	Prepare the project report as per guidelines and present before the panel of experts	Understand

CO.NO	COURSE OUTCOMES	Taxonomy
Specific learning outcomes – Dynamics of Machinery (20A03601)		
C321.1	Explain the concepts of friction and its pivotal role in the functioning of collars, pivots, brakes, clutches and dynamometers.	Understand
C321.2	Apply gyroscopic principles on the motion of aeroplane, ship, four wheel and two wheel vehicles.	Apply
C321.3	Design a flywheel and also develop turning moment diagram for an IC engine.	Apply
C321.4	Analyze the working characteristics of distinguished governors.	Analyze
C321.5	Analyze the balancing of rotating and reciprocating masses	Analyze
C321.6	Estimate the natural frequency of vibrating system.	Apply
Specific Learning Outcomes – Finite Element Methods (FEM) (20A03602)		
C322.1	Explain the approaches for solving FEM problems in different fields.	Understand
C322.2	Formulate FEM model for bars and trusses to develop stiffness matrices and load vectors.	Apply
C322.3	Predict stresses in beams and frames using FEM.	Apply
C322.4	Write interpolation functions to higher order are parametric elements.	Apply
C322.5	Solve the stress in Axis symmetric triangular elements and apply finite element applications in solid mechanics.	Apply
C322.6	Solve the 2D heat transfer and fluid mechanics problems using FEM.	Apply
Specific Learning Outcomes – Heat Transfer (20A03603T)		
C323.1	Understand the basic modes of heat transfer and their practical relevance	Understand
C323.2	Analyze one dimensional steady and unsteady state heat transfer problems in solids	Analyze
C323.3	Solve free and forced convection problems for external and internal flows.	Apply
C323.4	Estimate the rate of heat transfer in boiling and condensation applications.	Apply
C323.5	Predict the emission characteristics and rate of heat transfer for systems under thermal radiation.	Apply
C323.6	Design the heat transfer equipment for engineering applications	Apply
Specific Learning Outcomes – Professional Elective – II **Total Quality Management (TQM) (20A03604c)**		
C324.1	Understand the basic concepts of Total quality Management	Understand
C324.2	Explain the quality council its importance in real time application	Understand
C324.3	Apply the Quality control techniques in organization towards quality improvement	Apply
C324.4	Understanding the quality principle in measuring the performance	Understand
C324.5	Apply the quality tools in improving the process of production	Apply
C324.6	Understand the importance of quality standards in production	Understand
Specific Learning Outcomes – Open Elective Course – II **Introduction to Internet of Things (20A04701b)**		
C325.1	Understand the concepts of Internet of Things	Understand
C325.2	Identify hardware , software components and basic communication protocols of Internet of Things	Remember

C325.3	Understand different types of sensors and actuators	Understand
C325.4	Describe IoT applications in different domain and be able to analyze their performance	Understand
C325.5	Understand how to analyze and organize the data	Understand
C325.6	Explain different IOT Applications in real world.	Understand

Specific Learning Outcomes – Computer Aided Design Laboratory (20A03606)

C326.1	Demonstrate the knowledge on various simulation software's.	Understand
C326.2	Analyse the structural components of various bars and beams.	Analyse
C326.3	Illustrate the thermal analysis of 2D components and composite wall.	Analyse
C326.4	Illustrate the couple field analysis of 2D components and composite wall.	Analyse
C326.5	Solve the fluid flow problems by using computational fluid dynamics.	Apply
C326.6	Evaluate the various research problems in all the fields of engineering by using FEA.	Evaluate

Specific Learning Outcomes – 20A03607
Computer Aided Manufacturing Laboratory

C327.1	Describe the CNC control in modern manufacturing system.	Understand
C327.2	Generate a CNC program of given diagram using CNC lathe	Apply
C327.3	Generate a CNC program of given diagram using CNC Milling	Apply
C327.4	Generate a CNC program of given diagram using CNC Drilling	Apply
C327.5	Apply mathematical methods to calculate Joint coordinates in robotics.	Apply
C327.6	Apply the programming concepts of Robots for simple applications in material handling and assembly	Apply

Specific Learning Outcomes – 20A03603P
Heat Transfer Laboratory

C328.1	Estimate the Heat Transfer coefficient for conductive mode of Heat Transfer.	Apply
C328.2	Estimate the Heat Transfer coefficient for convective mode of Heat Transfer.	Apply
C328.3	Evaluate the emission characteristics of grey bodies.	Evaluate
C328.4	Determine the Stefan Boltzmann constant for radiation Heat Transfer.	Apply
C328.5	Estimate the performance characteristics of heat exchangers.	Apply
C328.6	Predict the heat transfer coefficient for drop wise and film wise condensation.	Apply

Specific Learning Outcomes – Skill oriented course – IV 3D Printing practice (20A03608)

C329.1	Explain different types of 3d Printing techniques	Understand
C329.2	Identify parameters for powder binding and jetting process	Understand
C329.3	Determine effective use of ABS material for 3D Printing	Apply
C329.4	Apply principles of mathematics to evaluate the volume of material require.	Apply

Specific Learning Outcomes – Mandatory Non-credit Course **Intellectual Property Rights & Patents (20A99601)**		
C3210.1	Distinguish and explain various forms of IPR	Understand
C3210.2	Identify criteria's to fit one's own intellectual work in particular form & IPR	Understand
C3210.3	Apply statutory provisions to protect particular form of IPR	Apply

II Year II Semester

SNO	COURSE OUTCOME	Bloom Taxonomy
Specific learning outcomes –Numerical Methods and Probability Theory (20A54402)		
C221.1	Use the numerical techniques find solution of algebraic and transcendental Equations.	Apply
C221.2	Determine the interpolating value of the function using Numerical techniques.	Apply
C221.3	Evaluate definite integrals using Newton cotes Formula.	Remember
C221.4	Utilize numerical methods to find numerical solution of ordinary and partial differential equations.	Apply
C221.5	Explain the basic concepts of probability, random variables and solve real time problems using Baye's theorem.	Understand
C221.6	Apply probability distributions like Bionomial, Poisson and Normal distributions to solve statistical problems	Apply
Specific Learning Outcomes – Applied Thermodynamics (20A03401T)		
C222.1	Understand the working principles of I.C. Engines, estimate engine performance through various tests and learn about combustion processes in SI and CI engines and identify the effects due to abnormal combustion	Understand
C222.2	Classify different types of compressors, learn about their working principles and uses and compare their individual performances.	Understand
C222.3	Explain the concepts of vapour power cycles used in steam power plants in terms of their efficiencies and work output, also study about gas turbine cycles and evaluate their performance improvement methods and also outline about the working principles of jet propulsion systems.	Evaluate
C222.4	Know about nozzles, their discharges and uses in turbnes, Classify steam turbines and analyze their performances and efficiencies through compounding and governing	Understand

C222.5	Learn about different refrigeration cycles, identify refrigerants and analyze their properties and applications	Understand
C222.6	Use properties of moist air in calculations for air condioning systems	Apply

Specific Learning Outcomes – Kinematics of Machinery (20A03402)

C223.1	Describe different mechanisms, inversions of different kinematic chains and also to find mobility of mechanisms	Understand
C223.2	Apply the mechanism of Hooke's joint, steering mechanisms	Apply
C223.3	Explain the working principle of different straight line motion mechanisms.	Understand
C223.4	Predict velocity and acceleration diagrams of simple plane mechanisms by using relative velocity method and instantaneous centre method.	Apply
C223.5	Explain gears, power transmission through different types of gears including gear profiles and its efficiency.	Understand
C223.6	Illustrate displacement diagram and cam profile for different follower motions.	Apply

Specific Learning Outcomes –   Manufacturing Technology (20A03403T)

C224.1	Interpret the tool geometry on chip formation and cutting processes.	Understand
C224.2	Identify the basic parts and operations performed on conventional machine tools.	Understand
C224.3	Estimate the machining parameters for machine tools.	Understand
C224.4	Select the type of machine tool and corresponding cutting tool required for a given geometry.	Understand
C224.5	Demonstrate the design features of jigs and fixtures.	Understand
C224.6	Use most advanced machine tools used in industrial automation.	Understand

Specific Learning Outcomes – Managerial Economics & Financial Analysis (20A52301)

C225.1	To inculcate the basic knowledge of micro economics and financial accounting	Understand
C225.2	To make the students learn how demand is estimated for different products, input-output relationship for optimizing production and cost	Apply
C225.3	To know the various types of Market Structures & pricing methods and its strategies	Analyze

C225.4	To give an overview on investment appraisal methods to promote the students to learn how to plan long-term investment decisions.	Understand
C225.5	To provide fundamental skills on Accounting and to explain the process of preparing Financial statements	Apply
C225.6	To outline the different types of business organizations and provide a framework for analyzing money in its functions as a medium of exchange.	Apply
Specific Learning Outcomes – Applied Thermodynamic Lab (20A03401P)		
C226.1	Outline the valve timing diagram and port timing diagram of IC engines	Understand
C226.2	Compute the performance of IC engine	Apply
C226.3	Compute the performance of multi stage reciprocating air compressors	Apply
C226.4	Compute the performance of Refrigeration and Air-conditioning systems	Apply
C226.5	Compute the performance of Heat Pipes and Heat Pumps	Apply
C226.6	Determine the nozzle characteristics	Apply
C226.7	Analyze the exhaust gases using ORSAT apparatus	Analyze
Specific Learning Outcomes – Manufacturing Technology Lab (20A03403P)		
C227.1	Explain the working of various parts of machine tools.	Understand
C227.2	Operate step turning, thread cutting and Knurling operations on lathe.	Apply
C227.3	Operate drilling and tapping operations using drilling machine.	Apply
C227.4	Operate keyway cut using Slotting Machines.	Apply
C227.5	Operate gear cutting using milling machine.	Apply
C227.6	Model the tool angles on single point cutting tool.	Apply
Specific Learning Outcomes – Computer Aided Machine Drawing (20A03404)		
C228.1	Demonstrate the conventional representations of materials and machine components.	Understand

C228.2	Model riveted, welded and key joints using CAD system.	Apply
C228.3	Create solid models and sectional views of machine components.	Analyze
C228.4	Generate solid models of machine parts and assemble them.	Apply
C228.5	Translate 3D assemblies into 2D drawings.	Analyze
C228.6	Create manufacturing drawing with dimensional and geometric tolerances.	Apply
Specific Learning Outcomes-soft skills (20A52401)		
C229.1	Memorize various elements of effective communicative skills	Understand
C229.2	Interpret people at the emotional level through emotional intelligence	Understand
C229.3	Apply critical thinking skills in problem solving	Apply
C229.4	Analyze the needs of an organization for team building	Analyze
C229.5	Judge the situation and take necessary decisions as a leader	Analyze
C229.6	Develop social and work- life skills as well as personal and emotional well-being	Analyze
Specific Learning Outcomes – Design Thinking for innovation (20A99401)		
C2210.1	Summarize the importance of basic sciences in product development	Understand
C2210.2	Explain the historical developments in mechanical, electrical, communications and computational engineering	Understand
C2210.3	Apply systematic approach to innovative designs	Understand
C2210.4	Identify new materials and manufacturing methods in design	Understand
C2210.5	Develop simple electrical gadgets.	Create
C2210.6	Understand reverse engineering methods in product development.	Understand