2.6.1 TEACHERS AND STUDENTS ARE AWARE OF THE STATED PROGRAMME AND COURSE OUTCOMES OF THE PROGRAMMES OFFERED BY THE INSTITUTION

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

Tiruchengode, Namakkal, Tamil Nadu - 637 215.
Affiliated to Anna University and Approved by AICTE
All UG Departments are Accredited by NBA

COURSE OUTCOMES, CO-PO/PSO MAPPING

REGULATION 2017

ANNA UNIVERSITY, CHENNAI

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY, TIRUCHENGODE – 637 215

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MAPPING OF COURSE OUTCOME WITH PROGRAM OUTCOMES

REGULATION 2017

Program Outcome for Computer Science and Engineering

PROGRAMME OUTCOMES (POs)

PO1: Engineering knowledge: Ability to apply the knowledge of mathematics, physical sciences and computer science and engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Ability to identify, formulate and analyze complex real life problems in order to provide meaningful solutions by applying knowledge acquired in computer science and engineering.

PO3: Design/development of solutions: Ability to design cost effective software / hardware solutions to meet desired needs of customers/clients.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions in the field of computer science and engineering.

PO5: Modern tool usage: Create, select and apply appropriate techniques, resources and modern computer science and engineering tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

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PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSO's)

PSO1: Software System Design and Development: The ability to apply software development life cycle principles to design and develop the application software that meet the automation needs of society and industry.

PSO2: Computing and Research ability: The ability to employ modern computer languages, environments and platforms in creating innovative career paths in SMAC (Social, Mobile, Analytics and Cloud) technologies.

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

LIST OF COURSE OUTCOMES

FIRST SEMESTER

HS8151 Communicative English	
C101.1	Read articles of a general kind in magazines and newspapers.
C101.2	Participate effectively in informal conversations; introduce themselves and their friends andexpress opinions in English.
C101.3	Understand the text structure and Language develoment
C101.4	Comprehend conversations and short talks delivered in English
C101.5	Write short essays of a general kind and personal letters and emails in English

MA8151 – Engineering Mathematics – I	
C102.1	Use both the limit definition and rules of differentiation to differentiate functions.
C102.2	Apply differentiation to solve maxima and minima problems.
C102.3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
C102.4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables
C102.5	Apply various techniques in solving differential equations.

PH8151 – Engineering Physics	
C103.1	The students will gain knowledge on the basics of properties of matter and its applications
C103.2	The students will acquire knowledge on the concepts of waves and optical devices andtheir applications in fibre optics
C103.3	The students will have adequate knowledge on the concepts of thermal properties ofmaterials and their applications in expansion joints and heat exchangers
C103.4	The students will get knowledge on advanced physics concepts of quantum theory and itsapplications in tunneling microscopes
C103.5	The students will understand the basics of crystals

CY8151 – Engineering Chemistry	
C104.1	Conversant with boiler feed water requirements, related problems and water treatment techniques
C104.2	Understand the basic concepts of phase rule and its applications to singleand two component systems and appreciate the purpose and significance of alloys
C104.3	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning
C104.4	Classify the types of fuels, calorific value calculations, manufacture of solid, liquid and gaseous fuels.
C104.5	Able to know the principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells.

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GE8151- Problem Solving and Python Programming	
C105.1	Develop algorithmic solutions to simple computational problems and Read, write, execute by hand simple Python programs.
C105.2	Structure simple Python programs for solving problems.
C105.3	Decompose a Python program into functions.
C105.4	Represent compound data using Python lists, tuples, dictionaries.
C105.5	Read and write data from/to files in Python Programs.

GE8152-Engineering Graphics	
C106.1	Familiarize with the fundamentals and standards of Engineering graphics
C106.2	Perform freehand sketching of basic geometrical constructions and multiple views ofobjects.
C106.3	Project orthographic projections of lines and plane surfaces.
C106.4	Draw projections and solids and development of surfaces.
C106.5	Visualize and to project isometric and perspective sections of simple solids.

GE8161-Problem Solving And Python Programming Laboratory	
C107.1	Write, test, and debug simple Python programs
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them
C107.4	Use Python lists, tuples, dictionaries for representing compound data
C107.5	Read and write data from/to files in Python

BS816 Physics And Chemistry Laboratory	
C108.1	Apply principles of elasticity used in engineering applications
C108.2	Understand the concepts of optics and thermal properties for engineering applications
C108.3	Able to know the mercury spectrum and semiconductor
C108.4	The students will be outfitted with hands-on knowledge in the quantitative chemical particles
C108.5	Able to analysis of water quality related parameters

SECOND SEMESTER

HS8251-Technical English	
C109.1	Read technical texts and write area- specific texts effortlessly.
C109.2	Listen and comprehend lectures and talks in their area of specialisation successfully.
C109.3	Able to understand the basics of language
C109.4	Speak appropriately and effectively in varied formal and informal contexts.
C109.5	Write reports and winning job applications

MA8251 – Engineering Mathematics – II	
C110.1	Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positivedefinite matrices and similar matrices.
C110.2	Gradient, divergence and curl of a vector point function and related identities.
C110.3	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.
C110.4	Analytic functions, conformal mapping and complex integration.
C110.5	Laplace transform and inverse transform of simple functions, properties, various relatedtheorems and application to differential equations with constant coefficients.

PH8252 - Physics For Information Science	
C111.1	Gain knowledge on classical and quantum electron theories, and energy band structuues,
C111.2	Acquire knowledge on basics of semiconductor physics and its applications in various devices,
C111.3	Get knowledge on magnetic properties of materials and their applications in data storage,
C111.4	Have the necessary understanding on the functioning of optical materials foroptoelectronics,
C111.5	Understand the basics of quantum structures and their applications in carbon electronics

BE8255 - Basic Electrical, Electronics And Measurement Engineering	
C112.1	Discuss the essentials of electric circuits and analysis.
C112.2	Discuss the basic operation of electric machines and transformers
C112.3	Introduction of renewable sources and common domestic loads.
C112.4	Able to understand about electronic circuits and diodes
C112.5	Introduction to measurement and metering for electric circuits.

GE8291 - Environmental Science And Engineering	
C113.1	Able to know the environmental eco systems
C113.2	Able to know the sources of environmental pollution
C113.3	Able to find the natural resources such as water, energy
C113.4	To know the social issues related to environmental pollution
C113.5	Know about the impact of population against the environment pollution

CS8251 - Programming In C	
C114.1	Develop simple applications in C using basic constructs
C114.2	Design and implement applications using arrays and strings
C114.3	Develop and implement applications in C using functions and pointers.
C114.4	Develop applications in C using structures.
C114.5	Design applications using sequential and random access file processing

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GE8261- Engineering Practices Laboratory	
C115.1	Fabricate carpentry components and pipe connections including plumbing works.Use welding equipments to join the structures.
C115.2	Carry out the basic machining operations Make the models using sheet metal works
C115.3	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary andfittings
C115.4	Carry out basic home electrical works and appliancesMeasure the electrical quantities
C115.5	Elaborate on the components, gates, soldering practices.

CS8261 - C Programming Laboratory	
C116.1	Develop C programs for simple applications making use of basic constructs
C116.2	Able to develop programs using arrays andstrings.
C116.3	Develop C programs involving functions, recursion
C116.4	Use of pointers, and structures for memory management
C116.5	Design applications using sequential and random access file processing.

THIRD SEMESTER

MA8351 – Discrete Mathematics	
C201.1	Have knowledge of the concepts needed to test the logic of a program.
C201.2	Have an understanding in identifying structures on many levels.
C201.3	Be aware of a class of functions which transform a finite set into another finite set whichrelates to input and output functions in computer science.
C201.4	Be aware of the counting principles.
C201.5	Be exposed to concepts and properties of algebraic structures such as groups, rings andfields

CS8351 – Digital Principles And System Design	
C202.1	Simplify Boolean functions using KMap
C202.2	Design and Analyze Combinational Circuits
C202.3	Design and Analyze Sequential Circuits
C202.4	Implement designs using Programmable Logic Devices
C202.5	Write HDL code for combinational and Sequential Circuits

CS8391 - Data Structures	
C203.1	Implement abstract data types for linear data structures.
C203.2	Apply the different linear data structures to problem solutions.
C203.3	Apply the different tree data structures to problem solutions.
C203.4	Apply the different Graph data structures to problem solutions.
C203.5	Analyze various searching algorithms

CS8392 - Object Oriented Programming	
C204.1	Develop Java programs using OOP principles
C204.2	Develop Java programs with the concepts inheritance and interfaces
C204.3	Build Java applications using exceptions and I/O streams
C204.4	Develop Java applications with threads and generics classes
C204.5	Develop interactive Java programs using swings

EC8395 - Communication Engineering	
C205.1	Ability to comprehend and appreciate the significance and role of this course in the present contemporary world
C205.2	Apply analog and digital communication techniques.
C205.3	Use data and pulse communication techniques.
C205.4	Analyze Source and Error control coding.
C205.5	Analyze spread spectrum and multiple access

CS8381 - Data Strucutres Laboratory	
C206.1	Write functions to implement linear and non-linear data structure operations
C206.2	Suggest appropriate linear / non-linear data structure operations for solving a givenproblem
C206.3	Apply appropriate method to traverse graph
C206.4	Appropriately use the linear / non-linear data structure operations for a given problem
C206.5	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval

CS8383 - Object Oriented Programming Laboratory	
C207.1	Develop and implement Java programs for simple applications that make use of classes
C207.2	Develop and implement Java programs with arraylist
C207.3	Develop java applications using strings
C207.4	Design and develop application using AWT
C207.5	Design applications using file processing

CS8382 - Digital Systems Laboratory	
C208.1	Implement simplified combinational circuits using basic logic gates
C208.2	Implement combinational circuits using MSI devices
C208.3	Implement sequential circuits like registers
C208.4	Implement sequential circuits like synchronous and asynchronous counters
C208.5	Simulate combinational and sequential circuits using HDL

HS8381 Interpersonal Skills/Listening&Speaking	
C209.1	Listen and respond appropriately.
C209.2	Communicate effectively
C209.3	Participate in group discussions
C209.4	Make effective presentations
C209.5	Participate confidently and appropriately in conversations both formal and informal

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FOURTH SEMESTER

MA8402-Probability And Queueing Theory	
C210.1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
C210.2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
C210.3	Apply the concept of random processes in engineering disciplines.
C210.4	Acquire skills in analyzing queueing models.
C210.5	Understand and characterize phenomenon which evolve with respect to time in a probabilistic manner

CS8491-Computer Architecture	
C211.1	Understand the basics structure of computers, operations and instructions.
C211.2	Design arithmetic and logic unit.
C211.3	Understand pipelined execution and design control unit.
C211.4	Understand parallel processing architectures.
C211.5	Understand the various memory systems and I/O communication.

CS8492 - Database Management Systems	
C212.1	Classify the modern and futuristic database applications based on size and complexity
C212.2	Map ER model to Relational model to perform database design effectively
C212.3	Write queries using normalization criteria and optimize queries
C212.4	Compare and contrast various indexing strategies in different database systems
C212.5	Appraise how advanced databases differ from traditional databases.

CS6451-Design and Analysis of Algorithms	
C213.1	Design algorithms for various computing problems.
C213.2	Analyze the time and space complexity of algorithms.
C213.3	Critically analyze the different algorithm design techniques for a given problem.
C213.4	Modify existing algorithms to improve efficiency.
C213.5	Coping with the algorithmic power and dealing with NP problems

CS8493 - Operating Systems	
C214.1	Analyze various scheduling algorithms.
C214.2	Understand deadlock, prevention and avoidance algorithms.
C214.3	Compare and contrast various memory management schemes.
C214.4	Understand the functionality of file systems.
C214.5	Perform administrative tasks on Linux Servers and Compare iOS and Android Operating Systems

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CS8494 - Software Engineering	
C215.1	Identify the key activities in managing a software project and Compare different process models.
C215.2	Concepts of requirements engineering and Analysis Modeling.
C215.3	Apply systematic procedure for software design and deployment.
C215.4	Compare and contrast the various testing and maintenance.
C215.5	Manage project schedule, estimate project cost and effort required

CS8481 - Database Management Systems Laboratory	
C216.1	Use typical data definitions and manipulation commands.
C216.2	Design applications to test Nested and Join Queries
C216.3	Implement simple applications that use Views
C216.4	Implement applications that require a Front-end Tool
C216.5	Critically analyze the use of Tables, Views, Functions and Procedures

CS8461 - Operating Systems Laboratory	
C217.1	Compare the performance of various CPU Scheduling Algorithms
C217.2	Implement Deadlock avoidance and Detection Algorithms
C217.3	Implement Semaphores and Create processes and implement IPC
C217.4	Analyze the performance of the various Page Replacement Algorithms
C217.5	Implement File Organization and File Allocation Strategies

HS8461-Advanced Reading and Writing	
C218.1	Write different types of essays.
C218.2	Write winning job applications.
C218.3	Understanding the references and improve the reading speed
C218.4	Read and evaluate texts critically.
C218.5	Display critical thinking in various professional contexts

FIFTH SEMESTER

MA8551 - Algebra And Number Theory	
C301.1	Apply the basic notions of groups, rings, fields which will then be used to solve related problems.
C301.2	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
C301.3	Demonstrate accurate and efficient use of advanced algebraic techniques.
C301.4	Demonstrate their mastery by solving non - trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text.
C301.5	Apply integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.

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CS8591 - Computer Networks	
C302.1	Understand the basic layers and its functions in computer networks and Evaluate the performance of a network.
C302.2	Understand the basics of how data flows from one node to another.
C302.3	Analyze and design routing algorithms.
C302.4	Design protocols for various functions in the network.
C302.5	Understand the working of various application layer protocols

EC8691 - Microprocessors And Micro Controllers	
C303.1	Understand and execute programs based on 8086 microprocessor.
C303.2	Execute programs based on 8086 microprocessor.
C303.3	Design Memory Interfacing circuits.
C303.4	Design and interface I/O circuits.
C303.5	Design and implement 8051 microcontroller based systems

CS8501 - Theory of Computation	
C304.1	Construct automata, regular expression for any pattern.
C304.2	Write Context free grammar for any construct.
C304.3	Design Turing machines for any language.
C304.4	Propose computation solutions using Turing machines.
C304.5	Derive whether a problem is decidable or not.

CS8592 - Object Oriented Analysis And Design	
C305.1	Express software design with UML diagrams
C305.2	Design software applications using OO concepts.
C305.3	Identify various scenarios based on software requirements
C305.4	Transform UML based software design into pattern based design using design patterns
C305.5	Understand the various testing methodologies for OO software

CS8582- Object Oriented Analysis and Design Laboratory	
C306.1	Perform OO analysis and design for a given problem specification.
C306.2	Identify and map basic software requirements in UML mapping
C306.3	Improve the software quality using design patterns and to explain the rationale behindapplying specific design patterns
C306.4	Test the compliance of the software with the SRS
C306.5	Implement the application and maintain

CS8581 - Networks Laboratory	
C309.1	Implement various protocols using TCP and UDP.
C309.2	Compare the performance of different transport layer protocols.
C309.3	Use simulation tools to analyze the performance of various network protocols.
C309.4	Analyze various routing algorithms.
C309.5	Implement error correction codes

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SIXTH SEMESTER

CS8651 - Internet Programming	
C310.1	Construct a basic website using HTML and Cascading Style Sheets.
C310.2	Build dynamic web page with validation using Java Script objects and by applyingdifferent event handling mechanisms.
C310.3	Develop server side programs using Servlets and JSP.
C310.4	Construct simple web pages in PHP and to represent data in XML format.
C310.5	Use AJAX and web services to develop interactive web applications

CS8691 - Artificial Intelligence	
C311.1	Use appropriate search algorithms for any AI problem
C311.2	Represent a problem using first order and predicate logic
C311.3	Provide the apt agent strategy to solve a given problem
C311.4	Design software agents to solve a problem
C311.5	Design applications for NLP that use Artificial Intelligence

CS8601 - Mobile Computing	
C312.1	Explain the basics of mobile telecommunication systems
C312.2	Illustrate the generations of telecommunication systems in wireless networks
C312.3	Determine the functionality of MAC, network layer and Identify a routing protocol for a given Ad hoc network
C312.4	Explain the functionality of Transport and Application layers
C312.5	Develop a mobile application using android/blackberry/ios/Windows SDK

CS8602 - Compiler Design	
C313.1	Understand the different phases of compiler.
C313.2	Design a lexical analyzer for a sample language.
C313.3	Apply different parsing algorithms to develop the parsers for a given grammar.
C313.4	Understand syntax-directed translation and run-time environment.
C313.5	Learn to implement code optimization techniques and a simple code generator.

CS8603 - Distributed Systems	
C314.1	Elucidate the foundations and issues of distributed systems
C314.2	Understand the various synchronization issues and global state for distributed systems.
C314.3	Understand the Mutual Exclusion and Deadlock detection algorithms in distributed systems
C314.4	Describe the agreement protocols and fault tolerance mechanisms in distributed systems.
C314.5	Describe the features of peer-to-peer and distributed shared memory systems

CS8705 - Data Warehousing AndData Mining (E)	
C315a.1	Design a Data warehouse system and perform business analysis with OLAP tools.
C315a.2	Apply suitable pre-processing and visualization techniques for data analysis
C315a.3	Apply frequent pattern and association rule mining techniques for data analysis
C315a.4	Apply appropriate classification and clustering techniques for data analysis
C315a.5	Application of WEKA tool

IT8076 - SOFTWARE TESTING (E)	
C315b.1	Design test cases suitable for a software development for different domains.
C315b.2	Identify suitable tests to be carried out.
C315b.3	Prepare test planning based on the document.
C315b.4	Document test plans and test cases designed.
C315b.5	Use automatic testing tools.

IT8072 – EMBEDDED SYSTEMS	
C315c.1	Describe the architecture and programming of ARM processor.
C315c.2	Explain the concepts of embedded systems
C315c.3	Understand the Concepts of peripherals and interfacing of sensors.
C315c.4	Capable of using the system design techniques to develop firmware
C315c.5	Illustrate the code for constructing a system

CS8072 – AGILE METHODOLOGIES	
C315d.1	Realize the importance of interacting with business stakeholders in determining the requirements for a software system
C315d.2	Perform iterative software development processes: how to plan them, how to executethem.
C315d.3	Point out the impact of social aspects on software development success.
C315d.4	Develop techniques and tools for improving team collaboration and software quality.
C315d.5	Perform Software process improvement as an ongoing task for development teams and Show how agile approaches can be scaled up to the enterprise level

CS8077 GRAPH THEORY AND APPLICATIONS	
C315e.1	Understand the basic concepts of graphs, and different types of graphs
C315e.2	Understand the properties, theorems and be able to prove theorems.
C315e.3	Apply Graphs for network problems
C315e.4	Understand how to represent Graphs
C315e.5	Apply suitable graph model and algorithm for solving applications.

IT8071 DIGITAL SIGNAL PROCESSING	
C315f.1	Perform mathematical operations on signals.
C315f.2	Understand the sampling theorem and perform sampling on continuous-time signals to getdiscrete time signal by applying advanced knowledge of the sampling theory.
C315f.3	Transform the time domain signal into frequency domain signal and vice-versa.
C315f.4	Apply the relevant theoretical knowledge to design the digital IIR/FIR filters for the givenanalog specifications
C315f.5	Apply the knowledge in spectrum sampled signal processing

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GE8075 INTELLECTUAL PROPERTY RIGHTS	
C315g.1	Get basic ideas about IPR
C315g.2	Can able to know to register IPR
C315g.3	Get insight into agreements and legislations
C315g.4	Know about the IP laws and Cyber Laws
C315g.5	Know emerging techniques in IPR

CS8661 - INTERNET PROGRAMMING LABORATORY	
C316.1	Construct Web pages using HTML/XML and style sheets.
C316.2	Build dynamic web pages with validation using Java Script objects and by applyingdifferent event handling mechanisms.
C316.3	Develop dynamic web pages using server side scripting.
C316.4	Use PHP programming to develop web applications.
C316.5	Construct web applications using AJAX and web services

CS8662 - Mobile Application Development Laboratory	
C317.1	Develop mobile applications using GUI and Layouts.
C317.2	Develop mobile applications using Event Listener.
C317.3	Develop mobile applications using Databases.
C317.4	Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multi-threading and GPS.
C317.5	Analyze and discover own mobile app for simple needs

SEVENTH SEMESTER

MG8591 - PRINCIPELS OF MANAGEMENT	
C401.1	Able to understand basis of management
C401.2	Able to devise plan according to the organization's requirement
C401.3	Able to organize teams for managing entities
C401.4	Get insight into make directions for management
C401.5	Able to know how to control the process of management if there is any deviation in planning

CS8792-CRYPTOGRAPHY AND NETWORK SECURITY	
C402.1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
C402.2	Apply the different cryptographic operations of symmetric cryptographic algorithms
C402.3	Apply the different cryptographic operations of public key cryptography
C402.4	Apply the various Authentication schemes to simulate different applications
C402.5	Understand various Security practices and System security standards

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CS8791- CLOUD COMPUTING	
C403.1	Articulate the main concepts, key technologies, strengths and limitations of cloud computing.
C403.2	Learn the key and enabling technologies that help in the development of cloud
C403.3	Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models
C403.4	Explain the core issues of cloud computing such as resource management and security
C403.5	Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.

OME752-SUPPLY CHAIN MANAGEMENT	
C404.1	The student would understand the framework and scope of supply chain networks and functions
C404.2	Develop an understanding of the importance of logistics in the formulation of the business strategy and the conduct of supply chain operations
C404.3	Develop an in-depth understanding of logistics operating areas and their interrelationship
C404.4	Strengthen integrative management analytical and problem-solving skills
C404.5	Plan Warehouse and Logistics operations for optimum utilization of resources

CS8091 -Big Data Analytics	
C405.1.1	Work with big data tools and its analysis techniques
C405.1.2	Analyze data by utilizing clustering and classification algorithms
C405.1.3	Learn and apply different mining algorithms and recommendation systems for large volumes of data
C405.1.4	Perform analytics on data streams
C405.1.5	Learn NoSQL databases and management

CS8082-MACHINE LEARNING TECHNIQUES	
C405.2.1	Differentiate between supervised, unsupervised, semi-supervised machine learning approaches
C405.2.2	Discuss the decision tree algorithm and indentity and overcome the problem of overfitting
C405.2.3	Discuss and apply the back propagation algorithm and genetic algorithms to various problems
C405.2.4	Apply the Bayesian concepts to machine learning
C405.2.5	Analyse and suggest appropriate machine learning approaches for various types of problems

CS8092-COMPUTER GRAPHICS AND MULTIMEDIA	
C405.3.1	Design two dimensional graphics
C405.3.2	Apply two dimensional transformations
C405.3.3	Design three dimensional graphics
C405.3.4	Understood Different types of Multimedia File Format
C405.3.5	Design Basic 3d Scenes using Blender

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IT8075-SOFTWARE PROJECT MANAGEMENT	
C405.4.1	Understand Project Management principles while developing software
C405.4.2	Gain extensive knowledge about the basic project management concepts, framework and the process models
C405.4.3	Obtain adequate knowledge about software process models and software effort estimation techniques
C405.4.4	Define the checkpoints, project reporting structure, project progress and tracking mechanisms using project management principles
C405.4.5	Learn staff selection process and the issues related to people management

CS8081-INTERNET OF THINGS	
C405.5.1	Explain the concept of IoT
C405.5.2	Analyze various protocols for IoT
C405.5.3	Design a PoC of an IoT system using Rasperry Pi/Arduino
C405.5.4	Apply data analytics and use cloud offerings related to IoT
C405.5.5	Analyze applications of IoT in real time scenario

IT8074-SERVICE ORIENTED ARCHITECTURE	
C405.6.1	Understand XML technologies
C405.6.2	Understand service orientation, benefits of SOA
C405.6.3	Understand web services and WS standards
C405.6.4	Use web services extensions to develop solutions
C405.6.5	Understand and apply service modeling, service oriented analysis and design for application development

GE8077-TOTAL QUALITY MANAGEMENT	
C405.7.1	The student would be able to apply the tools and techniques of quality management to manufacturing and services processes
C405.7.2	Evaluate the principles of quality management and to explain how these principles can be applied within quality management systems
C405.7.3	Identify the key aspects of the quality improvement cycle and to select and use appropriate tools and techniques for controlling, improving and measuring quality
C405.7.4	Critically appraise the organisational, communication and teamwork requirements for effective quality management
C405.7.5	Critically analyse the strategic issues in quality management, including current issues and developments, and to devise and evaluate quality implementation plans

CS8083-MULTI-CORE ARCHITECTURES AND PROGRAMMING	
C406.1.1	Describe multicore architectures and identify their characteristics and challenges
C406.1.2	Identify the issues in programming Parallel Processors
C406.1.3	Write programs using OpenMP and MPI
C406.1.4	Design parallel programming solutions to common problems
C406.1.5	Compare and contrast programming for serial processors and programming for parallel processors

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CS8079-HUMAN COMPUTER INTERACTION	
C406.2.1	Design effective dialog for HCI
C406.2.2	Design effective HCI for individuals and persons with disabilities
C406.2.3	Assess the importance of user feedback
C406.2.4	Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Web sites
C406.2.5	Develop meaningful user interface

CS8073-C# AND .NET PROGRAMMING	
C406.3.1	Write various application using C# language in the .NET Framework
C406.3.2	Develop distributed applications using .NET Frame
C406.3.3	Create mobile applications using .NET compact Framework
C406.3.4	ASP.NET Web services and web service security.
C406.3.5	Create simple data binding applications using ADO.Net connectivity.

CS8088-WIRELESS ADHOC AND SENSOR NETWORKS	
C406.4.1	Identify different issues in wireless ad hoc and sensor networks
C406.4.2	To analyze protocols developed for ad hoc and sensors networks
C406.4.3	To identify and understand security issues in ad hoc and sensornetworks
C406.4.4	Explain the concepts of network architecture and MAC layer protocol for WSN
C406.4.5	Discuss the WSN routing issues by considering QoS measurements

CS8071- ADVANCED TOPICS ON DATABASES	
C406.5.1	To develop in-depth understanding of relational databases and skills to optimize databaseperformance in practice
C406.5.2	To understand and critique on each type of databases
C406.5.3	To design faster algorithms in solving practical database problems
C406.5.4	To implement intelligent databases and various data models
C406.5.5	To understand database security issues

GE8072- FOUNDATION SKILLS IN INTEGRATED PRODUCT DEVELOPMENT	
C406.6.1	Define, formulate and analyze a problem
C406.6.2	Solve specific problems independently or as part of a team
C406.6.3	Gain knowledge of the Innovation & Product Development process in the Business Context
C406.6.4	Work independently as well as in teams
C406.6.5	Manage a project from start to finish

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GE8074- HUMAN RIGHTS	
C406.7.1	Engineering students will acquire the basic knowledge of human rights
C406.7.2	Demonstrate a good understanding of the provisions under the Constitution of India dealing with human rights
C406.7.3	Display a good understanding of the nature and scope of special legislations dealing with protection of human rights of marginalized and vulnerable sections
C406.7.4	Demonstrate a good understanding of the practical application of human rights law to specific human rights problems in India
C406.7.5	Analyze complex human rights problems and apply relevant provisions of human rights law in India to a hypothetical situation/case study and a theoretical knowledge of the underpinnings of the human rights framework in India, its operation and issues associated with its implementation

GE8071- DISASTER MANAGEMENT	
C406.8.1	Differentiate the types of disasters, causes and their impact on environment and society
C406.8.2	Assess vulnerability and various methods of risk reduction measures as well as mitigation
C406.8.3	Draw the hazard and vulnerability profile of India, Scenarious in the Indian context, Disasterdamage assessment and management
C406.8.4	Capacity to integrate knowledge and to analyse, evaluate and manage the different public health aspects of disaster events at a local and global levels, even when limited information is available
C406.8.5	Understand disaster management acts and guidelines along with role of various stackholders during disasters

CS8711-Cloud Computing Laboratory	
C407.1	Configure various virtualization tools such as Virtual Box, VMware workstation
C407.2	Design and deploy a web application in a PaaS environment
C407.3	Learn how to simulate a cloud environment to implement new schedulers
C407.4	Install and use a generic cloud environment that can be used as a private cloud
C407.5	Manipulate large data sets in a parallel environment

IT8761-Security Laboratory	
C408.1	Develop code for classical Encryption Techniques to solve the problems
C408.2	Build cryptosystems by applying symmetric and public key encryption algorithms
C408.3	Construct code for authentication algorithms
C408.4	Develop a signature scheme using Digital signature standard
C408.5	Demonstrate the network security system using open source tools

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EIGHTH SEMESTER

EC8093- DIGITAL IMAGE PROCESSING	
C409.1	Know and understand the basics and fundamentals of digital image processing, such as digitization, sampling, quantization, and 2D-transforms
C409.2	Operate on images using the techniques of smoothing, sharpening and enhancement
C409.3	Understand the restoration concepts and filtering techniques
C409.4	Learn the basics of segmentation, features extraction, compression and recognition methods for color models
C409.5	Understand the need for image compression and to learn the spatial and frequency domain techniques of image compression

CS8085- SOCIAL NETWORK ANALYSIS	
C410.1	Develop semantic web related applications
C410.2	Represent knowledge using ontology
C410.3	Predict human behaviour in social web and related communities
C410.4	Visualize social networks
C410.5	Use software to implement statistical models of social networks to analyze network formation and evolution

IT8073- INFORMATION SECURITY	
C411.1	Discuss the basics of information security
C411.2	Illustrate the legal, ethical and professional issues in information security
C411.3	Demonstrate the aspects of risk management
C411.4	Become aware of various standards in the Information Security System
C411.5	Design and implementation of Security Techniques

CS8087- SOFTWARE DEFINED NETWORKS	
C412.1	Analyze the evolution of software defined networks
C412.2	Express the various components of SDN and their uses
C412.3	Explain the use of SDN in the current networking scenario
C412.4	Design and develop various applications of SDN
C412.5	Describe techniques to enable applications to control the underlying network using SDN

CS8074- CYBER FORENSICS	
C413.1	Understand the basics of computer forensics
C413.2	Apply a number of different computer forensic tools to a given scenario
C413.3	Analyze and validate forensics data
C413.4	Identify the vulnerabilities in a given network infrastructure
C413.5	Implement real-world hacking techniques to test system security

CS8086- SOFT COMPUTING	
C414.1	Apply suitable soft computing techniques for various applications
C414.2	Integrate various soft computing techniques for complex problems
C414.3	Understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic
C414.4	To understand the fundamental theory and concepts of neural networks, Identify different neural network architectures, algorithms, applications and their limitations
C414.5	Reveal different applications of these models to solve engineering and other problems.

GE8076- PROFESSIONAL ETHICS IN ENGINEERING	
C415.1	Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society
C415.2	To understand the basic perception of profession, professional ethics, various moral & social issues, industrial standards, code of ethics and role of professional ethics in engineering field
C415.3	To aware of professional rights and responsibilities of an engineer, responsibilities of an engineer for safety and risk benefit analysis
C415.4	To acquire knowledge about various roles of engineers in variety of global issues and able to apply ethical principles to resolve situations that arise in their professional lives
C415.5	Ability to use the engineering principles to update and maintain the technical skills and continuing their education throughout their professional career.

CS8080 - INFORMATION RETRIEVAL TECHNIQUES	
C416.1	Use an open source search engine framework and explore its capabilities
C416.2	Apply appropriate method of classification or clustering
C416.3	Design and implement innovative features in a search engine
C416.4	Design and implement a recommender system
C416.5	Acquired the necessary experience to design, and implement real applications using Information Retrieval systems

CS8078 - GREEN COMPUTING	
C417.1	Acquire knowledge to adopt green computing practices to minimize negativeimpacts on the environment
C417.2	Enhance the skill in energy saving practices in their use of hardware
C417.3	Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders
C417.4	Understand the ways to minimize equipment disposal requirements
C417.5	To have a basic understanding of a variety of technologies applied in building a green system and to identify the various key sustainability and green IT trends

CS8076 - GPU ARCHITECTURE AND PROGRAMMING	
C418.1	Describe GPU Architecture
C418.2	Write programs using CUDA, identify issues and debug them
C418.3	Implement efficient algorithms in GPUs for common application kernels, such as matrixmultiplication
C418.4	Write simple programs using OpenCL
C418.5	Identify efficient parallel programming patterns to solve problems

CS8084 - NATURAL LANGUAGE PROCESSING	
C419.1	To tag a given text with basic Language features
C419.2	To design an innovative application using NLP components
C419.3	To implement a rule based system to tackle morphology/syntax of a language
C419.4	To design a tag set to be used for statistical processing for real-time applications
C419.5	To compare and contrast the use of different statistical approaches for differenttypes of NLP applications

CS8001 - PARALLEL ALGORITHMS	
C420.1	Develop parallel algorithms for standard problems and applications
C420.2	Analyse efficiency of different parallel algorithms
C420.3	Be able to identify and leverage common parallel computing patterns
C420.4	Analyze the computational complexity of parallel algorithms
C420.5	Be able to properly assess efficiency and scalability of a parallel algorithm/application

IT8007 – SPEECH PROCESSING	
C421.1	Create new algorithms with speech processing
C421.2	Derive new speech models
C421.3	Perform various language phonetic analysis
C421.4	Create a new speech identification system
C421.5	Generate a new speech recognition system

GE8073 – FUNDAMENTALS OF NANOSCIENCE	
C422.1	Will familiarize about the science of nanomaterials
C422.2	Will demonstrate the preparation of nanomaterials
C422.3	Will develop knowledge in characteristic nanomaterial
C422.4	Understand the synthesis of nanomaterials and their application and the impact of nanomaterials on environment
C422.5	Apply their learned knowledge to develop Nanomaterial's

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CORRELATION MATRIX BETWEEN CO AND PO WITH PSO
REGULATION - 2017
FIRST SEMESTER

COURSE NAME: HS8151 COMMUNICATIVE ENGLISH

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101.1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C101.2	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C101.3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C101.4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C101.5	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C101	-	-	-	-	-	-	-	3	3	3	-	3	-	-

COURSE NAME: MA8151 – Engineering Mathematics – I

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C102.1	3	2	2	2	-	-	-	-	2	-	-	2	-	-
C102.2	2	2	2	3	-	-	-	-	2	-	-	2	-	-
C102.3	3	3	2	2	-	-	-	-	2	-	-	1	-	-
C102.4	2	2	1	3	-	-	-	-	2	-	-	2	-	-
C102.5	3	2	2	2	-	-	-	-	3	-	-	2	-	-
C102	3	2	2	2	0	0	0	0	2	0	0	2	-	-

COURSE NAME : PH8151 – Engineering Physics

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C103.1	3	2	-	3	-	-	2	-	-	2	2	3	-	-
C103.2	3	3	-	2	-	3	2	-	-	2	2	3	-	-
C103.3	3	-	-	-	-	-	2	-	-	2	-	2	-	-
C103.4	3	3	-	3	-	3	3	2	-	3	2	3	-	-
C103.5	3	3	-	3	-	3	3	2	-	3	3	3	-	-
C103	3	3	-	3	-	3	2	2	-	2	2	3	-	-

COURSE NAME : CY8151 – Engineering Chemistry

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C104.1	3	2	3	-	2	3	3	-	-	-	-	2	-	-
C104.2	3	1	1	-	-	1	-	-	-	-	-	-	-	-
C104.3	3	1	-	-	-	-	2	-	-	-	-	1	-	-
C104.4	3	2	2	-	1	2	3	-	-	-	-	2	-	-
C104.5	3	2	2	-	1	2	3	-	-	-	-	2	-	-
C104	3	2	2	-	1	2	2	-	-	-	-	1	-	-

COURSE NAME : GE8151 Problem Solving and Python Programming

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C105.1	3	2	1	-	2	1	-	-	-	-	-	1	2	-
C105.2	3	2	1	-	2	1	-	-	-	-	-	1	2	1
C105.3	3	2	1	-	2	1	-	-	-	-	-	1	2	1
C105.4	3	2	1	-	2	1	-	-	-	-	-	1	2	1
C105.5	3	2	1	1	2	1	-	-	-	-	-	1	2	1
C105	3	2	1	1	2	1	-	-	-	-	-	1	2	1

COURSE NAME : GE8152 Engineering Graphics

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C106.1	3	3	3	2	2	-	-	-	1	-	-	3	-	-
C106.2	3	3	3	3	2	-	-	-	1	-	-	2	-	-
C106.3	3	2	3	3	3	-	-	-	1	-	-	2	-	-
C106.4	3	3	3	2	3	-	-	-	1	-	-	2	-	-
C106.5	3	2	3	2	3	-	-	-	1	-	-	2	-	-
C106	3	3	3	2	3	-	-	-	1	-	-	2	-	-

COURSE NAME : :GE8161 Problem Solving and Python Programming Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C107.1	3	3	3	-	3	-	-	-	-	-	-	2	3	1
C107.2	3	3	3	-	3	-	-	-	-	-	-	2	3	1
C107.3	3	3	3	-	3	-	-	-	-	-	-	2	3	1
C107.4	3	3	3	-	3	-	-	-	-	-	-	2	3	1
C107.5	3	3	3	-	3	-	-	-	-	-	-	2	3	1
C107	3	3	3	-	3	-	-	-	-	-	-	2	3	1

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COURSE NAME : BS8161 Chemistry Laboratory

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C108.1	3	2	3	-	2	3	3	-	-	-	-	2	-	-
C108.2	3	2	3	-	2	3	3	-	-	-	-	2	-	-
C108.3	3	2	3	-	2	3	3	-	-	-	-	2	-	-
C108.4	3	2	3	-	2	3	3	-	-	-	-	2	-	-
C108.5	3	2	1	1	1	1	1	-	1	-	-	-	-	-
C108	3	2	2.6	1	1.8	2.6	2.6	-	1	-	-	2	-	-

COURSE NAME : BS8161 Physics Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C108.1	3	3	3	-	3	-	-	-	-	-	-	2	-	-
C108.2	3	3	3	-	3	-	-	-	-	-	-	2	-	-
C108.3	3	3	3	-	3	-	-	-	-	-	-	2	-	-
C108.4	3	3	3	-	3	-	-	-	-	-	-	2	-	-
C108.5	3	3	3	-	3	-	-	-	-	-	-	2	-	-
C108	3	3	3	-	3	-	-	-	-	-	-	2	-	-

SECOND SEMESTER

COURSE NAME : HS8251 Technical English

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C109.1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C109.2	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C109.3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C109.4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C109.5	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C109	-	-	-	-	-	-	-	3	3	3	-	3	-	-

COURSE NAME : MA8251 – Engineering Mathematics – II

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C110.1	3	2	1	2	-	-	-	-	3	-	-	2	-	-
C110.2	2	3	2	3	-	-	-	-	2	-	-	1	-	-
C110.3	2	2	3	2	-	-	-	-	3	-	-	1	-	-
C110.4	2	2	1	2	-	-	-	-	2	-	-	1	-	-
C110.5	2	3	2	2	1	-	-	-	2	-	1	2	-	-
C110	2	2	2	2	1	0	0	0	2	0	1	1	-	-

COURSE NAME : PH8252 - Physics for Information Science

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C111.1	3	3	3	3	-	-	-	-	-	2	-	2	-	-
C111.2	3	3	3	3	-	-	-	-	-	2	-	2	-	-
C111.3	3	3	3	3	-	2	-	-	-	2	-	2	-	-
C111.4	3	3	3	3	-	2	-	-	-	2	-	2	-	-
C111.5	2	3	3	3	-	2	-	-	-	2	-	2	-	-
C111	2.8	3	3	3	-	2	-	-	-	2	-	2	-	-

COURSE NAME : BE8255 - Basic Electrical, Electronics and Measurement Engineering

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C112.1	3	2	1	2	-	-	-	-	3	-	-	2	-	-
C112.2	2	3	2	3	-	-	-	-	2	-	-	1	-	-
C112.3	2	2	3	2	-	-	-	-	3	-	-	1	-	-
C112.4	2	2	1	2	-	-	-	-	2	-	-	1	-	-
C112.5	2	3	2	2	1	-	-	-	2	-	1	2	-	-
C112	2	2	2	2	1	0	0	0	2	0	1	1	-	-

COURSE NAME : GE8291 - Environmental Science and Engineering

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C113.1	2	3	1	-	-	3	3	1	-	-	-	1	-	-
C113.2	3	3	2	1	1	3	3	2	-	-	-	1	-	-
C113.3	3	3	-	-	-	3	3	-	-	-	-	-	-	-
C113.4	3	3	1	-	-	3	3	1	-	-	-	1	-	-
C113.5	3	3	1	-	-	3	3	1	-	-	-	1	-	-
C113	3	3	1	-	-	3	3	1	-	-	-	1	-	-

COURSE NAME : CS8251 - Programming in C

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C114.1	3	3	3	-	2	-	-	2	2	1	-	3	2	-
C114.2	3	3	3	-	2	-	-	2	2	1	-	3	2	1
C114.3	3	3	3	-	2	-	-	2	2	1	-	3	2	1
C114.4	3	3	3	-	2	-	-	2	2	1	-	3	2	1
C114.5	3	3	3	-	2	-	-	2	2	1	-	3	2	1
C114	3	3	3	-	2	-	-	2	2	1	-	3	2	1

COURSE NAME : GE8261- Engineering Practices Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C115.1	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115.2	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115.3	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115.4	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115.5	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115	2	-	2	-	-	-	1	-	2	-	-	1	-	-

COURSE NAME : CS8261 - C Programming Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C116.1	2	-	2	-	-	-	1	-	2	-	-	1	3	1
C116.2	2	-	2	-	-	-	1	-	2	-	-	1	3	1
C116.3	2	-	2	-	-	-	1	-	2	-	-	1	3	1
C116.4	2	-	2	-	-	-	1	-	2	-	-	1	3	1
C116.5	2	-	2	-	-	-	1	-	2	-	-	1	3	1
C116	2	-	2	-	-	-	1	-	2	-	-	1	3	1

THIRD SEMESTER

COURSE NAME: MA8351 – DISCRETE MATHEMATICS

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201.1	2	3	1	1	-	-	-	-	3	-	-	2	-	-
C201.2	1	2	3	2	-	-	-	-	2	-	-	1	-	-
C201.3	3	2	2	2	-	-	-	-	3	-	-	2	-	-
C201.4	2	1	2	3	-	-	-	-	2	-	-	1	-	-
C201.5	2	2	1	2	-	-	-	-	2	-	-	1	-	-
C201	2	2	1.8	2	0	0	0	0	2.4	0	0	1.4	-	-

COURSE NAME: CS8351 – DIGITAL PRINCIPLES AND SYSTEM DESIGN

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	3	3	3	-	-	-	-	-	-	-	-	-	-	-
C202.2	3	3	3	-	-	-	-	-	-	-	-	-	-	-
C202.3	3	3	3	-	-	-	-	-	-	-	-	-	-	-
C202.4	3	3	3	-	-	-	-	-	-	-	-	-	-	-
C202.5	3	3	3	-	-	-	-	-	-	-	-	-	-	-
C202	3	3	3	-	-	-	-	-	-	-	-	-	-	-

COURSE NAME: CS8391 - DATA STRUCTURES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C203.1	3	3	2	-	-	-	-	-	-	-	-	-	2	2
C203.2	3	2	3	-	-	-	-	-	-	-	-	-	2	1
C203.3	3	3	3	-	-	-	-	-	-	-	-	-	2	1
C203.4	2	3	2	-	-	-	-	-	-	-	-	-	2	2
C203.5	3	2	3	-	-	-	-	-	-	-	-	-	2	2
C203	3	3	3	-	-	-	-	-	-	-	-	-	2	2

COURSE NAME: CS8392 - OBJECT ORIENTED PROGRAMMING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C204.1	2	3	3	-	-	-	-	-	-	-	-	-	1	1
C204.2	2	3	3	-	-	-	-	-	-	-	-	-	1	3
C204.3	3	3	3	-	-	-	-	-	-	-	-	-	2	3
C204.4	3	3	3	-	-	-	-	-	-	-	-	-	2	2
C204.5	3	3	3	-	-	-	-	-	-	-	-	-	3	2
C204	3	3	3	-	-	-	-	-	-	-	-	-	2	2

COURSE NAME: EC8395 - COMMUNICATION ENGINEERING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	3	2	2	2	-	-	-	-	-	3	-	2	-	-
C205.2	3	2	2	2	-	-	-	-	-	3	-	2	-	-
C205.3	3	2	2	2	-	-	-	-	-	3	-	2	-	-
C205.4	3	2	2	2	-	-	-	-	-	3	-	2	-	-
C205.5	3	1	1	1	-	2	-	-	-	3	-	3	-	-
C205	3	2	2	2	-	2	-	-	-	3	-	3		

COURSE NAME: CS8381 - DATA STRUCUTRES LABORATORY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	3	3	3	-	-	-	-	2	3	3	-	2	2	1
C206.2	3	3	3	-	-	-	-	3	3	2	-	2	2	1
C206.3	3	3	3	-	-	-	-	2	2	2	-	3	2	1
C206.4	2	3	2	-	-	-	-	3	3	2	-	3	2	1
C206.5	3	2	2	-	-	-	-	3	2	3	-	2	2	1
C206	3	3	3	-	-	-	-	3	3	2	-	2	2	1

COURSE NAME: CS8382 - DIGITAL SYSTEMS LABORATORY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C208.1	3	3	3	-	-	3	-	3	3	3	-	2	-	-
C208.2	3	3	3	-	-	3	-	3	3	3	-	2	-	-
C208.3	3	3	3	-	-	3	-	3	3	3	-	1	-	-
C208.4	3	3	3	-	-	3	-	3	3	3	-	2	-	-
C208.5	3	3	3	-	-	3	-	3	3	3	-	3	-	-
C208	3	3	3	-	-	3	-	3	3	3	-	3	-	-

COURSE NAME: CS8383 - OBJECT ORIENTED PROGRAMMING LABORATORY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C207.1	3	3	3	-	-	2	-	2	3	3	-	3	1	1
C207.2	3	3	3	-	-	3	-	2	3	3	-	3	1	3
C207.3	2	3	3	-	-	2	-	3	3	2	-	3	2	3
C207.4	3	2	2	-	-	3	-	2	3	3	-	2	1	2
C207.5	3	3	3	-	-	2	-	3	2	2	-	3	1	2
C207	3	3	3	-	-	2	-	2	3	3	-	3	1.2	2.2

COURSE NAME:HS8381 INTERPERSONAL SKILLS/LISTENING&SPEAKING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C209.1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C209.2	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C209.3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C209.4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C209.5	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C209	-	-	-	-	-	-	-	3	3	3	-	3	-	-

FOURTH SEMESTER

COURSE NAME: MA8402-PROBABILITY AND QUEUEING THEORY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C210.1	3	2	1	1	-	-	-	-	3	-	-	2	2	-
C210.2	1	2	3	2	-	-	-	-	2	-	-	1	1	-
C210.3	3	3	3	2	-	-	-	-	2	-	-	1	2	1
C210.4	2	1	2	3	-	-	-	-	2	-	-	1	1	2
C210.5	1	2	1	2	-	-	-	-	2	-	-	1	2	-
C210	2	2	2	2	-	-	-	-	2.2	-	-	1.2	2	1

COURSE NAME: CS8491-COMPUTER ARCHITECTURE

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C211.1	3	2	3	-	-	-	-	-	-	-	-	-	1	1
C211.2	3	2	3	-	-	-	-	-	-	-	-	-	2	1
C211.3	3	3	2	-	-	-	-	-	-	-	-	-	2	2
C211.4	3	3	3	-	-	-	-	-	-	-	-	-	2	2
C211.5	3	3	2	-	-	-	-	-	-	-	-	-	2	3
C211	3	3	3	-	-	-	-	-	-	-	-	-	2	2

PRINCIPAL,
K. S. R. INSTITUTE FOR
ENGINEERING AND TECHNOLOGY,
K. S. R. KALVI NAGAR,
TIRUCHENGODE - 637 215,
NAMAKKAL DT., TAMIL NADU.

COURSE NAME: CS8492 - DATABASE MANAGEMENT SYSTEMS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	3	3	3	-	-	-	-	1	2	2	-	3	1	2
C212.2	3	3	3	-	-	-	-	2	3	2	-	3	3	2
C212.3	3	3	3	-	-	-	-	1	2	1	-	3	3	2
C212.4	3	3	3	-	-	-	-	1	2	1	-	3	2	2
C212.5	3	3	3	-	-	-	-	1	2	2	-	3	3	2
C212	3	3	3	-	-	-	-	1	2	2	-	3	2	2

COURSE NAME: CS6451-DESIGN AND ANALYSIS OF ALGORITHMS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	3	3	3	-	-	-	-	-	2	2	-	3	2	-
C213.2	3	3	3	-	-	-	-	-	2	2	-	2	3	-
C213.3	3	3	3	-	-	-	-	-	2	2	-	2	3	-
C213.4	2	3	3	-	-	-	-	-	2	2	-	2	3	-
C213.5	3	3	3	-	-	-	-	-	2	2	-	2	2	-
C213	3	3	3	-	-	-	-	-	2	2	-	2	3	-

COURSE NAME: CS8493 - OPERATING SYSTEMS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C214.1	3	3	3	-	-	-	-	-	-	-	-	-	3	1
C214.2	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C214.3	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C214.4	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C214.5	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C214	3	3	3	-	-	-	-	-	-	-	-	-	3	3

COURSE NAME: CS8494 - SOFTWARE ENGINEERING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C215.1	3	3	3	-	3	3	-	2	3	3	-	3	2	2
C215.2	2	3	3	-	3	2	-	2	3	3	-	3	3	2
C215.3	3	3	3	-	3	3	-	2	3	3	-	3	3	3
C215.4	3	2	3	-	3	3	-	2	3	3	-	3	3	2
C215.5	3	3	3	-	3	3	-	2	3	3	-	2	3	2
C215	3	3	3	-	3	3	-	2	3	3	-	3	3	2

COURSE NAME: CS8481 - DATABASE MANAGEMENT SYSTEMS LABORATORY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C216.1	1	2		-	-	-	-	1	2	1	-	2	3	3
C216.2	2	2	2	-	-	-	-		1	-	-	2	3	2
C216.3	3	1	1	-	-	-	-			-	-	2	2	2
C216.4	3	2	2	-	-	-	-	1	2	-	-	2	3	3
C216.5	2	2	2	-	-	-	-		2	-	-	2	3	3
C216	2	2	2	-	-	-	-	1	2	1	-	3	3	3

COURSE NAME: CS8461 - OPREATING SYSTEMS LABORATORY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C217.1	3	3	3	-	-	-	-	3	3	3	-	3	3	3
C217.2	3	3	3	-	-	-	-	3	3	3	-	3	3	3
C217.3	3	3	3	-	-	-	-	3	3	3	-	3	3	3
C217.4	3	3	3	-	-	-	-	3	3	3	-	3	3	3
C217.5	3	3	3	-	-	-	-	3	3	3	-	3	3	3
C217	3	3	3	-	-	-	-	3	3	3	-	3	3	3

HS8461 Advanced Reading and Writing

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C218.1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C218.2	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C218.3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C218.4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C218.5	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C218	-	-	-	-	-	-	-	3	3	3	-	3	-	-

FIFTH SEMESTER

COURSE NAME: MA8551 - ALGEBRA AND NUMBER THEORY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C301.1	3	2	2	2	-	-	-	-	3	-	-	1	-	-
C301.2	2	3	1	1	-	-	-	-	2	-	-	-	-	-
C301.3	2	2	2	1	-	-	-	-	2	-	-	1	-	-
C301.4	3	2	2	2	-	-	-	-	2	-	-	1	-	-
C301.5	3	3	3	2	-	-	-	-	2	-	-	1	-	-
C301	3	2	2	2	0	0	0	0	2	0	0	1	-	-

COURSE NAME: CS8591 - COMPUTER NETWORKS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C302.1	3	3	3	1	1	-	-	1	1	-	-	2	1	1
C302.2	3	3	3	2	1	-	-	1	1	-	-	1	2	1
C302.3	3	3	3	2	1	-	-	1	1	-	-	1	2	2
C302.4	3	3	3	2	1	-	-	1	1	-	1	1	2	2
C302.5	3	3	3	1	2	1	1	1	1	1	1	2	2	3
C302	3	3	3	2	1	1	1	1	1	1	1	1	2	2

COURSE NAME: EC8691 - MICROPROCESSORS AND MICRO CONTROLLERS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C303.1	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C303.2	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C303.3	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C303.4	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C303.5	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C303	3	3	3	-	-	-	-	-	-	-	-	-	3	3

COURSE NAME: CS8501 - THEORY OF COMPUTATION

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C304.1	3	2	2	-	-	-	-	-	-	-	-	-	2	1
C304.2	3	3	2	-	-	-	-	-	-	-	-	-	2	1
C304.3	3	3	3	-	-	-	-	-	-	-	-	-	3	2
C304.4	3	2	2	-	-	-	-	-	-	-	-	-	2	1
C304.5	3	2	2	-	-	-	-	-	-	-	-	-	2	2
C304	3	2.4	2.2	-	-	-	-	-	-	-	-	-	2	1

COURSE NAME: CS8592 - OBJECT ORIENTED ANALYSIS AND DESIGN

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C305.1	3	3	3	-	-	3	-	-	-	-	-	-	3	2
C305.2	3	3	3	-	-	2	-	-	-	-	-	-	2	2
C305.3	3	3	3	-	-	2	-	-	-	-	-	-	2	3
C305.4	3	3	3	-	-	2	-	-	-	-	-	-	2	2
C305.5	3	3	3	-	-	2	-	-	-	-	-	-	2	3
C305	3	3	3	-	-	2	-	-	-	-	-	-	2	2

COURSE NAME: CS8582- OBJECT ORIENTED ANALYSIS AND DESIGN LABORATORY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C307.1	3	3	3	-	3	3	-	-	1	-	3	2	3	3
C307.2	3	3	3	-	3	2	-	-	1	-	3	2	3	3
C307.3	3	3	3	-	3	2	-	-	2	-	3	2	3	3
C307.4	3	3	3	-	3	2	-	-	2	-	3	2	3	3
C307.5	3	3	3	-	3	2	-	-	2	-	3	2	3	3
C307	3	3	3	-	3	2	-	-	1.6	-	3	2	3	3

COURSE NAME: CS8581 - NETWORKS LABORATORY

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C309.1	3	3	3	-	-	2	-	2	3	3	-	3	1	1
C309.2	3	3	3	-	-	3	-	2	3	3	-	3	1	3
C309.3	2	3	3	-	-	2	-	3	3	2	-	3	2	3
C309.4	3	2	2	-	-	3	-	2	3	3	-	2	1	2
C309.5	3	3	3	-	-	2	-	3	2	2	-	3	1	2
C309	3	3	3	-	-	2	-	2	3	3	-	3	1	2

SIXTH SEMESTER

COURSE NAME: CS8651 - INTERNET PROGRAMMING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C310.1	3	3	3	-	-	-	-	1	2	2	-	3	3	1
C310.2	3	3	3	-	-	-	-	1	2	2	-	3	3	2
C310.3	3	3	3	-	-	-	-	1	2	2	-	3	3	2
C310.4	3	3	3	-	-	-	-	1	2	2	-	3	3	2
C310.5	3	3	3	-	-	-	-	1	2	2	-	3	3	2
C310	3	3	3	-	-	-	-	1	2	2	-	3	3	2

COURSE NAME: CS8691 - ARTIFICIAL INTELLIGENCE

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C311.1	2	1	2	-	-	-	-	-	-	-	-	-	2	2
C311.2	2	1	2	-	-	-	-	-	-	-	-	-	2	2
C311.3	2	1	3	-	-	-	-	-	-	-	-	-	2	2
C311.4	2	1	3	-	-	-	-	-	-	-	-	-	2	2
C311.5	2	1	3	-	-	-	-	-	-	-	-	-	2	2
C311	2	1	2.6	-	-	-	-	-	-	-	-	-	2	2

COURSE NAME:CS8601 - MOBILE COMPUTING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C312.1	3	3	3	-	-	-	-	-	-	2	-	-	-	1
C312.2	3	3	3	-	1	1	-	-	-	-	1	1	-	1
C312.3	3	3	3	-	1	1	-	-	-	-	1	2	-	2
C312.4	3	3	3	-	2	1	-	-	-	-	1	2	-	2
C312.5	3	3	3	-	2	1	-	-	-	-	1	2	-	2
C312	3	3	3	-	1.5	1	-	-	-	2	1	2	-	2

COURSE NAME: CS8602 - COMPILER DESIGN

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C313.1	3	2	2	-	-	-	-	0	2	2	-	2	2	1
C313.2	3	3	2	-	-	-	-	0	2	2	-	2	2	1
C313.3	3	3	3	-	-	-	-	1	0	2	-	3	3	2
C313.4	3	2	2	-	-	-	-	0	2	2	-	2	2	1
C313.5	3	2	2	-	-	-	-	1	2	2	-	3	2	2
C313	3	2	2	-	-	-	-	1	2	2	-	2	2	1

COURSE NAME: CS8603 - DISTRIBUTED SYSTEMS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C314.1	3	3	3	-	-	-	-	-	-	-	-	-	2	2
C314.2	3	3	3	-	-	-	-	-	-	-	-	-	2	2
C314.3	3	3	3	-	-	-	-	-	-	-	-	-	3	3
C314.4	3	3	3	-	-	-	-	-	-	-	-	-	2	3
C314.5	3	3	3	-	-	-	-	-	-	-	-	-	3	2
C314	3	3	3	-	-	-	-	-	-	-	-	-	2	2

COURSE NAME: IT8075 - SOFTWARE TESTING(E)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C315.1	3	3	3	-	3	3	-	2	3	3	-	3	2	2
C315.2	2	3	3	-	3	2	-	2	3	3	-	3	2	2
C315.3	3	3	3	-	3	3	-	2	3	3	-	3	3	3
C315.4	3	2	3	-	3	3	-	2	3	3	-	3	2	3
C315.5	3	3	3	-	3	3	-	2	3	3	-	2	3	2
C315	3	3	3	-	3	3	-	2	3	3	-	3	2	2

COURSE NAME: CS8661 - INTERNET PROGRAMMING LABORATORY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C316.1	3	3	3	-	-	-	-	3	3	3	-	3	3	1
C316.2	3	3	3	-	-	-	-	3	3	3	-	3	3	1
C316.3	3	3	3	-	-	-	-	3	3	3	-	3	3	2
C316.4	3	3	3	-	-	-	-	3	3	3	-	3	3	2
C316.5	3	3	3	-	-	-	-	3	3	3	-	3	3	2
C316	3	3	3	-	-	-	-	3	3	3	-	3	3	2

COURSE NAME: CS8662 - MOBILE APPLICATION DEVELOPMENT LABORATORY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C317.1	3	3	3	-	3	-	-	3	3	3	3	3	3	2
C317.2	3	3	3	-	3	-	-	3	3	3	3	3	3	2
C317.3	3	3	3	-	3	-	-	3	3	3	3	3	2	1
C317.4	3	3	3	-	3	-	-	3	3	3	3	3	2	2
C317.5	3	3	3	-	3	-	-	3	3	3	3	3	3	1
C317	3	3	3	-	3	-	-	3	3	3	3	3	2	2

COURSE NAME: CS8611 - PROJECT WORK

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C318.1	3	3	3	3	3	2	1	1	3	-	3	3	2	1
C318.2	3	3	3	3	3	2	1	1	3	-	3	3	3	2
C318.3	3	3	3	3	3	2	1	1	3	-	3	3	3	3
C318.4	3	3	3	3	3	2	1	1	3	-	3	3	3	2
C318.5	3	3	3	3	3	2	1	1	3	-	3	3	3	2
C318	3	3	3	3	3	2	1	1	3	-	3	3	3	2

SEVENTH SEMESTER

COURSE NAME: MG8591 - PRINCIPELS OF MANAGEMENT

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	-	-	-	-	-	-	-	-	2	3	3	-	2	1
C401.2	-	-	-	-	-	-	-	-	2	3	3	2	3	2
C401.3	-	-	-	-	-	-	-	2	-	3	3	-	3	3
C401.4	-	-	-	-	-	-	-	2	2	3	3	2	3	2
C401.5	-	-	-	-	-	-	-	2	2	3	3	2	3	2
C401	-	-	-	-	-	-	-	2	2	3	3	2	3	2

COURSE NAME: CS8792 - CRYPTOGRAPHY AND NETWORK SECURITY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C402.1	3	2	2	1	2	1	-	1	-	1	-	2	2	2
C402.2	3	2	2	-	2	1	-	1	-	1	-	-	2	1
C402.3	2	1	-	-	1	-	-	-	-	-	-	1	2	2
C402.4	2	2	3	1	2	2	-	1	-	1	-	1	2	1
C402.5	2	2	2	1	-	-	-		-	1	-	1	3	1
C402	2	2	1	0	2	2	0	0	0	0	0	0	2	1

COURSE NAME: CS8791 - CLOUD COMPUTING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C403.1	2	1	1	-	-	-	-	-	-	-	-	-	2	2
C403.2	2	1	1	-	2	-	-	-	-	-	-	-	2	1
C403.3	3	2	2	1	-	-	-	-	-	-	-	-	2	2
C403.4	2	1	1	-	-	-	-	-	-	-	-	-	2	1
C403.5	3	2	2	1	-	-	-	-	-	-	-	-	3	1
C403	2	1	1	0	0	0	0	0	0	0	0	0	2	1

COURSE NAME: SUPPLY CHAIN MANAGEMENT

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C404.1	3	-	-	1	-	-	-	-	-	-	-	1	2	-
C404.2	1	-	2	-	3	-	-	-	-	-	-	-	2	-
C404.3	-	3	2	-	1	-	-	-	-	-	-	-	3	1
C404.4	-	-	-	-		-	-	-	-	-	-	-	2	1
C404.5	-	2	3	-		-	-	-	-	-	-	1	2	2
C404	0	0	1	0	0	0	0	0	0	0	0	0	2	1

COURSE NAME: HUMAN COMPUTER INTERACTION

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C405.1	2	3	-	2	2	-	-	-	-	-	-	-	2	1
C405.2	1	-	3	-	-	-	-	3	-	-	-	-	3	3
C405.3	2	2	1	-	-	2	2	1	-	-	-	-	3	2
C405.4	1	1	1	3	2	-	-	1	-	-	-	-	2	3
C405.5	1	2	1	1	1	1	-	2	-	-	-	-	3	2
C405	1	1	1	0	0	0	0	0	0	0	0	0	3	2

COURSE NAME:SOFTWARE PROJECT MANAGEMENT

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C406.1	2	1	1	-	-	-	-	-	-	-	-	-	3	3
C406.2	2	1	1	-	-	-	-	-	-	-	-	-	3	2
C406.3	3	2	2	-	-	-	-	-	-	-	-	-	3	3
C406.4	3	2	2	-	-	-	-	-	-	-	-	-	3	3
C406.5	3	2	2	-	-	-	-	-	-	-	-	-	3	2

C406	3	2	2	0	0	0	0	0	0	0	0	0	3	3

COURSE NAME: CS6005-ADVANCED DATABASE SYSTEMS[E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C407.1	2	1	1	-	-	-	-	-	-	-	-	-	2	1
C407.2	3	2	2	-	-	-	-	-	-	-	-	-	3	3
C407.3	2	1	1	-	-	-	-	-	-	-	-	-	3	2
C407.4	2	1	1	-	-	-	-	-	-	-	-	-	2	3
C407.5	2	1	1	-	-	-	-	-	-	0	-	-	3	2
C407	2	1	1	0	0	0	0	0	0	0	0	0	3	2

COURSE NAME: BM6005-BIO INFORMATICS[E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C408.1	-	3	-	1	-	-	-	-	-	-	-	-	2	1
C408.2	2	3	-		-	-	-	-	-	-	-	-	2	2
C408.3	-	3	-	3	-	-	-	-	-	-	-	-	3	1
C408.4	-	-	2	-	-	-	2	-	-	-	-	-	3	3
C408.5	-	3	-	3	2	-	-	-	-	-	-	1	2	3
C408	0	1	0	1	0	0	0	0	0	0	0	0	3	2

COURSE NAME: IT6801-SERVICE ORIENTED ARCHITECTURE[E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C409.1	2	1	1	-	-	-	-	-	-	-	-	-	3	1
C409.2	2	1	1	-	-	-	-	-	-	-	-	-	2	2
C409.3	2	1	1	-	-	-	-	-	-	-	-	-	3	1
C409.4	3	2	2	-	-	-	-	-	-	-	-	-	3	1
C409.5	2	1	1	-	-	-	-	-	-	-	-	-	3	2
C409	2	1	1	0	0	0	0	0	0	0	0	0	3	1

COURSE NAME: IT6005-DIGITAL IMAGE PROCESSING [E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C410.1	2	-	-	-	-	-	-	-	-	-	-	-	3	1
C410.2	2	-	-	2	-	-	-	-	-	-	-	-	2	2
C410.3		-	-	2	-	-	-	-	-	-	-	-	3	1
C410.4	2	-	-	-	-	-	-	-	-	-	-	-	3	1
C410.5	3	-	-	-	-	-	-	-	-	-	-	-	3	2
C410	2	0	0	0	0	0	0	0	0	0	0	0	3	1

COURSE NAME: CS6711 – SECURITY LABORATORY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C411.1	3	2	2	-	-	-	-	-	-	-	-	-	2	2
C411.2	3	2	2	-	-	-	-	-	-	-	-	-	2	1
C411.3	3	2	2	-	-	-	-	-	-	-	-	-	3	2
C411.4	3	1	2	-	-	-	-	-	-	-	-	-	3	2
C411.5	2	2	1	-	-	-	-	-	-	-	-	-	3	2
C411	3	2	2	0	0	0	0	0	0	0	0	0	3	2

COURSE NAME: CS6712 – GRID AND CLOUD COMPUTING LABORATORY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C412.1	3	3	3	3	3	2	1	2	2	2	2	3	2	3
C412.2	3	3	3	3	3	2	2	3	3	3	3	3	2	3
C412.3	3	3	3	3	3	2	1	2	2	2	2	3	2	3
C412.4	3	3	3	3	3	2	2	3	3	3	3	3	2	3
C412.5	3	3	3	3	3	3	3	2	2	2	2	3	2	3
C412	3	3	3	3	3	2	2	2	2	2	2	3	2	3

COURSE NAME: EC6703-EMBEDDED AND REAL TIME SYSTEMS[E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C413.1	2	2	2	-	-	-	-	-	-	-	-	-	2	3
C413.2	-	2	3	-	-	-	-	-	-	-	1	-	2	3
C413.3	-	1	2	-	-	-	-	-	-	-	-	-	2	3
C413.4	-	3	2	2	-	-	-	-	-	-	1	-	2	3
C413.5	-	-	1	-	1	-	-	-	-	-		-	2	3
C413	0	1	2	0	0	0	0	0	0	0	0	0	2	3

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COURSE NAME: CS6006-GAME PROGRAMMING[E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C414.1	1	1	1	1	1	-	1	-	-	-	-	-	2	2
C414.2	2	1	1	-	-	-	1	-	-	-	-	-	2	1
C414.3	2	-	-	-	-	-	1	-	-	-	-	-	3	2
C414.4	2	-	-	-	-	-	1	-	-	-	-	-	3	3
C414.5	2	1	1	1	-	-	1	-	-	-	-	-	3	2
C414	-	-	-	-	-	-	-	-	-	-	-	-	3	2

COURSE NAME: CS6007-INFORMATION RETRIEVAL[E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C415.1	3	-	-	-	-	-	-	-	-	-	-	-	3	3
C415.2	3	-	-	-	-	-	-	-	-	1	-	-	3	3
C415.3	3	2	-	-	-	-	-	-	-	1	-	-	3	3
C415.4	3	2	-	-	-	-	-	-	-	1	-	1	3	3
C415.5	3	2	-	-	-	-	-	-	-	1	-	1	3	3
C415	-	-	-	-	-	-	-	-	-	-	-	-	-	-

COURSE NAME: IT6006-DATA ANALYTICS[E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C416.1	2	1	2	-	-	-	-	-	-	-	-	-	2	2
C416.2	-	1	2	-	1	-	-	-	-	-	-	-	2	1
C416.3	2	1	-	-	3	-	-	-	-	-	-	-	3	2
C416.4	-	1	2	-	-	-	-	-	-	-	-	-	3	3
C416.5	-	1	2	-	1	-	-	-	-	0	-	-	3	2
C416	0	0	1	0	0	0	0	0	0	0	0	0	3	2

EIGTH SEMESTER

COURSE NAME: CS6801-MULTI –CORE ARCHITECTURES AND PROGRAMMING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C417.1	2	1	1	-	2	-	-	-	-	-	-	-	2	1
C417.2	2	1	1	-	2	-	-	-	-	-	-	-	2	2
C417.3	2	1	1	1	2	-	-	-	-	-	-	-	2	2
C417.4	3	2	2	-	3	-	-	-	-	-	-	-	2	2
C417.5	2	1	1	-	2	-	-	-	-	-	-	-	2	1
C417	2	1	1	0	2	-	-	-	-	-	-	-	2	2

COURSE NAME: CS6008-HUMAN COMPUTER INTERACTION [E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C418.1	3	-	-	-	-	-	-	-	-	-	-	-	3	1
C418.2	3	-	-	-	-	-	-	-	-	-	-	-	3	2
C418.3	2	-	-	-	-	-	-	-	-	-	-	-	3	2
C418.4	-	-	2	-	-	-	-	-	-	-	-	-	3	2
C418.5	-	-	2	-	-	-	-	-	-	-	-	-	3	3
C418	1	0	0	0	0	0	0	0	0	0	0	0	3	2

COURSE NAME: CS6009-NANO COMPUTING[E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C419.1	2	-	-	-	-	-	-	-	-	2	-	-	3	1
C419.2	2	1	-	-	-	-	-	-	-	2	-	-	3	1
C419.3	2	1	-	-	-	-	-	-	-	2	-	-	2	3
C419.4	2	1	-	-	-	-	-	-	-	2	-	-	3	2
C419.5	2	1	-	-	-	-	-	-	-	2	-	-	3	3
C419	2	0	0	0	0	0	0	0	0	2	0	0	3	2

COURSE NAME: IT6011-KNOWLEDGE MANAGEMENT [E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C420.1	1	-	-	-	-	-	-	-	-	-	-	-	2	1
C420.2	1	-	1	-	-	-	-	-	-	-	-	-	1	2
C420.3	1	2	-	-	-	-	-	-	-	-	-	-	2	1
C420.4	-	-	-	-	-	-	-	-	-	-	-	-	3	2
C420.5	1	-	1	-	-	-	-	-	-	-	-	-	3	3
C420	0	0	0	-	-	-	-	-	-	-	-	-	2	2

COURSE NAME: CS6010-SOCIAL NETWORK ANALYSIS [E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C421.1	1	2	2	1	-	-	-	-	-	-	-	-	2	2
C421.2	1	1	1	-	-	-	-	-	-	-	-	-	2	1
C421.3	1	2	1	3	-	-	-	-	-	-	-	-	3	2
C421.4	-	-	1	-	-	-	-	-	-	-	-	-	3	3
C421.5	1	1	-	2	-	-	-	-	-	-	-	-	3	3
C421	0	1	0	1	0	0	0	0	0	0	0	0	2	2

COURSE NAME: MG6088-SOFTWARE PROJECT MANAGEMENT [E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C422.1	2	1	3	-	-	-	-	-	3	2	3	-	2	3
C422.2	2	1	-	-	2	-	-	-	-	2	3	-	3	3
C422.3	3	2	3	1	-	-	-	-	2	-	-	-	2	2
C422.4	3	2	1	1	2	-	-	-	-	-	3	-	3	2
C422.5	3	2	-	-	2	-	-	-	3	1	-	-	3	3
C422	2	2	0	0	1	0	0	0	1	0	1	0	2	2

COURSE NAME: GE6075-PROFESSIONAL ETHICS IN ENGINEERING [E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C423.1	-	-	-	-	-	1	1	1	1	2	-	-	2	1
C423.2	-	-	-	-	-	1	1	3	1	2	-	-	3	2
C423.3	-	-	-	-	-	3	2	3	-	1	-	-	2	2
C423.4	-	-	-	-	-	3	2	1	-	-	-	-	3	3
C423.5	-	-	-	-	-	3	2	2	-	1	-	-	3	2
C423	0	0	0	0	0	2	2	2	0	1	0	0	2	2

COURSE NAME: CS6011-NATURAL LANGUAGE PROCESSING[E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C424.1	-	2	3	3	3	-	-	-	-	-	3	-	2	-
C424.2	-	2	2	2	1	-	-	-	-	-	3	-	2	-
C424.3	-	2	3	3	3	3	-	-	-	-	3	-	3	-
C424.4	-	2	2	2	1	-	-	-	-	-	3	-	1	1
C424.5	3	-	-	-	2	-	1	-	-	-	-	-	2	2
C424	0	1	2	1	2	0	0	0	0	0	2	0	2	0

COURSE NAME: CS6012-SOFT COMPUTING [E]

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C425.1	2	-	-	-	-	-	-	-	-	-	-	-	2	-
C425.2	-	-	2	-	-	-	-	-	-	-	-	-	2	-
C425.3	1	-	3	-	-	-	-	-	-	-	-	-	3	-
C425.4	2	-	-	-	-	-	-	-	-	-	-	-	1	1
C425.5	-	1	-	-	-	-	-	-	-	-	-	-	2	2
C425	0	0	0	0	0	0	0	0	0	0	0	0	2	0

COURSE NAME: CS6811 – PROJECT WORK

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C426.1	3	3	-	1	-	-	1	2	3	-	-	-	3	3
C426.2	-	3	2	3	-	3	1	-	3	3	-	2	3	3
C426.3	-	-	2	3	3	-	-	3	3	3	1	2	3	3
C426.4	-		-			-	3	3	3	3	2	3	3	3
C426.5	-	-	-	-	-	-	-	-	3	3	-	3	3	3
C426	0	1	0	1	0	0	0	1	3	2	0	2	3	3

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K. S. R. INSTITUTE FOR
ENGINEERING AND TECHNOLOGY,
K. S. R. KALVI NAGAR,
TIRUCHENGODE (Via), PIN - 637 215,
NAMAKKAL DT, TAMIL NADU.

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CO – PO AND CO – PSO MAPPING

2017- REGULATIONS

FIRST YEAR

Course Name: HS8151 Communicative English

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1.1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO1.2	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO1.3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO1.4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO1.5	-	-	-	-	-	-	-	3	3	3	-	3	-	-
CO1	-	-	-	-	-	-	-	**3**	**3**	**3**	-	**3**	-	-

CO1.1	Readtechnical texts andwritearea-specific textseffortlessly
CO1.2	Listenandcomprehend lectures andtalksintheirareaofspecialisation successfully
CO1.3	Speak appropriately andeffectively in varied formalandinformal contexts
CO1.4	Write reportsandwinningjobapplications.
CO1.5	ComprehendconversationsandshorttalksdeliveredinEnglish

Course Name:MA8151 Engineering Mathematics

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C1O2.1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C1O2.2	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C1O2.3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C1O2.4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C1O2.5	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C1O2	-	-	-	-	-	-	-	**3**	**3**	**3**	-	**3**	-	-

C1O2.1	Solve maxima & minima problems using both the limit concept and rules of differentiation.
C1O2.2	Solve the problems based on maxima and minima for functions of two variables using partial derivative and total derivatives
C1O2.3	Determine integrals using Riemann sums and techniques of integration such as, substitution,

	partial fractions and integration by parts and determine convergence/divergence of improper integrals.
C1O2.4	Acquire knowledge about evaluating double integrals and triple integrals and used to calculate area and volume.
C1O2.5	Apply various techniques in solving ordinary differential equations

Course Name:PH8151 Engineering Physics

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C103.1	3	3	3	2	-	2	-	-	-	2	-	2	3	3
C103.2	3	-	3	-	-	-	-	-	-	2	-	2	3	-
C103.3	3	2	3	3	-	-	-	-	-	2	-	2	3	2
C103.4	3	3	3	3	-	2	-	-	-	2	-	2	3	3
C103.5	3	3	3	3	-	2	-	-	-	2	-	2	3	3
C103	**3**	**3**	**3**	**3**	**-**	**2**	**-**	**-**	**-**	**2**	**-**	**2**	**3**	**3**

C103.1	Recognize the elastic properties of different materials.
C103.2	Solve problems related to engineering applications by using LASER and fibre optics techniques.
C103.3	Illustrate the modern applications of thermal insulation materials.
C103.4	Elaborate the dual nature of the light based on quantum theory.
C103.5	Apply the knowledge gained on crystal physics, structure of the crystal and preparation of crystal in various methods.

Course Name:CY8151 Engineering Chemistry

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	CO	PO1
C104.1	3	2	3	-	2	3	3	-	-	-	-	2	3	2
C104.2	3	1	1	-	-	1	-	-	-	-	-	-	3	1
C104.3	3	1	-	-	-	-	2	-	-	-	-	1	3	1
C104.4	3	2	2	-	1	2	3	-	-	-	-	2	3	2
C104.5	3	2	2	-	1	2	3	-	-	-	-	2	3	2
C104	**3**	**2**	**2**	**-**	**1**	**2**	**3**	**-**	**-**	**-**	**-**	**2**	**3**	**2**

C104.1	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
C104.2	Critically evaluate adsorption isotherm in chemical equilibrium and chemical kinetics, including effects of pressure, temperature, catalysts.

C104.3	Prediction of equilibrium relations & their characterizations to construct phase diagrams and the alloy making.
C104.4	Differentiate between various fuels & analyze exhaust and flue gases.
C104.5	Have the knowledge of converting solar energy in to most needy electrical energy efficiently and economically to reduce the environmental pollution & design of energy storage devices.

Course Name:GE8151 Problem Solving And Python Programming

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C105.1	3	2	1	-	-	1	-	-	-	-	-	1	3	1
C105.2	3	2	1	-	1	1	-	-	-	-	-	1	3	1
C105.3	3	2	1	-	-	1	-	-	-	-	-	1	3	1
C105.4	3	2	1	-	-	1	-	-	-	-	-	1	3	1
C105.5	3	2	1	1	-	1	-	-	-	-	-	1	3	1
C105	**3**	**2**	**1**	**1**	**1**	**1**	-	-	-	-	-	**1**	**3**	**1**

C105.1	Develop algorithmic solutions to simple computational problems.
C105.2	Demonstrate programs using simple Python statements and expressions.
C105.3	Explain control flow and functions concept in Python for solving problems.
C105.4	Use Python data structures – lists, tuples & dictionaries for representing compound data.
C105.5	Develop algorithmic solutions to simple computational problems.

Course Name:GE8152 Engineering Graphics

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C106.1	3	3	3	2	2	-	-	-	2	-	-	3	-	-
C106.2	3	3	3	3	2	-	-	-	2	-	-	2	-	-
C106.3	3	2	3	3	3	-	-	-	2	-	-	2	-	-
C106.4	3	3	3	2	3	-	-	-	2	-	-	2	-	-
C106.5	3	2	3	2	3	-	-	-	2	-	-	2	-	-
C106	**3**	**2**	**3**	**2**	**3**	-	-	-	**2**	-	-	**2**	-	-

C106.1	Perform freehand sketching of basic geometrical constructions and multiple views of objects and plane curves.
C106.2	Project orthographic projections of lines and plane surfaces.
C106.3	Draw projections of solids for different position.
C106.4	Draw projections of section of solids and development of surfaces.
C106.5	Visualize and to project isometric and perspective sections of simple solids.

Course Name:GE8161- Problem Solving And Python Programming Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C107.1	3	3	3	-	3	-	-	3	3	3	-	3	3	1
C107.2	3	3	3	-	3	-	-	3	3	3	-	2	3	1
C107.3	3	3	3	-	3	-	-	3	3	3	-	3	3	1
C107.4	3	3	3	-	3	-	-	3	3	3	-	3	3	1
C107.5	3	3	3	-	3	-	-	3	3	3	-	3	3	1
C107	**3**	**3**	**3**	**-**	**3**	**-**	**-**	**3**	**3**	**3**	**-**	**3**	**3**	**1**

C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them.
C107.4	Use Python lists, tuples, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.

Course name:BS8161-Physics and Chemistry Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C108.1	3	3	2	2	2	1	1	-	-	-	-	1	-	-
C108.2	3	3	2	-	-	-	-	-	-	-	-	-	-	-
C108.3	3	3	2	2	2	1	1	-	-	-	-	1	-	-
C108.4	3	3	2	2	-	1	1	-	-	-	-	1	-	-
C108.5	3	3	2	2	2	1	1	-	-	-	-	1	-	-
C108	**3**	**3**	**2**	**2**	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**1**	**-**	**-**

C108.1	)ine the velocity and compressibility of ultrasonic wave using different medium.
C108.2	Find the young's modulus with different methods and rigidity modulus
C108.3	Find thermal conductivity of bad conductor and energy band of semiconductor.
C108.4	Understand the different types of hardness & alkalinities. Water quality criteria and standards of DO and Chloride.
C108.5	Analyze and understand the different types of electrodes and their usage in conductivity and in pH titrations.

Course Name: HS8251 Technical English

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C109.1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C109.2	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C109.3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C109.4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C109.5	-	-	-	-	-	-	-	3	3	3	-	3	-	1
C109	-	-	-	-	-	-	-	**3**	**3**	**3**	-	**3**	-	**1**

C109.1	Readtechnical texts andwritearea-specific textseffortlessly.
C109.2	Listenandcomprehend lectures andtalksintheirareaofspecialisation successfully.
C109.3	Speak appropriately andeffectively in varied formalandinformal contexts.
C109.4	Write reportsandwinningjobapplications.
C109.5	ComprehendconversationsandshorttalksdeliveredinEnglish.

Course Name: MA8251-Engineering Mathematics-II

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C110.1	3	2	1	2	-	-	-	-	3	-	-	2	2	-
C110.2	2	3	2	3	-	-	-	-	2	-	-	1	-	-
C110.3	2	2	3	2	-	-	-	-	3	-	-	1	-	-
C110.4	2	2	1	2	-	-	-	-	2	-	-	1	-	-
C110.5	2	3	2	2	1	-	-	-	2	-	1	2	-	-
C110	**2**	**3**	**2**	**2**	**1**	-	-	-	**2**	-	**1**	**2**	-	-

C110.1	Describe the concept of change quadratic form to canonical form and used in various fields of engineering.
C110.2	Describe the fundamentals in vector calculus and solve the problems related to multiple integrals.
C110.3	Solve the problems of conformal mapping and bilinear transformations related to engineering.
C110.4	Use the knowledge of complex integration with different techniques finding the integrals.
C110.5	Apply Laplace transforms techniques to solve ordinary differential equations.

Course Name: PH8253-Physics For Electronics Engineering

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C111.1	3	3	3	2	-	2	-	-	-	2	-	2	-	-
C111.2	3	-	3	-	-	-	-	-	-	2	-	2	-	-
C111.3	3	2	3	3	-	-	-	-	-	2	-	2	-	-
C111.4	3	3	3	3	-	2	-	-	-	2	-	2	-	-
C111.5	3	3	3	3	-	2	-	-	-	2	-	2	-	-
C111	**3**	**3**	**3**	**2**	**-**	**2**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**-**

C111.1	Discuss the concepts of classical, quantum free electron theory and calculate the carrier concentration in metals.
C111.2	Explain the basic of physics related to properties of semiconductor and its types to solve practical problems related to semiconductor materials used for engineering applications.
C111.3	Illustrate the magnetic material, optical data storage devices and its engineering applications.
C111.4	Solve the problems related to engineering applications by LED.
C111.5	Develop the basic concepts of carbon nanotubes and its applications.

Course Name:BE8252 Basic Civil And Mechanical Engineering

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C112.1	3	-	-	-	-	3	-	-	-	-	-	2	-	-
C112.2	3	3	2	-	-	3	-	-	3	2	-	3	-	-
C112.3	3	-	-		2	3	3	-	3	-	-	3	-	-
C112.4	3	3	-	-	2	2	-	-	2	-	-	3	-	-
C112.5	3	2	-	-	-	2	2	-	-	-	-	3	-	-
C112	**3**	**2**	**-**	**-**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**3**	**-**	**-**

C112.1	Discuss the scope and importance of civil and Mechanical engineering.
C112.2	Explain the principles of surveying and importance of civil engineering materials.
C112.3	Describe the components of superstructures, substructures, railway and highway.
C112.4	Explain the working principle and significance of various types of power plants, pumps, Turbine and IC engines.
C112.5	Describe the various terminologies of refrigeration, air-conditioning and its working principle.

Course Name: EE8251-Circuit Theory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C113.1	3	3	3	3	1	-	-	-	1	-	-	2	3	3
C113.2	3	3	3	3	1	-	-	-	1	-	-	2	3	3
C113.3	3	3	3	3	2	-	-	-	1	-	-	2	3	3
C113.4	3	3	3	3	1	-	-	-	1	-	-	2	3	3
C113.5	3	3	3	3	1	-	-	-	1	-	-	2	3	3
C113	3	3	3	3	1	-	-	-	1	-	-	2	3	3

C113.1	Apply the knowledge of Kirchhoff's laws to determine the electrical parameters of networks.
C113.2	Apply the principles of network theorem's to solve the complex electric circuits
C113.3	Analysis the transient response of first order and second order system using Laplace transform.
C113.4	Analyse the effect of balanced, unbalanced loads on three phase circuits.
C113.5	Analyze the frequency response of resonant circuits and determine the effect of mutual inductance on coupled and tuned circuits.

Course Name :GE8291 Environmental Science and Engineering

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C114.1	1	-	-	-	-	3	3	-	-	-	-	2	1	1
C114.2	1	-	-	-	-	3	3	-	-	-	-	2	1	1
C114.3	1	-	-	-	-	3	3	-	-	-	-	1	1	1
C114.4	2	-	-	-	-	3	3	-	-	-	-	1	1	1
C114.5	2	-	-	-	-	3	3	-	-	-	-	1	1	1
C114	2	-	-	-	-	3	3	-	-	-	-	1	1	1

C114.1	Demonstrate understanding of the complex interactions of humans and ecological systems in the natural world.
C114.2	Characterize and analyze the pollution and its effects
C114.3	A greater knowledge of how natural resources relate to the economy and environment, both currently and in the future
C114.4	Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems.
C114.5	To understand the basic concepts of public health-specific communication, including technical and professional writing and the use of mass media and electronic technology

Course Name: GE8261-Engineering Practices Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C115.1	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115.2	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115.3	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115.4	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115.5	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115	**2**	**-**	**2**	**-**	**-**	**-**	**1**	**-**	**2**	**-**	**-**	**1**	**-**	**-**

C115.1	Describe the carpentry components, plumbing works for Engineering Practices and applications.
C115.2	Discuss the importance of welding equipments; operations in smithy, foundry, and fitting shop and practice for assemble the Centrifugal pump and Air conditioner.
C115.3	Demonstrate and infer the concepts of house wiring and able to design and conduct experiments.
C115.4	Determine the energy in single phase circuit and measure the electrical quantities like current, voltage, resistance etc.
C115.5	Fabricate various electronic components and illustrate the behavior of various circuits like rectifier circuits, logic circuits etc.

Course Name: EE8261-Electric Circuits Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C116.1	2	3	3	3	-	-	-	-	2	1	-	1	3	3
C116.2	3	3	3	3	1	-	-	-	2	1	-	1	3	3
C116.3	3	3	3	3	1	-	-	-	2	1	-	1	3	3
C116.4	3	3	3	3	1	-	-	-	2	1	-	1	3	3
C116.5	3	2	2	2	1	-	-	-	2	1	-	1	3	3
C116	**3**	**2**	**2**	**2**	**1**	**-**	**-**	**-**	**2**	**1**	**-**	**1**	**3**	**-**

C116.1	Able to have a basic knowledge in the analysis of ElectricNetworks
C116.2	Solve the given circuit with various theorems and methods.
C116.3	Analyse the various three phase circuits star and delta connections.
C116.4	Determine the AC & DC transients for various R,L & C circuits
C116.5	Illustrate the relation between various two port parameters and transform the

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELCTRONICS ENGINEERING

CO-PO AND CO-PSO MAPPING

2017- REGULATIONS

SECOND YEAR

Course Name: MA8353 Transforms and Partial Differential Equations

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201.1	3	2	3	2	-	-	-	-	2	-	-	1	3	-
C201.2	3	2	1	2	-	-	-	-	2	-	-	2	3	2
C201.3	2	2	1	1	1	-	-	-	3	-	1	1	3	2
C201.4	3	2	2	2	1	-	-	-	3	-	1	2	3	-
C201.5	3	2	1	2	2	-	-	-	3	-	2	2	3	2
C201	**3**	**2**	**2**	**2**	**1**	-	-	-	**3**	-	**1**	**2**	**3**	**3**

C201.1	To understand about mathematical techniques of partial differential equations would provide the math ability to formulate and develop the skills to determine the solution of partial differential equations.
C201.2	Ability to apply knowledge of Fourier series with different functions in engineering.
C201.3	To solve some of the wave, heat equations and two dimensional heat equations related to physical problems of engineering.
C201.4	To learn the concept of Fourier sine and cosine transforms and ability to apply knowledge of Fourier transforms using Convolution theorem and Parseval's identity.
C201.5	To understanding of the mathematical principles on Z-transforms and use to solve difference equations.

Course Name: EE8351 Digital Logic Circuits

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	1	1	-	-	-	-	-	-	1	1	-	1	-	3
C202.2	3	3	3	-	-	1	-	1	1	1	-	1	2	2
C202.3	3	3	3	3	1	1	-	1	1	1	-	2	-	3
C202.4	3	3	3	3	2	1	-	1	1	1	-	2	2	3
C202.5	2	-	-		3	1	-	-	1	1	-	2	2	2
C202	3	3	3	3	2	1	-	1	1	1	-	2	2	3

C202.1	Explain the various number system, binary codes & logic families and determine the error using parity and hamming code.
C202.2	Simplify and Implement Boolean functions, combinational circuits like adder, subractor, code converters, etc., using the properties of Boolean algebra and K-map
C202.3	Analyze and design the various synchronous sequential circuits like counter, shift registers using various Flip Flops.
C202.4	Design various asynchronous sequential circuits andprogrammable logic device.
C202.5	Simulate digital logic circuit using VHDL for various applications.

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PRINCIPAL,
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Course Name: EE8391 Electromagnetic Theory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C203.1	1	-	1	-	-	-	-	-	-	1	-	1	-	-
C203.2	1	-	1	-	-	-	-	-	1	1	-	1	1	-
C203.3	3	3	3	2	-	-	-	-	1	1	-	1	1	-
C203.4	3	3	3	2	-	-	-	-	1	1	-	1	1	-
C203.5	3	3	3	3	3	-	-	-	-	1	-	1	-	-
C203	3	3	3	3	3	-	-	-	1	1	-	1	1	-

C203.1	Explain the vectors in different co-ordinate systems and transformation between the co-ordinate systems, Coulomb's law and Gauss's law and its applications.
C203.2	Discuss the various aspects of electrostatics, boundary conditions and Energy density in Electro static field.
C203.3	Determine the Electric field Intensity due to straight conductors, circular loop, and infinitesheet of current by applying BiotSavart's and Ampere's circuital law and discuss the boundary conditions, magnetic dipole and torque involved in it.
C203.4	Apply the Maxwell equations to explain the effect of Electromagnetic fields.
C203.5	Analyze the wave propagation in various dielectrics and discuss the poynting theorem.

Course Name: EE8301 Electrical Machines – I

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C204.1	3	3	3	3	-	-	-	-	1	-	-	2	1	-
C204.2	3	3	3	3	1	-	-	-	1	-	-	2	2	-
C204.3	1	-	-	-	-	-	-	-	1	-	-	2	3	-
C204.4	3	3	3	3	1	-	-	-	1	-	-	2	3	-
C204.5	2	2	2	2	1	-	-	-	1	-	-	2	3	-
C204	3	3	3	3	1	-	-	-	1	-	-	2	3	-

C204.1	Apply and analyze the magnetic material properties to various magnetic circuits
C204.2	Analyze the principle of electromechanical energy conversion and concepts in rotating machines
C204.3	Describe the construction, operating principles and characteristics of a DC generator
C204.4	Compute the performance indices of a transformer by conducting various tests on the static machine
C204.5	Elaborate the operating principles, characteristics, testing and hence determine the performance indices of a DC motor

Course Name: EC8353 Electronic Devices and Circuits

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	3	3	2	2	1	-	-	-	3	-	-	-	2	-
C205.2	2	2	3	3	1	-	-	-	3	-	-	-	2	-
C205.3	3	2	3	2	1	-	-	-	3	-	-	-	2	-
C205.4	2	2	3	3	1	-	-	-	3	-	-	-	2	-
C205.5	3	3	2	2	1	-	-	-	3	-	-	-	2	-
C205	3	3	3	3	1	-	-	-	3	-	-	-	-	-

C205.1	Acquire knowledge about semiconductor physics and analyze the rectifier and regulator circuits
C205.2	Delve into various types of transistor and thyristors operation, construction & characteristics
C205.3	Analyze & determine the h-parameter model & operation of transistor at low and high frequencies for various transistor amplifier
C205.4	Discuss the effects of various factors that affect the trend of the frequency response of transistor amplifier; Analyze multistage amplifier and differential amplifier
C205.5	Describe the effects of feedback on amplifier parameters& explain the basic principle of peration & design of oscillators

Course Name ME8792 Power Plant Engineering

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	1	1	-	-	-	-	1	1	-	-	-	-	1	-
C206.2	1	1	-	-	-	-	1	1	-	-	-	-	1	-
C206.3	1	1	-	-	-	-	1	1	-	-	-	-	1	-
C206.4	1	1	-	-	-	-	1	1	-	-	-	-	1	-
C206.5	3	2	-	-	-	-	1	1	-	-	-	-	1	-
C206	2	2	-	-	-	-	1	1	-	-	-	-	1	-

C206.1	Describe the construction and working of Thermal power plant and factors associated in it.
C206.2	Explain about the Diesel, Gas power plant and the various types of cycles and its Operations
C206.3	Discuss about Nuclear power plant, Reactor and its safety.
C206.4	Explain about the Renewable Energy sources and availability, and its Operations
C206.5	Determine about the load distribution parameters and discuss about Environmental issues of thermal and nuclear power plant and Economic related issues in power sectors.

Course Name: EC8311 Electronics Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C207.1	3	3	1	3	-	-	-	-	3	2	3	-	2	-
C207.2	3	2	1	2	-	-	-	-	3	2	3	-	2	-
C207.3	3	3	1	3		-	-	-	3	2	3	-	2	-
C207.4	3	3	1	3	-	3	-	-	3	2	3	-	2	-
C207.5	3	3	1	3	-	-	-	-	3	2	3	-	2	-
C207	**3**	**3**	**1**	**3**	-	**3**	-	-	**3**	**2**	**3**	-	**2**	-

C207.1	Design and implement the circuits using diodes
C207.2	Design and implement the circuit using the different types of transistor configurations.
C207.3	Design an amplifier circuit with biasing technique.
C207.4	Design and simulate a clipper and clamper circuits using spice
C207.5	Design the multivibrators and oscillator circuits

Course Name: EE8311 Electrical Machines Laboratory – I

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C208.1	2	1	1	2	2	-	-	-	1	1	1	1	3	1
C208.2	2	1	1	2	2	-	-	-	1	1	1	1	3	1
C208.3	3	2	1	2	2	-	-	-	1	1	1	1	3	1
C208.4	3	2	2	2	2	-	-	-	1	1	1	1	3	1
C208.5	3	2	2	2	2	-	-	-	1	1	1	1	3	1
C208	**3**	**2**	**2**	**2**	**2**	-	-	-	**1**	**1**	**1**	**1**	**3**	**1**

C208.1	Conduct load test and study the performance of DC motors
C208.2	Employ and discuss the various methods of starting and speed control for DC motor
C208.3	Examine the internal and external characteristics of different types of DC generators
C208.4	Predict the equivalent circuit and compute the performance, losses for the given transformer
C208.5	Test the given machine/ transformer and compute the performance indices

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Course Name MA8491 Numerical Methods

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C209.1	3	2	2	2	-	-	-	-	3	-	-	-	3	3
C209.2	3	3	1	3	-	-	-	-	2	-	-	-	3	3
C209.3	2	2	2	2	-	-	-	-	2	-	-	-	3	3
C209.4	3	3	2	3	-	-	-	-	3	-	-	-	3	3
C209.5	2	2	2	2	-	-	-	-	2	-	-	-	3	3
C209	**3**	**3**	**2**	**3**	-	-	-	-	**3**	-	-	**2**	**3**	**3**

C209.1	Acquire knowledge about direct methods, iterative methods and solutions of the roots of nonlinear (algebraic or transcendental) equations, solutions of large system of linear equations and eigen value problem of matrix can be obtained numerically.
C209.2	Learns the concept of Lagrange's interpolation, Newton's interpolation and cubic splines.
C209.3	Understand the concept of numerical differentiation and integration using Trapezoidal, Simpson's rule, Romberg's method, Gaussian quadrature formulae.
C209.4	Knows about single step methods and multi step methods and able to solve the problems based on first order differential equations.
C209.5	Understand the finite difference techniques and use to find solutions of boundary value problems in ordinary and partial differential equations.

Course Name: EE8401 Electrical Machines – II

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C210.1	2	2	2	2	2	-	1	-	1	-	-	1	3	-
C210.2	2	2	2	2	2	-	1	-	1	-	-	1	3	-
C210.3	2	2	2	2	2	-	1	-	1	-	-	1	3	-
C210.4	2	2	2	2	2	-	1	-	1	-	-	1	3	-
C210.5	2	2	2	2	2	-	1	-	1	-	-	1	3	-
C210	**2**	**2**	**2**	**2**	**2**	-	**1**	-	**1**	-	-	**1**	**3**	-

C210.1	Describe the Construction and performance of salient and non – salient type synchronous generators.
C210.2	Illustrate the Principle of operation and performance of synchronous motor.
C210.3	Outline the Construction, principle of operation and performance of various induction machines.
C210.4	Discuss the types of Starters, and speed control methods for three-phase induction motors.
C210.5	Explain the Construction, principle of operation and performance of single phase induction motors and special machines

Course Name EE8402 Transmission and Distribution

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C211.1	1	-	-	-	-	-	-	-	-	-	-	1	2	-
C211.2	3	3	3	3	-	-	-	-	1	-	-	2	2	-
C211.3	3	3	3	3	-	-	1	-	1	-	-	2	2	-
C211.4	2	2	2	2	-	-	1	-	1	-	-	2	2	-
C211.5	3	3	3	3	-	-	1	-	1	-	-	2	2	-
C211	3	3	3	3	-	-	1	-	1	-	-	2	2	-

C211.1	Explain structure of power system, various types of distributors and types of transmission systems
C211.2	Realize the concept of bundle conductors (GMD &GMR) and calculate the transmission line parameters (Inductance and Capacitance)
C211.3	Analyze and determine performance of the transmission lines (Nominal T & π method)
C211.4	Describe the types of insulator and underground cables, and hence determine string efficiency and Grading of cables.
C211.5	Calculate sag under various conditions and explain the various substation and grounding systems

Course Name: EE8403 Measurements and Instrumentation

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	1	2	-	-	-	-	-	-	-	-	-	-	-	-
C212.2	1	2	2	2	-	-	-	-	-	-	-	1	2	-
C212.3	3	2	-	2	-	-	-	-	-	-	-	-	-	-
C212.4	2	-	2	-	-	-	-	-	-	-	-	1	2	-
C212.5	1	-	1	1	-	-	-	-	-	-	-	1	2	-
C212	2	2	2	2	-	-	-	-	-	-	-	1	2	-

C212.1	Explain the functional elements, characteristics and errors in measurements thereby understanding the standards.
C212.2	Describe the construction and operation of various electrical and electronics instruments and determine the magnetic measurements
C212.3	Determine the basic values of R,L & C through comparison methods and effect of interference
C212.4	Illustrate the construction and operation of various storage and display devices.
C212.5	Explain and select various transducers and data acquisition system used for various applications

Course Name: EE8451 Linear Integrated Circuits and Applications

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	1	-	-	-	-	-	-	-	-	-	-	-	2	-
C213.2	2	2	2	-	-	-	-	-	-	-	-	-	2	-
C213.3	2	2	2	-	2	-	-	-	-	-	-	-	2	-
C213.4	3	2	3	-	2	-	-	-	-	-	-	-	2	-
C213.5	2	1	1	-	2	-	-	-	-	-	-	-	2	-
C213	**2**	**2**	**2**	-	**2**	-	-	-	-	-	-	-	**2**	-

C213.1	Define the methods of fabrication and also describe the various components of IC fabrication.
C213.2	Explain the construction and characteristics of operational amplifier and design its basic applications like inverting and non inverting amplifiers
C213.3	Describe the various applications of op-amp like log and antilog amplifier, Active filters, waveform generators, D/A and A/D converters using op-amps.
C213.4	Analyze the characteristics and applications of IC555 timer, IC566 VCO and IC565 PLL.
C213.5	Illustrate the construction of various voltage regulators, audio and power amplifier ICs

Course Name: IC8451 Control Systems

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C214.1	3	3	2	2	2	-	-	-	1	-	-	2	3	2
C214.2	3	3	2	2	3	-	-	-	1	-	-	2	-	2
C214.3	3	3	2	3	3	-	-	-	1	-	-	3	3	2
C214.4	3	3	2	3	3	-	-	-	1	-	-	3	-	2
C214.5	3	3	3	3	3	-	-	-	1	-	-	3	3	2
C214	**3**	**3**	**3**	**3**	**3**	-	-	-	**1**	-	-	**3**	**3**	**2**

C214.1	Determine the transfer function of the electrical, mechanical, thermal system by various techniques like block diagram reduction, signal flow graph and acquire the equivalent electrical analogous circuit.
C214.2	Analyze the behavior of open loop, closed loop system and determine the frequency domain specifications through bode plot, polar plot, M & N circles, Nichol's Chart.
C214.3	Apply the various stability criterions like Routh Hurwitz criterion, Nyquist stability criterion determine the stability of the system and design suitable lag, lead, lag- lead compensators to achieve specifications for stability
C214.4	Design the various state models for linear, time invariant systems and hence analyze the system state equations for controllability and observability.
C214.5	Determine the various time response specifications, errors for various first order, second order system and hence determine the stability through root locus by considering the effect of P, PI, PID modes of feedback

Course Name: EE8411 Electrical Machines Laboratory – II

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C215.1	3	3	2	2	2	-	-	-	1	1	1	1	1	-
C215.2	2	2	-	2	2	-	-	-	1	1	1	1	2	-
C215.3	3	3	2	2	2	-	-	-	1	1	1	1	3	-
C215.4	3	3	2	2	2	-	-	-	1	1	1	1	3	-
C215.5	2	2	-	2	2	-	-	-	1	1	1	1	3	-
C215	**3**	**2**	**2**	**2**	**2**	-	-	-	**1**	**1**	**1**	**1**	**3**	-

C215.1	Analyze and predetermine the regulation of Alternators using various methods.
C215.2	Examine the effect of various sequence parameters on d-q reactance.
C215.3	Experiment and determine the characteristics of synchronous machine with varying excitation
C215.4	Compute the performance of single and three phase induction motor and determine the suitability of various starters.
C215.5	Inspect and interpret the equivalent circuit parameters for induction motor

Course Name: EE8461 Linear and Digital Integrated Circuits Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	2	-
C216.1	3	2	2	2	-	-	-	-	1	1	1	1	2	-
C216.2	3	2	2	2	2	-	-	-	1	1	1	1	2	-
C216.3	3	2	2	2	2	-	-	-	1	1	1	1	2	-
C216.4	3	2	2	2	2	-	-	-	1	1	1	1	2	-
C216.5	3	2	2	2	2	-	-	-	1	1	1	1	2	-
C216	**3**	**2**	**2**	**2**	**2**	-	-	-	**1**	**1**	**1**	**1**	**2**	-

C216.1	Working Practice in simulators to learn design, testing and characterizing of circuit behavior with digital and analog ICs.
C216.2	Design combinational logic circuits using digital IC's
C216.3	Analyze and design various applications of Op-Amp
C216.4	Design and construct waveform generation circuits using timer
C216.5	Design and explain the analog to digital conversion and vice versa using op amps.

Course Name: EE8412 Presentation Skills and Technical Seminar

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C217.1	3	2	2	1	2	1	1	1	1	2	2	2	2	2
C217.2	2	-	-	1	2	-	-	1	3	3	3	1	2	2
C217.3	1	-	-	-	2	-	-	-	3	3	3	2	2	2
C217.4	2	-	-	-	3	-	-	-	3	3	3	2	2	2
C217.5	-	-	-	-	-	-	-	-	3	3	3	2	2	2
C217	3	2	2	1	2	1	1	1	3	3	3	2	2	2

C217.1	Study the advanced engineering developments
C217.2	Prepare and present technical reports.
C217.3	Practises with various various teaching aids such as over head projectors, and demonstrative models.
C217.4	Make use of computer office tools like power point,MS word Excel for presentation.
C217.5	Improving communication skills for prsentation

THIRD YEAR

Course Name: EE8501 Power System Analysis

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C301.1	2	2	1	2	3	-	-	-	-	-	-	2	1	-
C301.2	2	2	2	2	3	-	-	-	-	-	-	2	1	-
C301.3	3	3	3	2	3	-	1	-	-	-	-	2	1	-
C301.4	3	3	3	3	3	-	1	-	-	-	-	2	1	-
C301.5	3	3	3	3	3	-	1	-	-	-	-	-	1	-
C301	3	3	3	3	3	-	1	-	-	-	-	2	1	-

C301.1	Formulate the bus impedance and bus admittance matrix for the load flow analysis by drawing single line diagram.
C301.2	Estimate the power flow solution by using Gauss-Seidal and Newton-Raphson method.
C301.3	Determine the symmetrical three phase faults using bus impedance matrix.
C301.4	Analyze the effects of various unsymmetrical faults occurring in transmission lines.
C301.5	Analyze the stability of the power system using swing equation.

Course Name EE8551 Microprocessors and Microcontrollers

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C302.1	1	-	-	-	-	-	-			-	-	2	-	3
C302.2	3	2	2	2	2	-	-	1	2	-	2	2	3	3
C302.3	1	-	1	-	-	-	-	-	-	-	-	2	-	3
C302.4	2	-	2	-	2	-	-	-	-	-	2	2	3	3
C302.5	3	2	2	2	3	-	-	-	-	-	2	2	3	3
C302	**2**	**2**	**2**	**2**	**3**	-	-	**1**	**2**	-	**2**	**2**	**3**	**3**

C302.1	Illustrate the signals, architecture and IO ports of microprocessors (8085).
C302.2	Write assembly language programs for microprocessor (8085).
C302.3	Explain the architecture, data transfer concepts and interrupt of microcontroller (8051).
C302.4	Describe various peripheral devices and its interfaces for 8085 & 8051
C302.5	Demonstrate concepts of 8085 and 8051 for simple applications development with programming

Course Name: EE8552 Power Electronics

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C303.1	1	-	-	-	-	-	1	-	-	-	-	2	3	-
C303.2	3	2	2	1	2	-	1	-	-	-	-	2	3	-
C303.3	3	2	2	1	2	-	1	-	-	-	-	2	3	-
C303.4	2	-	-	-	2	-	1	-	-	-	-	2	3	-
C303.5	2	-	-	-	2	-	1	-	-	-	-	2	3	-
C303	**3**	**2**	**2**	**1**	**2**	-	**1**	-	-	-	-	**2**	**3**	-

C303.1	Explain the construction and operation of semiconductor devices and their switching characteristics.
C303.2	Determine the various performance indices of controlled rectifiers .
C303.3	Analysis and design the various DC-DC converters
C303.4	Describe the inverter topology and Pulse Width modulation techniques.
C303.5	Illustrate the principle behind AC-AC converters and its applications.

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Course Name: EE8591 Discrete Time Systems and Signal Processing

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C304.1	1	-	-	-	1	-	-	-	-	-	-	1	3	2
C304.2	3	3	-	3	3	-	-	-	-	-	-	3	2	2
C304.3	3	3	-	-	3	-	-	-	-	-	-	3	2	2
C304.4	2	2	2	-	2	-	-	-	-	-	-	1	3	2
C304.5	1	-	-	-	1	-	-	-	-	-	-	1	3	2
C304	**3**	**3**	**3**	**3**	**3**	**2**	-	-	**3**	-	**2**	**2**	**3**	**2**

C304.1	Classify various signals and systems & their mathematical representation
C304.2	Analyze the discrete time systems using Z-transforms and DTFT.
C304.3	Compute DFT and FFT transformation techniques
C304.4	Distinguish IIR & FIR filters and their design for digital implementation
C304.5	Summarize digital signal processors & its features

Course Name: C8392 Object Oriented Programming

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C305.1	3	1	2	-	-	-	-	-	-	-	-	-	-	2
C305.2	3	3	3	-	2	-	-	-	-	-	2	2	-	2
C305.3	3	2	3	-	2	-	2	-	-	-	3	3	-	2
C305.4	3	2	2	-		-	-	-	-	-	1	1	-	2
C305.5	3	3	3	-	3	-	2	-	-	-	3	3	-	2
C305	**3**	**2**	**3**	**2**	**2**	-	-	**1**	**2**	-	**1**	**2**	-	**2**

C305.1	To understand Object Oriented Programming concepts.
C305.2	Ability to develop applications using Object Oriented Programming Concepts and Ability to implement features of object oriented programming to solve real world problems.
C305.3	Able to develop computer programs using the advanced concepts of Virtual concept and exception handling
C305.4	To know the basic characteristics of Java and to become familiar with the relationship between classes and objects in a Java program
C305.5	To acquire the knowledge of various multithreading and exceptions handling in java.

Course Name: OAN551-Sensors and Transducers

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C306.1	2	2	2	2	1	-	1	-	-	-	-	2	-	-
C306.2	2	2	2	2	1	-	1	-	-	-	-	2	-	-
C306.3	2	2	2	2	1	-	1	-	-	-	-	2	-	-
C306.4	2	1	1	1	1	-	1	-	-	-	-	2	-	-
C306.5	2	3	3	3	1	-	1	-	-	-	-	2	-	-
C306	2	2	2	2	1	-	1	-	-	-	-	2	-	-

C306.1	Expertise in various calibration techniques and signal types for sensors.
C306.2	Apply the various sensors in the Automotive applications.
C306.3	Apply the various sensors in the Mechatronics applications.
C306.4	Study the basic principles of various smart sensors.
C306.5	Implement the DAQ systems with different sensors for real time applications.

Course Name: EE8511 Control and Instrumentation Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C307.1	3	-	2	2	2	-	-	-	1	1	1	1	3	2
C307.2	3	2	2	2	2	-	-	-	1	1	1	1	3	2
C307.3	2	-	1	-	2	-	-	-	1	1	1	1	3	2
C307.4	3	2	2	2	2	-	-	-	1	1	1	1	3	2
C307.5	3	2	2	2	2	-	-	-	1	1	1	1	-	2
C307	3	2	2	2	2	-	-	-	1	1	1	1	3	2

C307.1	Discover the model of various AC & DC machines and compensators
C307.2	Compute the performance indices and other passive elements for the given electrical network.
C307.3	Demonstrate the working principles involved in various transducers and signal conditioning circuits
C307.4	Analyze the error characteristics of various machines by servomechanism
C307.5	Analyze the time response and stability of systems using various plots

Course Name: HS8581 Communication Skills - Laboratory Based

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C308.1	-	-	-	-	-	-	-	-	3	3	2	1	1	1
C308.2	-	-	-	-	-	-	-	-	3	3	2	1	1	1
C308.3	-	-	-	-	-	-	-	-	3	3	2	1	1	1
C308.4	-	-	-	-	-	-	-	-	3	3	2	1	1	1
C308.5	-	-	-	-	-	-	-	-	3	3	2	1	1	1
C308	-	-	-	-	-	-	-	-	3	3	2	1	1	1

C308.1	Speak with confidence improving their speaking ability in one or more situations and become eloquent in the essential areas of communication such as pronunciation, fluency, or complexity.
C308.2	Comprehend English talks or lectures actively and attentively and enhance their listening tendency.
C308.3	Read and learn grammatical structures, new lexical items and the elements of pronunciation.
C308.4	Develop their skills in interpersonal communication and in expressing their views in a lucid manner.
C308.5	Speak with confidence improving their speaking ability in one or more situations and become eloquent in the essential areas of communication such as pronunciation, fluency, or complexity.

Course Name: CS8383 Object Oriented Programming Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C309.1	3	1	1	-	-	-	-	-	2	-	1		-	2
C309.2	3	2	2	-	-	-	-	-	2	-	1	2	-	2
C309.3	3	3	2	1	1	-	-	-	3	-	2	2	-	2
C309.4	3	3	3	2	2	-	2	1	3	-	3	3	-	2
C309.5	3	3	3	2	2	-	2	2	3	-	3	3	-	2
C309	3	3	3	2	2	-	2	2	3	-	2	3	-	2

C309.1	Able to trace the execution of program code to debug an application
C309.2	Able to design object oriented solutions for small systems involving multiple objects.
C309.3	Develop JAVA code using Object Oriented concepts.
C309.4	Ability to write the C++ , JAVA code for given problems
C309.5	Ability to read, understand and control the execution of branching and looping structure in C++ programming

Course Name: EE8601 Solid State Drives

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C310.1	1	-	-	-	2	-	1	-	-	-	-	2	2	-
C310.2	2	3	3	3	2	-	1	-	-	-	-	2	3	-
C310.3	1	1	1	1	1	-	1	-	-	-	-	2	3	-
C310.4	1	-	-	-		-	1	-	-	-	-	2	3	-
C310.5	2	2	2	2	2	-	1	-	-	-	-	2	3	-
C310	**2**	**2**	**2**	**2**	**2**	-	**1**	-	-	-	-	**2**	**3**	-

C310.1	Study the dynamic and load torque characteristics of electrical motor drives
C310.2	Design the converter and chopper fed DC motor drive.
C310.3	Explain the various control techniques for induction motor drives
C310.4	Describe the synchronous motor drives for various control techniques.
C310.5	Design the closed loop controllers for electrical motor drives.

Course Name: EE8602 Protection and Switchgear

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C311.1	2	-	-	-	2	-	2	-	-	-	-	1	2	-
C311.2	2	2	2	-	2	-	2	-	-	-	-	1	2	-
C311.3	2	2	2	2	-	-	2	-	-	-	-	1	2	-
C311.4	2	-	2	2	2	-	2	-	-	-	-	1	2	-
C311.5	2	2	-	2	-	-	2	-	-	-	-	1	2	-
C311	**2**	**2**	**2**	**2**	**2**	-	**2**	-	-	-	-	**1**	**2**	-

C311.1	Explain the concept of fault due to lightning and the various protective schemes involved in protection like earthing, insulation and fault current reduction.
C311.2	Describe the construction and operation of various types of relays and their applications of relays used in grids and power stations etc.
C311.3	Illustrate the construction of CTs, PTs and various protective devices involved in protecting transformers, transmission lines, generators, busbars and various apparatus
C311.4	Correlate the relation between static relay and numerical protection
C311.5	Demonstrate the operation, implementation, types, and testing of circuit breakers which are used in substations and homes

Course Name: EE8691 Embedded Systems

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C312.1	2	-	-	1	-	-	-	-	-	-	-	2	-	3
C312.2	1	-	-	-	2	-	-	-	-	-	-	2	-	3
C312.3	1	-	-	-	-	-	-	-	-	-	-	2	-	3
C312.4	3	-	3	3	3	-	-	-	-	-	-	2	2	3
C312.5	2	1	2	3	3	-	-	-	-	-	-	2	2	3
C312	2	1	3	2	2	-	-	-	-	-	-	2	2	3

C312.1	Describe the differences between the general computing system and the embedded system, also recognize the classification of embedded systems.
C312.2	Explain about embedded networking concepts and study of protocols
C312.3	Classify the different phases of firmware development and predict the models for it.
C312.4	Design real time embedded systems using the concepts of RTOS.
C312.5	Explain the knowledge of standalone embedded system development

Course Name: EE6604 Design of Electrical Machines

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C313.1	2	1	-	-	1	-	1	-		-	-	-	2	-
C313.2	3	3	3	2	-	-	1	-	1	-	-	-	2	-
C313.3	3	3	3	3	1	-	1	-	1	-	-	-	2	-
C313.4	3	3	3	3	-	-	1	-	1	-	-	-	2	-
C313.5	3	3	3	-	1	-	1	-	1	-	-	-	2	-
C313	3	3	3	3	1	-	1	-	1	-	-	-	2	-

C313.1	Describe the properties of various engineering materials and categorize the machines on their thermal rating.
C313.2	Illustrate the design of transformer to meet the cooling requirement.
C313.3	Formulate the armature and field design of D.C motor.
C313.4	Model the squirrel cage and wound rotors, based on the design parameters and analyze the magnetic leakage concepts.
C313.5	Select the design parameters of synchronous motor and design the turbo Alternator for the specifications.

Course Name: EE6703 Special Electrical Machines

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C314.1	2	1	1	-	-	-	1	-	-	-	-	-	2	-
C314.2	2	1	1	-	-	-	1	-	-	-	-	-	2	-
C314.3	2	1	1	-	-	-	1	-	-	-	-	-	2	-
C314.4	2	1	1	-	-	-	1	-	-	-	-	-	2	-
C314.5	2	1	1	-	-	-	1	-	-	-	-	-	2	-
C314	**2**	**1**	**1**	-	-	-	**1**	-	-	-	-	-	**2**	-

C314.1	Illustrate the reluctance principle and synchronous reluctance motor operation.
C314.2	Realize the concept of switched reluctance motor and its control strategies.
C314.3	Explicate necessity of brushless DC motor and its principle of operation.
C314.4	Explain the principle of operation and types of stepper motor and its applications.
C314.5	Describe permanent magnet synchronous motor principle of operation and its drive circuits

Course Name: EE8661 Power Electronics and Drives Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C315.1	2	2	-	2	-	-	-	-	-	-	1	2	3	-
C315.2	3	3	2	2	-	-	-	-	-	-	1	2	3	2
C315.3	2	2	2	2	2	-	-	-	-	-	1	2	3	-
C315.4	2	2	2	2	2	-	-	-	-	-	1	2	3	2
C315.5	3	3	2	2	3	-	-	-	-	-	2	2	3	2
C315	**3**	**3**	**2**	**2**	**3**	-	-	-	-	-	**2**	**2**	**3**	**2**

C315.1	Sketch the characteristics of power electronic devices and its triggering sequence using passive elements.
C315.2	Analyze the performance of half/Fully controlled rectifiers for different types of load
C315.3	Interpret the various control strategies to computethePerformanceindices of DC-DC converters.
C315.4	Illustrate the operating principle behind AC-AC/DC converters for speed control of the motor by incorporating different modulation techniques.
C315.5	Simulate and analyze the various power electronic converters

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Course Name: EE8681 Microprocessors and Microcontrollers Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C316.1	3	2	3	2	2	-	-	-	1	1	1	2	-	3
C316.2	3	2	3	2	1	-	-	-	1	1	1	2	-	3
C316.3	2	2	1	1	2	-	-	-	1	1	1	2	2	3
C316.4	3	2	3	3	1	-	-	-	1	1	1	2	2	3
C316.5	1	1	1	1	2	-	-	-	1	1	1	2	2	3
C316	**3**	**2**	**2**	**2**	**2**	-	-	-	**1**	**1**	**1**	**1**	**2**	**3**

C316.1	Build the logic for Data manipulation of programs on the 8085 microprocessor and 8051 microcontroller
C316.2	Develop the assembly level programming to illustrate control instructions in the 8085 microprocessor and 8051 microcontroller
C316.3	Work with standard interfaces like 8255, 8253, digital-to-analog Converters and analog-to-digital converters etc with Microprocessor (8085) and Microcontroller (8051)
C316.4	Design logical real-time applications like Traffic Light Control, Motor Interface, etc. using 8085 microprocessor and 8051 microcontroller
C316.5	Practices with Simulators / Emulators / open source for assembly level programming

Course Name: EE8611 Mini Project

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C317.1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
C317.2	3	3	3	3	3	3	2	2	2	3	3	3	3	3
C317.3	3	3	3	3	3	3	2	2	2	3	3	3	3	3
C317.4	3	3	3	3	3	3	2	2	2	3	3	3	3	3
C317.5	3	3	3	3	3	3	2	2	2	3	3	3	2	2
C317	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**3**	**3**	**3**	**3**	**3**

C317.1	Discuss and infer the technical details through literature survey.
C317.2	Apply the acquired knowledge and identify the methodology
C317.3	Examine the technological gap for product design.
C317.4	Demonstrate the product design and development
C317.5	Elucidate the relationship of environmental and ethical issues with technical development

FINAL YEAR

Course Name: EE8701 High Voltage Engineering

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	2	-	-	-	-	-	2	-	-	-	-	-	-	-
C401.2	2	-	-	-	-	-	2	-	-	-	-	-	-	-
C401.3	1	1	-	-	-	-	2	-	-	-	-	-	-	-
C401.4	2	1	-	-	-	-	2	-	-	-	-	-	-	-
C401.5	1	1	-	-	-	-	2	-	-	-	-	-	-	-
C401	2	1	-	-	-	-	2	-	-	-	-	-	-	-

C401.1	Comprehend the causes of over voltages and protection of over voltages in power system
C401.2	Illustrate the mechanism of electrical breakdown in gases, solids and liquids
C401.3	Discuss the various techniques involved in generation of high voltage and high current.
C401.4	Describe the different types of high voltage and high current measurement techniques
C401.5	Explain the methods used for testing of electrical equipments and insulation coordination.

Course Name: EE8702 Power System Operation and Control

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C402.1	2	2	2	2	1	-	-	-	-	-	-	1	-	-
C402.2	1	1	1	1	1	-	-	-	-	-	-	1	2	-
C402.3	1	-	-	-		-	-	-	-	-	-	1	2	-
C402.4	3	2	2	2	1	-	1	-	-	-	-	1		-
C402.5	2	-	-	-	1	-	-	-	-	-	-	-	2	-
C402	2	2	2	2	1	-	1	-	-	-	-	1	2	-

C402.1	Understand the need for power system operation and control.
C402.2	Get knowledge of the mechanism involved in maintaining the frequency constant by controlling the real power, when there is a system load variation.
C402.3	Understand voltage constancy and the methods of voltage control.
C402.4	Analyze the economic scheduling of load among the generators and the concept of economic dispatch
C402.5	Understand the methods of computer control using energy control centre and SCADA.

Course Name: EE8703 Renewable Energy Systems

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C403.1	2	-	-	-	1	-	1	-	-	-	-	2	-	-
C403.2	2	2	2	-	1	-	1	-	-	-	-	2	-	-
C403.3	2	1	-	-	1	-	1	-	-	-	-	2	-	-
C403.4	2	1	-	-	1	-	1	-	-	-	-	2	-	-
C403.5	2	1	-	-	1	-	1	-	-	-	-	2	-	-
C403	2	2	2	1	1	-	1	-	-	-	-	2	-	-

C403.1	Ability to create awareness about renewable Energy Sources and technologies.
C403.2	Able to explain the design procedure of wind turbines.
C403.3	Ability to acquire knowledge about solar energy.
C403.4	Ability to understand basics about biomass energy
C403.5	Ability to explain the various renewable energy resources and technologies and their applications.

Course Name: OCS752-Introduction to C Programming

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C404.1	2	2	2	2	-	-	-	-	-	-	-	3	-	2
C404.2	2	2	2	2	-	-	-	-	-	-	-	3	-	2
C404.3	3	3	2	2	-	-	-	-	-	-	-	3	-	2
C404.4	3	3	3	2	-	-	-	1	1	-	-	3	-	2
C404.5	3	3	3	2	-	-	-	1	1	-	-	3	-	2
C404	2	2	2	2	-	-	-	1	1	-	-	3	-	2

C404.1	Identify the major parts of a computing system and solve the number system conversion problems.
C404.2	Demonstrate the basics of C programming and the usage of decision making, branching, looping statements.
C404.3	Implement the concepts of arrays and strings in application development.
C404.4	Design C programs using functions and pointers.
C404.5	Write and execute C programs using structures and unions, the storage classes and preprocessor directives.

Course Name: EI6703 Fibre Optics and Laser Instruments (E-II)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C405.1	2	1	-	-	-	-	-	-	-	-	-	1	-	-
C405.2	2	1	-	-	-	-	-	-	-	-	-	1	-	-
C405.3	2	1	-	-	-	-	-	-	-	-	-	1	-	-
C405.4	2	1	-	-	-	-	-	-	-	-	-	1	-	-
C405.5	2	1	-	-	-	-	-	-	-	-	-	1	-	-
C405	2	1	-	-	-	-	-	-	-	-	-	1	-	-

C405.1	Explain the various types, properties, losses, sources, detectors involved in optical fiber
C405.2	Illustrate the fiber optic instrumentation system for physical parameter measurements like pressure,temperature, length etc.
C405.3	Describe the various types of lasers by stating its modes of operation.
C405.4	Demonstrate the working operation of lasers involved in physical parameter measurements
C405.5	Discuss the role of laser instruments in medical applications and explain principle, methods applications of hologram.

Course Name: EE6002 Power System Transients(E-I)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C406.1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
C406.2	3	-	-	1	1	-	-	-	-	-	-	-	-	-
C406.3	2	-	-	1	1	-	-	-	-	-	-	-	-	-
C406.4	2	-	-	1	-	-	-	-	-	-	-	-	-	-
C406.5	1	-	-	1	1	-	-	-	-	-	-	-	-	-
C406	2	-	-	1	1	-	-	-	-	-	-	-	-	-

C406.1	Summarize the power system transients and role of transients in power system
C406.2	Analyze the switching operations with resistance, capacitance, load and its equivalent circuit.
C406	Discuss the mechanism of lightning and protection of power system.
C406.4	Comprehend the travelling of voltage and current wave and analyze the transient response with line parameters
C406.5	Describe the voltage transients by faults, load rejection in integrated power system operation

Course Name: EE8711 Power System Simulation Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C407.1	3	2	2	2	3	-	-	-	1	1	1	1	2	3
C407.2	2	2	2	2	3	-	-	-	1	1	1	1	-	3
C407.3	2	2	2	2	3	-	-	-	1	1	1	1	2	3
C407.4	3	2	2	2	3	-	-	-	1	1	1	1	-	3
C407.5	3	2	2	2	3	-	-	-	1	1	1	1	-	3
C407	**3**	**2**	**2**	**2**	**3**	-	-	-	**1**	**1**	**1**	**1**	**2**	**3**

C407.1	Compute the transmission line parameters (Inductance and Capacitance) and formulate the admittance and impedance matrices.
C407.2	Compare and disseminate the power flow using Gauss Seidal method and Newton-Raphson method
C407.3	Interpret the effect of symmetrical and various unsymmetrical faults occurring in power system
C407.4	Analyze the electromagnetic transient phenomena for single and multi machine infinite bus system
C407.5	Schedule the economic dispatch based on demand and also analyze the mechanism involved in single area and multi area system

Course Name: EE8712 Renewable Energy Systems Laboratory

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C408.1	2	-	1	1	-	-	-	-	-	1	-	2	-	-
C408.2	1	-	1	1	-	-	-	-	-	1	-	2	-	-
C408.3	1	-	1	1	-	-	-	-	-	1	-	2	-	-
C408.4	2	-	1	1	2	-	-	-	-	1	-	2	-	-
C408.5	1	-	1	1	2	-	-	-	-	1	-	2	-	-
C408	2	-	1	1	2	-	-	-	-	1	-	2	-	-

C408.1	Ability to understand and analyze renewable energy systems.
C408.2	Ability to train the students in renewable energy source and technologies
C408.3	Ability to provide adequate inputs on a variety of issues in harnessing renewable energy
C408.4	Ability to simulate the various energy sources
C408.5	Ability to understand the basics of Intelligent control

Course Name: EE6801 Electric Energy Generation, Utilization and Conservation

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C409.1	2	2	2	2	-	-	-	-	-	-	-	-	2	-
C409.2	2	2	2	-	1	-	2	-	-	-	-	2	2	-
C409.3	2	-	-	1	2	-	2	-	-	-	-	-	2	-
C409.4	2	2	2	2	2	-	2	-	-	-	-	2	2	-
C409.5	2	1	2	2	2	-	2	-	-	-	-	2	2	-
C409	**2**	**2**	**2**	**2**	**2**	-	**2**	-	-	-	-	**2**	**2**	-

C409.1	Able to select drives for particular application.
C409.2	Define and apply the concepts of luminous flux, luminous intensity, and illumination.
C409.3	Explain the concepts of heating and welding can be learned.
C409.4	Simple system for solar energy conversion systems.
C409.5	Able to explain the design procedure of wind turbines.

Course Name: EE6008 Microcontroller Based System Design

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C410.1	2	2	2	-	-	-	-	-	-	-	-	2	-	3
C410.2	2	2	2	-	2	-	-	-	-	-	-	2	-	3
C410.3	2	2	2	-	2	-	-	-	-	-	-	2	2	3
C410.4	2	2	2	-	2	-	-	-	-	-	-	2	-	3
C410.5	2	2	2	-	2	-	-	-	-	-	-	2	-	3
C410	**2**	**2**	**2**	-	**2**	-	-	-	-	-	-	**2**	**2**	**3**

C410.1	Describe the architectural aspects and basics of PIC microcontroller.
C410.2	Compare and classify interrupts and timer programming used in PIC MCU.
C410.3	Explain the various peripherals and sensors interface.
C410.4	Illustrate the basic concepts of ARM processor and its memory.
C410.5	Discuss the organization, architecture, implementation and applications of ARM processor.

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Course Name: EE8811 Project Work

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C411.1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
C411.2	3	3	3	3	3	3	2	2	2	3	3	3	3	3
C411.3	3	3	3	3	3	3	2	2	2	3	3	3	3	3
C411.4	3	3	3	3	3	3	2	2	2	3	3	3	3	3
C411.5	3	3	3	3	3	3	2	2	2	3	3	3	2	2
C411	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**3**	**3**	**3**	**3**	**3**

C411.1	Discuss and infer the technical details through literature survey.
C411.2	Apply the acquired knowledge and identify the methodology
C411.3	Examine the technological gap for product design.
C411.4	Demonstrate the product design and development
C411.5	Elucidate the relationship of environmental and ethical issues with technical development

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CO – PO AND CO – PSO MAPPING

2017 - REGULATIONS

FIRST YEAR

Course Name: HS8151 Communicative English

C101.1	Read articles of a general kind in magazines and newspapers.
C101.2	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.
C101.3	Comprehend conversations and short talks delivered in English.
C101.4	Write short essays of a general kind and personal letters and emails in English.
C101.5	Develop informative paragraphs through extended Communication Skills.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101.1	-	-	-	-	-	3	3	3	3	3	3	2	-	-
C101.2	-	-	-	-	-	3	3	3	3	3	3	2	-	-
C101.3	-	-	-	-	-	3	3	3	3	3	3	2	-	-
C101.4	-	-	-	-	-	3	3	3	3	3	3	2	-	-
C101.5	-	-	-	-	-	3	3	3	3	3	3	2	-	-
C101	-	-	-	-	-	3	3	3	3	3	3	2	-	-

Course Name: MA8151 Engineering Mathematics - I

C102.1	Determine maxima & minima problems using both the limit concept and rules of differentiation.
C102.2	Evaluate integrals both by using Riemann sums & Fundamental Theorem of Calculus and apply integration to compute multiple integrals, area and volume.
C102.3	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
C102.4	Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
C102.5	Apply various techniques in solving ordinary differential equations.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C102.1	3	3	3	3	-	-	-	-	2	-	3	3	-	-
C102.2	3	3	3	3	-	-	-	-	2	-	3	3	-	-
C102.3	3	3	3	3	-	-	-	-	2	-	3	3	-	-
C102.4	3	3	3	3	-	-	-	-	2	-	3	3	-	-
C102.5	3	3	3	3	-	-	-	-	2	-	3	3	-	-
C102	3	3	3	3	-	-	-	-	2	-	3	3	-	-

PRINCIPAL,
K. S. R. INSTITUTE FOR
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K. S. R. KALVI NAGAR,
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Course Name: PH8151 Engineering Physics

C103.1	Gain knowledge on the basics of properties of matter and its applications
C103.2	Acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics
C103.3	Explain the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers
C103.4	Get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes
C103.5	Understand the basics of crystals, their structures and different crystal growth techniques.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C103.1	3	3	3	3	-	-	-	-	-	-	3	3	-	-
C103.2	3	3	3	3	-	-	-	-	-	-	3	3	-	-
C103.3	3	3	3	3	-	-	-	-	-	-	3	3	-	-
C103.4	3	3	3	3	-	-	-	-	-	-	3	3	-	-
C103.5	3	3	3	3	-	-	-	-	-	-	3	3	-	-
C103	3	3	3	3	-	-	-	-	-	-	3	3	-	-

Course Name: CY8151 Engineering Chemistry

C104.1	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
C104.2	Evaluate adsorption isotherm in chemical equilibrium and chemical kinetics, including effects of pressure, temperature, catalysts.
C104.3	Predict the equilibrium relations & their characterizations to construct phase diagrams and the alloy making.
C104.4	Differentiate between various fuels & analyze exhaust and flue gases.
C104.5	Gain knowledge of converting solar energy in to most needy electrical energy efficiently and economically to reduce the environmental pollution & design of energy storage devices.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C104.1	3	3	3	3	-	2	2	-	-	-	3	3	-	-
C104.2	3	3	3	3	-	2	2	-	-	-	3	3	-	-
C104.3	3	3	3	3	-	2	2	-	-	-	3	3	-	-
C104.4	3	3	3	3	-	2	2	-	-	-	3	3	-	-
C104.5	3	3	3	3	-	2	2	-	-	-	3	3	-	-
C104	3	3	3	3	-	2	2	-	-	-	3	3	-	-

Course Name: GE8151 Problem Solving and Python Programming

C105.1	Develop algorithmic solutions to simple computational problems.
C105.2	Read, write, execute by hand simple Python programs
C105.3	Structure simple Python programs for solving problems
C105.4	Decompose a Python program into functions
C105.5	Represent compound data using Python lists, tuples, dictionaries.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C105.1	3	3	3	3	3	1	-	-	-	-	3	3	-	3
C105.2	3	3	3	3	3	1	-	-	-	-	3	3	-	3
C105.3	3	3	3	3	3	1	-	-	-	-	3	3	-	3
C105.4	3	3	3	3	3	1	-	-	-	-	3	3	-	3
C105.5	3	3	3	3	3	1	-	-	-	-	3	3	-	3
C105	3	3	3	3	3	1	-	-	-	-	3	3	-	3

Course Name: GE8152 Engineering Graphics

C106.1	Familiarize with the fundamentals and standards of Engineering graphics
C106.2	Perform freehand sketching of basic geometrical constructions and multiple views of objects.
C106.3	Project orthographic projections of lines and plane surfaces.
C106.4	Draw projections of section of solids and development of surfaces.
C106.5	Visualize and to project isometric and perspective sections of simple solids.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C106.1	3	2	2	2	2	-	-	-	2	3	3	3	-	-
C106.2	3	2	2	2	2	-	-	-	2	3	3	3	-	-
C106.3	3	2	2	2	2	-	-	-	2	3	3	3	-	-
C106.4	3	2	2	2	2	-	-	-	2	3	3	3	-	-
C106.5	3	2	2	2	2	-	-	-	2	3	3	3	-	-
C106	3	2	2	2	2	-	-	-	2	3	3	3	-	-

Course Name: GE8161 Problem Solving Python and Programming Laboratory

C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them.
C107.4	Use Python lists, tuples, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C107.1	3	3	3	3	3	-	-	-	2	-	3	3	1	2
C107.2	3	3	3	3	3	-	-	-	2	-	3	3	1	2
C107.3	3	3	3	3	3	-	-	-	2	-	3	3	1	2
C107.4	3	3	3	3	3	-	-	-	2	-	3	3	1	2
C107.5	3	3	3	3	3	-	-	-	2	-	3	3	1	2
C107	3	3	3	3	3	-	-	-	2	-	3	3	1	2

Course Name: BS8161 Physics and Chemistry Laboratory

C108.1	Determine the velocity and compressibility of ultrasonic wave using different medium.
C108.2	Find the young's modulus with different methods and rigidity modulus
C108.3	Find thermal conductivity of bad conductor and energy band of semiconductor.
C108.4	Understand the different types of hardness & alkalinities, Water quality criteria and standards of DO and Chloride.
C108.5	Analyze and understand the different types of electrodes and their usage in conductivity and in pH titrations.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C108.1	3	3	2	2	2	1	1	-	-	-	-	1	-	2
C108.2	3	3	2	-	-	-	-	-	-	-	-	-	-	2
C108.3	3	3	2	2	2	1	1	-	-	-	-	1	-	2
C108.4	3	3	2	2	-	1	1	-	-	-	-	1	-	2
C108.5	3	3	2	2	2	1	1	-	-	-	-	1	-	2
C108	3	3	2	2	2	1	1	-	-	-	-	1	-	2

Course Name: HS8251 Technical English

C109.1	Read technical texts and write area- specific texts effortlessly.
C109.2	Listen and comprehend lectures and talks in their area of specialisation successfully.
C109.3	Speak appropriately and effectively in varied formal and informal contexts.
C109.4	Write reports and winning job applications.
C109.5	Comprehend conversations and short talks delivered in English.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C109.1	-	-	-	-	3	3	3	3	3	3	3	3	-	-
C109.2	-	-	-	-	3	3	3	3	3	3	3	3	-	-
C109.3	-	-	-	-	3	3	3	3	3	3	3	3	-	-
C109.4	-	-	-	-	3	3	3	3	3	3	3	3	-	-
C109.5	-	-	-	-	3	3	3	3	3	3	3	3	-	-
C109	-	-	-	-	3	3	3	3	3	3	3	3	-	-

Course Name: MA8251 Engineering Mathematics - II

C110.1	Describe the concept of change quadratic form to canonical form and used in various fields of engineering.
C110.2	Describe the fundamentals in vector calculus and solve the problems related to multiple integrals.
C110.3	Solve the problems of conformal mapping and bilinear transformations related to engineering.
C110.4	Use the knowledge of complex integration with different techniques finding the integrals.
C110.5	Apply Laplace transforms techniques to solve ordinary differential equations.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C110.1	3	3	3	3	-	-	-	-	2	-	3	3	-	-
C110.2	3	3	3	3	-	-	-	-	2	-	3	3	-	-
C110.3	3	3	3	3	-	-	-	-	2	-	3	3	-	-
C110.4	3	3	3	3	-	-	-	-	2	-	3	2	-	-
C110.5	3	3	3	3	-	-	-	-	2	-	3	3	-	-
C110	3	3	3	3	-	-	-	-	2	-	3	3	-	-

Course Name: PH8253 Physics for Electronics Engineering

C111.1	Gain knowledge on classical and quantum electron theories, and energy band structures
C111.2	Acquire knowledge on basics of semiconductor physics and its applications in various devices
C111.3	Get knowledge on magnetic and dielectric properties of materials
C111.4	Have the necessary understanding on the functioning of optical materials for optoelectronics
C111.5	Understand the basics of quantum structures and their applications in spintronics and carbon electronics.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C111.1	3	3	3	3	-	2	-	-	-	-	3	3	-	-
C111.2	3	3	3	3	-	-	-	-	-	-	3	3	-	-
C111.3	3	3	3	3	-	-	-	-	-	-	3	3	-	-
C111.4	3	3	3	3	-	2	-	-	-	-	3	3	-	-
C111.5	3	3	3	3	-	2	-	-	-	-	3	3	-	-
C111	3	3	3	3	-	2	-	-	-	-	3	3	-	-

Course Name: BE8254 Basic Electrical, Electronics and Measurement Engineering

C112.1	Discuss the essentials of electric circuits and analysis.
C112.2	Explain the basic operation of electric machines and transformers.
C112.3	Comprehend the concepts in DC generators and motors
C112.4	Understand the concepts in AC generators and motors
C112.5	Illustrate the concepts of measurement and metering for electric circuits.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C112.1	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C112.2	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C112.3	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C112.4	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C112.5	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C111	3	3	3	3	-	2	-	-	-	-	3	3	-	-

Course Name: EC8251 Circuit Analysis

C113.1	Develop the capacity to analyze electrical circuits and network topologies.
C113.2	Analyze the electrical circuits by applying various network theorems for D.C and A.C circuits.
C113.3	Measure various parameters from the series and parallel resonance and single, double tuned coupled circuits.
C113.4	Analyze the transient response of RC, RL and RLC circuits by various signals.
C113.5	Express given Electrical Circuit in various parameter model and solve the circuits.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C113.1	3	3	3	3	3	3	-	-	1	-	3	3	-	2
C113.2	3	3	3	3	3	3	-	-	1	-	3	3	-	2
C113.3	3	3	3	3	3	3	-	-	1	-	3	3	-	2
C113.4	3	3	3	3	3	3	-	-	1	-	3	3	-	2
C113.5	3	3	3	3	3	3	-	-	1	-	3	3	-	2
C113	3	3	3	3	3	3	-	-	1	-	3	3	-	2

Course Name: EC8252 Electronic Devices

C114.1	Acquire knowledge about semiconductor physics for intrinsic and extrinsic materials and learn the basics of semiconductor diodes
C114.2	Analyze the BJT terminal characteristics; utilize the circuit models to design single-stage BJT amplifiers.
C114.3	Study and analyze the performance of FETs on the basis of their operation and working.
C114.4	Understand the inner working of Special semiconductor devices.
C114.5	Understand the principle of operation, capabilities and limitation of various power and display devices and their applications.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C114.1	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C114.2	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C114.3	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C114.4	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C114.5	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C114	3	3	3	3	3	3	-	-	-	-	3	3	-	-

Course Name: EC8261 Circuits and Devices Laboratory

C115.1	Analyze the characteristics of basic Electronic Devices.
C115.2	Design and analysis RL and RC circuits
C115.3	Verify Thevenin's &Norton theorem, KVL &KCL, Super Position Theorems, maximum power transfer & reciprocity theorem.
C115.4	Analyze the transient response of RLC circuits by various signals.
C115.5	Design the circuits using MULTISIM Software

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C115.1	3	3	3	3	3	3	-	-	-	-	3	3	-	3
C115.2	3	3	3	3	3	3	-	-	-	-	3	3	-	3
C115.3	3	3	3	3	3	3	-	-	-	-	3	3	-	3
C115.4	3	3	3	3	3	3	-	-	-	-	3	3	-	3
C115.5	3	3	3	3	3	3	-	-	-	-	3	3	-	3
C115	3	3	3	3	3	3	-	-	-	-	3	3	-	3

Course Name: GE8261 Engineering Practices Laboratory

C116.1	Describe the carpentry components, plumbing works for Engineering Practices and applications.
C116.2	Discuss the importance of welding equipments; operations in smithy, foundry, and fitting shop and practice for assemble the Centrifugal pump and Air conditioner.
C116.3	Demonstrate and infer the concepts of house wiring and able to design and conduct experiments.
C116.4	Determine the energy in single phase circuit and measure the electrical quantities like current, voltage, resistance etc.
C116.5	Fabricate various electronic components and illustrate the behavior of various circuits like rectifier circuits, logic circuits etc.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C116.1	3	3	3	3	3	3	1	-	2	-	3	3	-	-
C116.2	3	3	3	3	3	3	1	-	2	-	3	3	-	-
C116.3	3	3	3	3	3	3	1	-	2	-	3	3	-	-
C116.4	3	3	3	3	3	3	1	-	2	-	3	3	-	-
C116.5	3	3	3	3	3	3	1	-	2	-	3	3	-	-
C116	3	3	3	3	3	3	1	-	2	-	3	3	-	-

SECOND YEAR

Course Name: MA8352 Linear Algebra and Partial Differential Equations

C201.1	Compute basic objects associated with vector spaces.
C201.2	Construct basic objects related with linear transformation and apply the knowledge of linear transformation and diagonalization in engineering.
C201.3	Acquire the concept of inner product spaces.
C201.4	Acquire the concepts of partial differential equations would provide the ability to formulate and determine the solution of partial differential equations.
C201.5	Apply the knowledge of Fourier series for solving the initial boundary value problems in one dimensional wave and heat equations and boundary value problems in elliptic equations.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201.1	3	3	3	3	3	-	-	-	2	-	3	3	-	-
C201.2	3	3	3	3	3	-	-	-	2	-	3	3	-	-
C201.3	3	3	3	3	3	-	-	-	2	-	3	3	-	-
C201.4	3	3	3	3	3	-	-	-	2	-	3	3	-	-
C201.5	3	3	3	3	3	-	-	-	2	-	3	3	-	-
C201	3	3	3	3	3	-	-	-	2	-	3	3	-	-

Course Name: EC8393 Fundamentals of Data Structures in C

C202.1	Implement linear and non-linear data structure operations using C
C202.2	Develop Programs using functions, pointers, structures and unions in C
C202.3	Implement the different linear data structures concepts in real time applications
C202.4	Apply the different non-linear data structures in real time scenarios
C202.5	Appropriately choose sorting algorithm for an application.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	3	3	3	3	3	3	-	-	1	-	3	3	-	-
C202.2	3	3	3	3	3	3	-	-	1	-	3	3	-	-
C202.3	3	3	3	3	3	3	-	-	2	-	3	3	-	-
C202.4	3	3	3	3	3	3	-	-	2	-	3	3	-	-
C202.5	3	3	3	3	3	3	-	-	2	-	3	3	-	-
C202	3	3	3	3	3	3	-	-	2	-	3	3	-	-

Course Name: EC8351 Electronic Circuits - I

C203.1	Understand the methods of biasing transistors
C203.2	Working principles, characteristics and applications of BJT
C203.3	Analyze the small signal BJT and FET amplifiers - single stage and multi stage amplifiers.
C203.4	Analyze Frequency response characteristics of BJT and FET amplifiers.
C203.5	Design power supplies and Electronic Devices Testing.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C203.1	3	3	3	3	3	3	-	-	2	-	3	3	1	2
C203.2	3	3	3	3	3	3	-	-	2	-	3	3	2	2
C203.3	3	3	3	3	3	3	-	-	2	-	3	3	2	2
C203.4	3	3	3	3	3	3	-	-	2	-	3	3	-	2
C203.5	3	3	3	3	3	3	-	-	2	-	3	3	-	2
C203	3	3	3	3	3	3	-	-	2	-	3	3	2	2

Course Name: EC8352 Signals & Systems

C204.1	Understand the basic properties of different types of signals and systems.
C204.2	Analyze the continuous time signals using Fourier series, Fourier transform and Laplace transform.
C204.3	Apply Fourier and Laplace transforms to analyze the continuous time LTI systems.
C204.4	Analyze the discrete time signals using Discrete Time Fourier transform and Z – transform.
C204.5	Apply Z- transform to analyze the discrete time LTI systems.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C204.1	3	3	3	3	3	3	-	-	1	-	3	3	-	-
C204.2	3	3	3	3	3	3	-	-	2	-	3	3	-	-
C204.3	3	3	3	3	3	3	-	-	2	-	3	3	-	-
C204.4	3	3	3	3	3	3	-	-	2	-	3	3	-	-
C204.5	3	3	3	3	3	3	-	-	2	-	3	3	-	-
C204	3	3	3	3	3	3	-	-	2	-	3	3	-	-

Course Name: EC8392 Digital Electronics

C205.1	Understand the Digital fundamentals, Boolean algebra and its applications in digital systems.
C205.2	Design and implement combinational circuits using logic gates.
C205.3	Design and implement synchronous sequential circuits using flip-flops.
C205.4	Analysis and Design procedure for Asynchronous sequential circuits.
C205.5	Describe the semiconductor memories and related technology.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C205.2	3	3	3	3	3	3	-	-	-	-	3	3	2	2
C205.3	3	3	3	3	3	3	-	-	-	-	3	3	2	2
C205.4	3	3	3	3	3	3	-	-	-	-	3	3	2	2
C205.5	3	3	3	3	3	3	-	-	-	-	3	3	2	2
C205	3	3	3	3	3	3	-	-	-	-	3	3	2	2

Course Name: EC8391 Control System Engineering

C206.1	Identify the various control system components and their representations
C206.2	Analyze the various time domain parameters
C206.3	Analysis the various frequency response plots and its system
C206.4	Apply the concepts of various system stability criterions
C206.5	Design various transfer functions of digital control system using state variable models

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	3	3	3	3	3	3	-	-	1	-	3	3	-	-
C206.2	3	3	3	3	3	3	-	-	1	-	3	3	-	-
C206.3	3	3	3	3	3	3	-	-	1	-	3	3	-	-
C206.4	3	3	3	3	3	3	-	-	1	-	3	3	-	-
C206.5	3	3	3	3	3	3	-	-	1	-	3	3	-	-
C206	3	3	3	3	3	3	-	-	1	-	3	3	-	-

Course Name: EC8381 Fundamentals of Data Structures in C Laboratory

C207.1	Implement basic concepts and advanced programs in C.
C207.2	Implement functions and recursive functions in C.
C207.3	Develop C program for linear data structure operations and its applications.
C207.4	Design and implement various non-linear data structures to solve problems.
C207.5	Choose appropriate sorting algorithm for an application and implement it in a modularized way.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C207.1	3	3	3	3	3	3	-	-	1	-	3	3	-	-
C207.2	3	3	3	3	3	3	-	-	1	-	3	3	-	-
C207.3	3	3	3	3	3	3	-	-	2	-	3	3	-	-
C207.4	3	3	3	3	3	3	-	-	2	-	3	3	-	-
C207.5	3	3	3	3	3	3	-	-	2	-	3	3	-	-
C207	3	3	3	3	3	3	-	-	2	-	3	3	-	-

Course Name: EC8361 Analog and Digital Circuits Laboratory

C208.1	Construct various rectifiers, filters and power supplies.
C208.2	Design various amplifier circuits and analyze the frequency response and transfer characteristics.
C208.3	Compare the limitations of bandwidth among single stage and multi stage amplifiers
C208.4	Simulate and analyze amplifier circuits using PSpice
C208.5	Design and Test the digital logic circuits

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C208.1	3	3	3	3	3	3	-	-	2	-	3	3	3	3
C208.2	3	3	3	3	3	3	-	-	2	-	3	3	3	3
C208.3	3	3	3	3	3	3	-	-	2	-	3	3	3	3
C208.4	3	3	3	3	3	3	-	-	2	-	3	3	3	3
C208.5	3	3	3	3	3	3	-	-	2	-	3	3	3	3
C208	3	3	3	3	3	3	-	-	2	-	3	3	3	3

Course Name: HS8381 Interpersonal Skills/Listening & Speaking

C209.1	Listen and respond appropriately.
C209.2	Participate in group discussions.
C209.3	Make effective presentations.
C209.4	Participate confidently and appropriately in conversations both formal and informal.
C209.5	Carry out Interactive Communication in academic and business contexts

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C209.1	-	-	-	-	-	3	-	3	3	3	3	3	-	-
C209.2	-	-	-	-	-	3	-	3	3	3	3	3	-	-
C209.3	-	-	-	-	-	3	-	3	3	3	3	3	-	-
C209.4	-	-	-	-	-	3	-	3	3	3	3	3	-	-
C209.5	-	-	-	-	-	3	-	3	3	3	3	3	-	-
C209	-	-	-	-	-	3	-	3	3	3	3	3	-	-

Course Name: MA8451 Probability and Random Processes

C210.1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon
C210.2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications
C210.3	Apply the concept random processes in engineering disciplines
C210.4	Understand and apply the concept of correlation and spectral densities
C210.5	Analyze the response of random inputs to linear time invariant systems

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C210.1	3	3	3	3	3	-	-	-	2	-	3	3	-	-
C210.2	3	3	3	3	3	-	-	-	2	-	3	3	-	-
C210.3	3	3	3	3	3	-	-	-	2	-	3	3	-	-
C210.4	3	3	3	3	3	-	-	-	3	-	3	3	-	-
C210.5	3	3	3	3	3	-	-	-	2	-	3	3	-	-
C210	3	3	3	3	3	-	-	-	2	-	3	3	-	-

Course Name: EC8452 Electronic Circuits II

C211.1	Design and analyze of feedback amplifiers
C211.2	Design different types of oscillator circuits.
C211.3	Analyze the performance of tuned amplifier's and their effects on frequency response.
C211.4	Design different types of wave shaping and multivibrator circuits
C211.5	Construct various power amplifiers and DC Converters

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C211.1	3	3	3	3	3	3	-	-	-	-	3	3	1	3
C211.2	3	3	3	3	3	3	-	-	-	-	3	3	1	3
C211.3	3	3	3	3	3	3	-	-	-	-	3	3	1	3
C211.4	3	3	3	3	3	3	-	-	-	-	3	3	1	3
C211.5	3	3	3	3	3	3	-	-	-	-	3	3	1	3
C211	3	3	3	3	3	3	-	-	-	-	3	3	1	3

Course Name: EC8491 Communication Theory

C212.1	Design AM communication systems
C212.2	Design Angle modulated communication systems
C212.3	Apply the concepts of Random Process to the design of communication systems.
C212.4	Analyze the noise performance of AM and an FM system in analog modulation techniques and its effect on communication receiver.
C212.5	Acquire knowledge in Sampling and Quantization.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C212.2	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C212.3	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C212.4	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C212.5	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C212	3	3	3	3	3	3	-	-	-	-	3	3	-	-

Course Name: EC8451 Electromagnetic Fields

C213.1	Understand the fundamental electromagnetic laws and concepts.
C213.2	Analyze and estimate Electrostatic field quantities based on the fundamental laws.
C213.3	Analyze and estimate Magnetostatic field quantities based on the fundamental laws.
C213.4	Derive Maxwell's equations in integral, differential and phasor forms and explain their physical meaning.
C213.5	Explain Electromagnetic wave propagation in lossy and in lossless media.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C213.2	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C213.3	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C213.4	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C213.5	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C213	3	3	3	3	3	3	-	-	-	-	3	3	-	-

Course Name: EC8453 Linear Integrated Circuits

C214.1	Infer the DC and AC characteristics of operational amplifiers and its effect on output and their compensation techniques.
C214.2	Design linear and non linear applications of OP – AMPS
C214.3	Design applications using analog multiplier and PLL
C214.4	Design ADC and DAC using OP – AMPS
C214.5	Generate waveforms using OP – AMP Circuits and Analyze special function ICs

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C214.1	3	3	3	3	3	3	-	-	-	-	3	3	3	3
C214.2	3	3	3	3	3	3	-	-	2	-	3	3	3	3
C214.3	3	3	3	3	3	3	-	-	2	-	3	3	3	3
C214.4	3	3	3	3	3	3	-	-	-	-	3	3	3	3
C214.5	3	3	3	3	3	3	-	-	2	-	3	3	3	3
C214	3	3	3	3	3	3	-	-	2	-	3	3	3	3

Course Name: GE8291 Environmental Science and Engineering

C215.1	Describe the importance of environment, ecosystem & biodiversity.
C215.2	Characterize the impact of pollution & hazardous waste in a global, societal context.
C215.3	Explain the important role in conservation of natural resources for future generation.
C215.4	Identify contemporary issues that result in environmental degradation, its control measures.
C215.5	Summarize the issues of environment and human population in their professional undertakings

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C215.1	3	3	1	3	-	3	3	3	-	-	3	3	-	-
C215.2	3	3	2	3	-	3	3	3	-	-	3	3	-	-
C215.3	3	3	1	3	-	3	3	3	-	-	3	3	-	-
C215.4	3	3	1	3	-	3	3	3	-	-	3	3	-	-
C215.5	3	3	1	3	-	3	3	3	-	-	3	3	-	-
C214	3	3	3	3	3	3	-	-	2	-	3	3	3	3

Course Name: EC8461 Circuits Design and Simulation Laboratory

C216.1	Apply the fundamental principles of amplifier circuits
C216.2	Design the various feedback amplifier circuits
C216.3	Differentiate feedback amplifiers and oscillators
C216.4	Design the multivibrators circuit and tuned Amplifiers
C216.5	Simulate the multivibrators and oscillator circuit using SPICE

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C216.1	3	3	3	3	3	3	-	-	2	-	3	3	3	3
C216.2	3	3	3	3	3	3	-	-	2	-	3	3	3	3
C216.3	3	3	3	3	3	3	-	-	2	-	3	3	3	3
C216.4	3	3	3	3	3	3	-	-	2	-	3	3	3	3
C216.5	3	3	3	3	3	3	-	-	3	-	3	3	3	3
C216	3	3	3	3	3	3	-	-	3	-	3	3	3	3

Course Name: EC8462 Linear Integrated Circuits Laboratory

C217.1	Design oscillators and amplifiers D-A converters using operational amplifiers.
C217.2	Design filters using Op-amp and perform experiment on frequency response.
C217.3	Analyze the working of PLL and use PLL as frequency multiplier.
C217.4	Design DC power supply using ICs.
C217.5	Analyze the performance of filters, multivibrators , A/D converter and analog multiplier using SPICE

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C217.1	3	3	3	3	3	3	-	-	1	-	3	3	3	3
C217.2	3	3	3	3	3	3	-	-	1	-	3	3	3	3
C217.3	3	3	3	3	3	3	-	-	1	-	3	3	3	2
C217.4	3	3	3	3	3	3	-	-	1	-	3	3	3	2
C217.5	3	3	3	3	3	3	-	-	1	-	3	3	3	3
C217	3	3	3	3	3	3	-	-	1	-	3	3	3	3

THIRD YEAR

Course Name: EC8501 Digital Communication

C301.1	Design PCM systems
C301.2	Design and implement base band transmission schemes
C301.3	Design and implement band pass signaling schemes
C301.4	Analyze the spectral characteristics of band pass signaling schemes and their noise performance
C301.5	Design error control coding schemes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C301.1	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C301.2	3	3	3	3	3	3	-	-	-	-	3	3	-	3
C301.3	3	3	3	3	3	3	-	-	-	-	3	3	-	3
C301.4	3	3	3	3	3	3	-	-	-	-	3	3	3	3
C301.5	3	3	3	3	3	3	-	-	-	-	3	3	3	-
C301	3	3	3	3	3	3	-	-	-	-	3	3	3	3

Course Name: EC8553 Discrete Time Signal Processing

C302.1	Apply DFT for the analysis of digital signals and systems
C302.2	Design and Realize IIR filters.
C302.3	Design and Realize FIR filters.
C302.4	Characterize the effects of finite precision representation on digital filters.
C302.5	Explain the architecture and functionalities of Digital Signal Processors.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C302.1	3	3	3	3	3	3	-	-	1	-	3	3	3	3
C302.2	3	3	3	3	3	3	-	-	1	-	3	3	3	3
C302.3	3	3	3	3	3	3	-	-	1	-	3	3	3	3
C302.4	3	3	3	3	3	3	-	-	1	-	3	3	3	3
C302.5	3	3	3	3	3	3	-	-	1	-	3	3	3	3
C302	3	3	3	3	3	3	-	-	1	-	3	3	3	3

Course Name: EC8552 Computer Architecture and Organization

C303.1	Describe data representation, instruction formats and the operation of a digital computer
C303.2	Illustrate the fixed point and floating-point arithmetic for ALU operation
C303.3	Discuss about implementation schemes of control unit and pipeline performance
C303.4	Explain the concept of various memories, interfacing and organization of multiple processors
C303.5	Discuss parallel processing technique and unconventional architectures

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C303.1	3	3	3	3	-	3	-	-	-	-	3	3	3	-
C303.2	3	3	3	3	-	3	-	-	-	-	3	2	3	3
C303.3	3	3	3	3	-	3	-	-	-	-	2	2	2	3
C303.4	3	3	3	3	-	3	-	-	-	-	3	3	2	3
C303.5	3	3	3	3	-	2	-	-	-	-	3	2	2	-
C303	3	3	3	3	-	3	-	-	-	-	3	3	3	3

Course Name: EC8551 Communication Networks

C304.1	Identify the components required to build different types of networks
C304.2	Understand the Media Access Control and internetworking
C304.3	Apply the routing technique for flow of information from one node to another node in the network
C304.4	Implement the flow control and TCP congestion control algorithms in transport layer
C304.5	Categorize the application layer protocols.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C304.1	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C304.2	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C304.3	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C304.4	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C304.5	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C304	3	3	3	3	3	3	-	-	-	-	3	3	-	-

Course Name: EC8072 Medical Electronics

C305.1	Know the human body electro- physiological parameters and recording of bio-potentials
C305.2	Comprehend the non-electrical physiological parameters and their measurement – body temperature, blood pressure, pulse, blood cell count, blood flow meter etc.
C305.3	Interpret the various assist devices used in the hospitals viz. pacemakers, defibrillators, dialyzers and ventilators
C305.4	Comprehend physical medicine methods eg. ultrasonic, shortwave, microwave surgical diathermies , and bio-telemetry principles and methods
C305.5	Know about recent trends in medical instrumentation

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C305.1	3	2	2	2	2	2	2	3	-	-	-	2	-	2
C305.2	3	2	2	2	2	2	2	3	-	-	-	2	-	2
C305.3	3	2	2	2	2	2	2	3	-	-	-	2	-	2
C305.4	3	2	2	3	2	2	2	3	-	-	-	2	-	2
C305.5	3	2	2	2	2	2	2	3	-	-	-	2	-	2
C305	3	2	2	3	2	2	2	3	-	-	-	2	-	2

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Course Name: ORO551 Renewable Energy Sources

C306.1	Understanding the physics of solar radiation
C306.2	Ability to classify the solar energy collectors and methodologies of storing solar energy
C306.3	Knowledge in applying solar energy in a useful way
C306.4	Knowledge in wind energy and biomass with its economic aspects
C306.5	Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal energies

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C306.1	-	-	3	-	-	3	3	3	-	-	3	3	-	-
C306.2	-	-	3	-	-	3	3	3	-	-	3	3	-	-
C306.3	-	-	3	3	-	3	3	3	-	-	3	3	-	-
C306.4	-	-	3	3	-	3	3	3	-	-	3	3	-	-
C306.5	-	-	3	3	-	3	3	3	-	-	3	3	-	-
C306	-	-	3	3	-	3	3	3	-	-	3	3	-	-

Course Name: EC8562 Digital Signal Processing Laboratory

C307.1	Carryout basic signal processing operations
C307.2	Demonstrate their abilities towards MATLAB based implementation of various DSP systems
C307.3	Analyze the architecture of a DSP Processor
C307.4	Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals
C307.5	Design a DSP system for various applications of DSP

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C307.1	3	3	3	3	3	3	-	-	-	-	3	3	3	3
C307.2	3	3	3	3	3	3	-	-	-	-	3	3	3	3
C307.3	3	3	3	3	3	3	-	-	-	-	3	3	3	3
C307.4	3	3	3	3	3	3	-	-	-	-	3	3	3	3
C307.5	3	3	3	3	3	3	-	-	-	-	3	3	3	3
C307	3	3	3	3	3	3	-	-	-	-	3	3	3	3

Course Name: EC8561 Communication Systems Laboratory

C308.1	Simulate & validate the various functional modules of a communication system
C308.2	Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes
C308.3	Apply various channel coding schemes
C308.4	Demonstrate channel coding capabilities towards the improvement of the noise performance of communication system
C308.5	Simulate end-to-end communication Link

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C308.1	3	3	3	3	3	3	-	-	1	-	3	3	-	2
C308.2	3	3	3	3	3	3	-	-	1	-	3	3	-	2
C308.3	3	3	3	3	3	3	-	-	1	-	3	3	-	2
C308.4	3	3	3	3	3	3	-	-	1	-	3	3	-	2
C308.5	3	3	3	3	3	3	-	-	1	-	3	3	-	2
C308	3	3	3	3	3	3	-	-	1	-	3	3	-	2

Course Name: EC8563 Communication Networks Laboratory

C309.1	Communicate between two desktop computers
C309.2	Implement the different protocols
C309.3	Program using sockets.
C309.4	Implement and compare the various routing algorithms
C309.5	Use the simulation tool

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C309.1	3	3	3	3	3	3	-	-	1	-	3	3	-	2
C309.2	3	3	3	3	3	3	-	-	1	-	3	3	-	3
C309.3	3	3	3	3	3	3	-	-	1	-	3	3	-	3
C309.4	3	3	3	3	3	3	-	-	1	-	3	3	-	3
C309.5	3	3	3	3	3	3	-	-	1	-	3	3	-	3
C309	3	3	3	3	3	3	-	-	1	-	3	3	-	3

Course Name: EC8691 Microprocessors and Microcontrollers

C310.1	Understand the architecture, instruction set and addressing modes of 8086 microprocessor.
C310.2	Classify the system bus structure and multiprocessor configurations of 8086 microprocessor.
C310.3	Demonstrate and implement the peripheral interfacing of microprocessor.
C310.4	Analyze the hardware architecture, instruction set and programming of 8051 microcontroller.
C310.5	Illustrate the concept of microcontroller interfacing with peripherals.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C310.1	3	3	3	3	3	3	-	-	-	-	3	3	3	-
C310.2	3	3	3	3	3	3	-	-	-	-	3	3	3	-
C310.3	3	3	3	3	3	3	-	-	-	-	3	3	3	-
C310.4	3	3	3	3	3	3	-	-	-	-	3	3	3	-
C310.5	3	3	3	3	3	3	-	-	-	-	3	3	3	-
C310	3	3	3	3	3	3	-	-	-	-	3	3	3	-

Course Name: EC8095 VLSI Design

C311.1	Realize the concepts of digital building blocks using MOS transistor.
C311.2	Design combinational MOS circuits and power strategies.
C311.3	Design and construct Sequential Circuits and Timing systems.
C311.4	Design arithmetic building blocks and memory subsystems.
C311.5	Apply and implement FPGA design flow and testing

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C311.1	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C311.2	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C311.3	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C311.4	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C311.5	3	3	3	3	3	3	-	-	-	-	3	3	3	-
C311	3	3	3	3	3	3	-	-	-	-	3	3	3	-

Course Name: EC8652 Wireless Communication

C312.1	Characterize wireless channels and evolve the system design specifications
C312.2	Design a cellular system based on resource availability and traffic demands
C312.3	Design and implement various signaling schemes for fading channels
C312.4	Compare multipath mitigation techniques and analyze their performance
C312.5	Design and implement systems with transmit/ receive diversity and MIMO systems and analyze their performance.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C312.1	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C312.2	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C312.3	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C312.4	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C312.5	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C312	3	3	3	3	3	3	-	-	-	-	3	3	-	-

Course Name: MG8591 Principles of Management

C313.1	Define the concept of management roles & skills and business organization.
C313.2	Analyze the planning process and strategic management.
C313.3	Develop the organization structure and human resource management.
C313.4	Evaluate the human behavior and create the leadership communication.
C313.5	Inspect budget control techniques and productivity management.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C313.1	-	-	-	-	-	3	3	3	-	3	3	3	-	-
C313.2	-	-	-	-	-	3	3	3	-	3	3	3	-	-
C313.3	-	-	-	-	-	3	3	3	-	3	3	3	-	-
C313.4	-	-	-	-	-	3	3	3	-	3	3	3	-	-
C313.5	-	-	-	-	-	3	3	3	-	3	3	3	-	-
C313	-	-	-	-	-	3	3	3	-	3	3	3	-	-

Course Name: EC8651 Transmission Lines and RF Systems

C314.1	Explain the characteristics of transmission lines and its losses
C314.2	Write about the standing wave ratio and input impedance in high frequency transmission lines
C314.3	Analyze impedance matching by stubs using smith charts
C314.4	Analyze the characteristics of TE and TM waves
C314.5	Design a RF transceiver system for wireless communication

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C314.1	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C314.2	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C314.3	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C314.4	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C314.5	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C314	3	3	3	3	3	3	-	-	-	-	3	3	-	-

Course Name: EC8004 Wireless Networks

C315.1	Conversant with the latest 3G/4G networks and its architecture
C315.2	Design and implement wireless network environment for any application using latest wireless protocols and standards
C315.3	Ability to select the suitable network depending on the availability and requirement
C315.4	Implement different type of applications for smart phones and mobile devices with latest network strategies
C315.5	Understand the concepts about evolution of 4G networks.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C315.1	3	2	3	2	2	-	-	-	-	-	2	3	-	-
C315.2	2	3	2	2	3	-	-	-	-	-	2	3	-	-
C315.3	3	2	3	2	2	-	-	-	-	-	2	3	-	-
C315.4	2	3	2	2	3	-	-	-	-	-	2	3	-	-
C315.5	3	2	3	2	3	-	-	-	-	-	2	3	-	-
C315	3	3	3	2	3	-	-	-	-	-	2	3	-	-

Course Name: EC8681 Microprocessors and Microcontrollers Laboratory

C316.1	Write ALP Programmes for fixed and Floating Point and Arithmetic operation
C316.2	Interface different I/Os with processor
C316.3	Generate waveforms using Microprocessors
C316.4	Execute Programs in 8051
C316.5	Explain the difference between simulator and Emulator

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C316.1	3	3	3	3	3	3	-	-	-	-	3	3	3	-
C316.2	3	3	3	3	3	3	-	-	-	-	3	3	3	-
C316.3	3	3	3	3	3	3	-	-	-	-	3	3	3	-
C316.4	3	3	3	3	3	3	-	-	-	-	3	3	3	-
C316.5	3	3	3	3	3	3	-	-	-	-	3	3	3	-
C316	3	3	3	3	3	3	-	-	-	-	3	3	3	-

Course Name: EC8661 VLSI Design Laboratory

C317.1	Write HDL code for basic as well as advanced digital integrated circuit.
C317.2	Import the logic modules into FPGA Boards
C317.3	Synthesize Place and Route the digital IPs
C317.4	Design, Simulate and Extract the layouts of Analog IC Blocks using EDA tools
C317.5	Design, Simulate and Extract the layouts of Digital IC Blocks using EDA tools

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C317.1	3	3	3	3	3	3	-	-	-	-	3	3	3	2
C317.2	3	3	3	3	3	3	-	-	-	-	3	3	2	3
C317.3	3	3	3	3	3	3	-	-	-	-	3	3	1	3
C317.4	3	3	3	3	3	3	-	-	-	-	3	3	-	3
C317.5	3	3	3	3	3	3	-	-	-	-	3	3	2	3
C317	3	3	3	3	3	3	-	-	-	-	3	3	2	3

Course Name: EC8611 Technical Seminar

C318.1	Enhance the communication skills
C318.2	Make effective presentations
C318.3	Learn Recent advances in engineering / technology
C318.4	Develop their confidence and help them to attend presentations
C318.5	Develop adequate soft skills required for presentations

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C318.1	-	3	-	3	3	3	-	3	3	3	3	3	-	-
C318.2	-	3	-	3	3	3	-	3	3	3	3	3	-	-
C318.3	-	3	-	3	3	3	-	3	3	3	3	3	-	-
C318.4	-	3	-	3	3	3	-	3	3	3	3	3	-	-
C318.5	-	3	-	3	3	3	-	3	3	3	3	3	-	-
C318	-	3	-	3	3	3	-	3	3	3	3	3	-	-

FINAL YEAR

Course Name: EC8701 Antenna and Microwave Engineering

C401.1	Apply the basic principles and evaluate antenna parameters and link power budgets
C401.2	Design and assess the performance of various antennas
C401.3	Analyze the antenna arrays, smart antennas and apply it to the real time Application
C401.4	Explain the active & passive microwave devices & components used in Microwave Communication systems.
C401.5	Design a microwave system given the application specifications

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C401.2	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C401.3	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C401.4	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C401.5	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C401	3	3	3	3	3	3	-	-	-	-	3	3	-	-

Course Name: EC8751 Optical Communication

C402.1	Realize basic elements in optical fibers, different modes and configurations.
C402.2	Analyze the transmission characteristics associated with dispersion and polarization techniques
C402.3	Design optical sources and detectors with their use in optical communication system
C402.4	Construct fiber optic receiver systems, measurements and coupling techniques.
C402.5	Design optical communication systems and its networks.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C402.1	3	3	3	3	-	3	-	-	-	-	3	3	-	-
C402.2	3	3	3	3	-	3	-	-	-	-	3	3	-	-
C402.3	3	3	3	3	-	3	-	-	-	-	3	3	-	-
C402.4	3	3	3	3	-	3	-	-	-	-	3	3	-	-
C402.5	3	3	3	3	-	3	-	-	-	-	3	3	-	-
C402	3	3	3	3	-	3	-	-	-	-	3	3	-	-

Course Name: EC8791 Embedded and Real Time Systems

C403.1	Describe the architecture and programming of ARM processor
C403.2	Outline the concepts of embedded systems
C403.3	Understand the basic concepts of embedded programming
C403.4	Explain the basic concepts of real time operating system design
C403.5	Model real-time applications using embedded-system concepts

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C403.1	3	3	3	3	3	3	-	-	-	-	3	3	3	3
C403.2	3	3	3	3	3	3	-	-	-	-	3	3	3	3
C403.3	3	3	3	3	3	3	-	-	-	-	3	3	3	3
C403.4	3	3	3	3	3	3	-	-	-	-	3	3	3	3
C403.5	3	3	3	3	3	3	-	-	-	-	3	3	3	3
C403	3	3	3	3	3	3	-	-	-	-	3	3	3	3

Course Name: EC8702 Ad Hoc and Wireless Networks

C404.1	Know the basics of Ad hoc networks and Wireless Sensor Networks
C404.2	Apply this knowledge to identify the suitable routing algorithm based on the network and user requirement
C404.3	Apply the knowledge to identify appropriate physical and MAC layer protocols
C404.4	Understand the transport layer and security issues possible in Ad hoc and sensor networks
C404.5	Be familiar with the OS used in Wireless Sensor Networks and build basic modules

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C404.1	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C404.2	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C404.3	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C404.4	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C404.5	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C404	3	3	3	3	3	3	-	-	-	-	3	3	-	-

Course Name: GE8071 Disaster Management

C405.1	Differentiate the types of disasters, causes and their impact on environment and society
C405.2	Assess vulnerability and various methods of risk reduction measures as well as mitigation.
C405.3	Understand the relationship between vulnerability disasters, disaster prevention and risk reduction
C405.4	Understanding about Disaster Risk management
C405.5	Draw the hazard and vulnerability profile of India scenarios

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C405.1	-	-	-	-	-	3	3	3	2	3	3	3	-	-
C405.2	-	-	-	-	-	3	3	3	2	3	3	3	-	-
C405.3	-	-	-	-	-	3	3	3	2	3	3	3	-	-
C405.4	-	-	-	-	-	3	3	3	2	3	3	3	-	-
C405.5	-	-	-	-	-	3	3	3	2	3	3	3	-	-
C405	-	-	-	-	-	3	3	3	2	3	3	3	-	-

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C408.1	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C408.2	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C408.3	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C408.4	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C408.5	3	3	3	3	3	3	-	-	-	-	3	3	-	-
C408	3	3	3	3	3	3	-	-	-	-	3	3	-	-

Course Name: EC8093 Digital Image Processing

C409.1	Explain the basics of image processing.
C409.2	Describe the Image enhancement techniques used in digital image processing
C409.3	Explain the Image Restoration and used in digital image processing.
C409.4	Brief about Image Segmentation techniques and solve problem on it.
C409.5	Understand about Image Compression and Recognition methods in image processing.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C409.1	2	3	3	2	3	2	-	-	-	-	2	2	-	2
C409.2	2	3	3	2	3	2	-	-	-	-	2	2	-	2
C409.3	2	3	3	2	3	2	-	-	-	-	2	2	-	2
C409.4	2	3	3	2	3	2	-	-	-	-	2	2	-	2
C409.5	2	3	3	2	3	2	-	-	-	-	2	2	-	2
C409	2	3	3	2	3	2	-	-	-	-	2	2	-	2

Course Name: EC8094 Satellite Communication

C410.1	Know about the satellite systems, orbits and launching methods.
C410.2	Understand the geostationary orbit and its space segment.
C410.3	Understand the concept of uplink and downlink frequencies from earth segment to space link.
C410.4	Know the fundamentals of various access techniques.
C410.5	Understand the concept of broadcasting satellite services

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C410.1	3	3	3	3	2	2	-	-	-	-	2	2	-	-
C410.2	3	2	2	2	-	2	-	-	-	-	2	2	-	-
C410.3	2	3	3	2	2	2	-	-	-	-	2	2	-	-
C410.4	2	2	2	1	2	2	-	-	-	-	2	2	-	-
C410.5	3	2	3	2	2	2	-	-	-	-	2	2	-	-
C410	3	3	3	2	2	2	-	-	-	-	2	2	-	-

Course Name: EC8811 Project Work

C411.1	Discuss and infer the technical details through Literature survey
C411.2	Apply the acquired knowledge and identify the methodology.
C411.3	Examine the technological gap for product design.
C411.4	Determine the product design and development
C411.5	Elucidate the relationship of environmental and ethical issues with technical development

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C411.1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
C411.2	3	3	3	3	3	3	2	2	2	3	3	3	3	3
C411.3	3	3	3	3	3	3	2	2	2	3	3	3	3	3
C411.4	3	3	3	3	3	3	2	2	2	3	3	3	3	3
C411.5	3	3	3	3	3	3	2	2	2	3	3	3	2	2
C411	3	3	3	3	3	3	2	2	2	3	3	3	3	3

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PROFESSIONAL ELECTIVES

Course Name: CS8392 Object Oriented Programming

C319.1	Develop Java programs using OOP principles
C319.2	Develop Java programs with the concepts inheritance and interfaces
C319.3	Build Java applications using exceptions and I/O streams
C319.4	Develop Java applications with threads and generics classes
C319.5	Develop interactive java programs using swings

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C319.1	3	3	2	2	1	3	-	-	1	-	-	1	-	3
C319.2	3	2	3	3	2	2	-	-	1	-	-	2	-	3
C319.3	3	3	2	2	1	1	-	-	1	-	-	1	-	3
C319.4	3	3	3	3	1	1	-	-	1	-	-	1	-	3
C319.5	3	3	2	3	-	1	-	-	1	-	-	1	-	3
C319	3	3	3	3	2	2	-	-	1	-	-	2	-	3

Course Name: CS8493 Operating Systems

C320.1	Analyze various scheduling algorithms.
C320.2	Understand deadlock, prevention and avoidance algorithms.
C320.3	Compare and contrast various memory management schemes.
C320.4	Understand the functionality of file systems
C320.5	Perform administrative tasks on linux servers and compare IOS and android operating systems

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C320.1	2	3	3	2	-	-	-	-	-	-	-	2	1	-
C320.2	3	2	3	1	-	-	-	-	-	-	-	1	1	-
C320.3	2	2	3	2	-	-	-	-	-	-	-	2	1	-
C320.4	3	2	2	1	-	-	-	-	-	-	-	-	1	-
C320.5	3	3	2	2	-	-	-	-	-	-	-	2	1	-
C320	3	3	3	2	-	-	-	-	-	-	-	2	1	-

Course Name: EC8074 Robotics and Automation

C321.1	Explain the concepts of industrial robots in terms of classification, specifications coordinate systems, along with the need and application of robots & automation
C321.2	Examine different sensors and actuators for applications like maze solving and self driving cars.
C321.3	Design a 2R robot & an end-effector and solve the kinematics and dynamics of motion for robots.
C321.4	Explain navigation and path planning techniques along with the control architectures adopted for robot motion planning
C321.5	Describe the impact and progress in AI and other research trends in the field of robotics

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C321.1	3	3	3	3	2	-	-	-	-	-	2	2	2	-
C321.2	3	2	3	1	2	-	-	-	-	-	2	2	2	-
C321.3	2	3	3	2	2	-	-	-	-	-	2	2	2	-
C321.4	3	2	2	1	2	-	-	-	-	-	2	1	2	-
C321.5	3	3	3	2	2	-	-	-	-	-	2	1	2	-
C321	3	3	3	3	2	-	-	-	-	-	2	2	2	-

Course Name: EC8075 Nano Technology and Applications

C322.1	Explore the board view of nascent field of nanoscience and nanotechnology
C322.2	Describe the basic science behind the properties of materials
C322.3	Interpret the creation, characterization, and manipulation of nanoscale materials
C322.4	Comprehend the exciting applications of nanotechnology at the leading edge of scientific research
C322.5	Apply their knowledge of nanotechnology to identify how they can be exploited for new applications

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C322.1	3	2	3	3	2	3	-	-	-	-	2	2	3	2
C322.2	3	3	3	2	3	3	-	-	-	-	2	2	2	2
C322.3	3	3	3	3	2	3	-	-	-	-	1	2	-	2
C322.4	3	3	2	2	3	3	-	-	-	-	2	2	3	2
C322.5	3	3	2	3	3	3	-	-	-	-	1	3	3	2
C322	3	3	3	3	3	3	-	-	-	-	2	3	3	2

Course Name: GE8074 Human Rights

C323.1	Understand the basic knowledge of human rights.
C323.2	Evolution of the concept of Human Rights Magna carta.
C323.3	Understand the basic knowledge of UN laws and agencies
C323.4	Understand the basic knowledge of constitutional provisions
C323.5	Acquire the basic knowledge of Disadvantaged people human rights

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C323.1	-	-	-	-	-	3	3	3	3	-	-	3	-	-
C323.2	-	-	-	-	-	3	3	3	3	-	-	2	-	-
C323.3	-	-	-	-	-	3	3	3	3	-	-	3	-	-
C323.4	-	-	-	-	-	3	3	3	3	-	-	3	-	-
C323.5	-	-	-	-	-	3	3	3	3	-	-	3	-	-
C323	-	-	-	-	-	3	3	3	3	-	-	3	-	-

Course Name: GE8077 Total Quality Management

C324.1	Understanding of quality management process
C324.2	Understanding of quality management principles
C324.3	Understanding of quality management tools
C324.4	Understanding of quality management techniques
C324.5	Understanding of quality management manufacturing and services processes.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C324.1	-	-	-	-	-	3	3	3	3	-	-	3	-	-
C324.2	-	-	-	-	-	3	3	3	3	-	-	2	-	-
C324.3	-	-	-	-	-	3	3	3	3	-	-	3	-	-
C324.4	-	-	-	-	-	3	3	3	3	-	-	3	-	-
C324.5	-	-	-	-	-	3	3	3	3	-	-	3	-	-
C324	-	-	-	-	-	3	3	3	3	-	-	3	-	-

Course Name: CS8792 Cryptography and Network Security

C325.1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
C325.2	Apply the different cryptographic operations of symmetric cryptographic algorithms
C325.3	Apply the different cryptographic operations of public key cryptography
C325.4	Apply the various Authentication schemes to simulate different applications.
C325.5	Understand various Security practices and System security standards

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C325.1	3	2	2	1	2	-	-	-	-	-	3	3	-	-
C325.2	3	3	3	1	2	-	-	-	-	-	2	2	-	-
C325.3	2	2	2	1	2	-	-	-	-	-	2	2	-	-
C325.4	3	3	2	1	2	-	-	-	-	-	2	2	-	-
C325.5	2	2	2	1	2	-	-	-	-	-	2	2	-	-
C325	3	3	3	1	2	-	-	-	-	-	3	3	-	-

Course Name: EC8091 Advanced Digital Signal Processing

C326.1	Articulate and apply the concepts of special random processes in practical applications
C326.2	Choose appropriate spectrum estimation techniques for a given random process
C326.3	Apply optimum filters appropriately for a given communication application
C326.4	Apply appropriate adaptive algorithm for processing non-stationary signals
C326.5	Apply and analyze wavelet transforms for signal and image processing based applications

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C326.1	3	3	3	3	2	2	-	-	-	-	2	2	-	-
C326.2	3	3	2	2	2	2	-	-	-	-	2	2	-	-
C326.3	3	2	2	2	2	2	-	-	-	-	2	2	-	-
C326.4	3	2	2	2	2	2	-	-	-	-	2	2	-	-
C326.5	3	2	2	2	2	2	-	-	-	-	2	2	-	-
C326	3	3	2	2	2	2	-	-	-	-	2	2	-	-

Course Name: EC8001 MEMS and NEMS

C327.1	Interpret the basics of micro/nano electromechanical systems including their applications and advantages
C327.2	Recognize the use of materials in micro fabrication and describe the fabrication processes including micromachining, bulk micromachining and LIGA
C327.3	Analyze the key performance aspects of electromechanical transducers including sensors
C327.4	Analyze the key performance aspects of electromechanical transducers including actuators.
C327.5	Comprehend the theoretical foundations of quantum mechanics and nano systems

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C327.1	3	2	2	2	3	3	-	-	-	-	3	3	-	-
C327.2	3	3	3	2	2	2	-	-	-	-	2	2	-	-
C327.3	2	2	2	2	2	2	-	-	-	-	2	3	-	-
C327.4	2	3	2	2	2	2	-	-	-	-	2	3	-	-
C327.5	2	2	2	2	2	2	-	-	-	-	2	3	-	-
C327	3	3	3	2	3	3	-	-	-	-	2	3	-	-

Course Name: EC8003 Multimedia Compression and Communication

C328.1	Design audio compression techniques
C328.2	Configure Image and video compression techniques
C328.3	Configure Text compression techniques
C328.4	Select suitable service model for specific application
C328.5	Configure multimedia communication network

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C328.1	3	2	2	2	3	3	-	-	-	-	3	3	-	-
C328.2	3	3	3	2	2	2	-	-	-	-	2	2	-	-
C328.3	2	2	2	2	2	2	-	-	-	-	2	3	-	-
C328.4	2	3	2	2	2	2	-	-	-	-	2	3	-	-
C328.5	2	2	2	2	2	2	-	-	-	-	2	3	-	-
C328	3	3	3	2	3	3	-	-	-	-	2	3	-	-

Course Name: EC8003 CMOS Analog IC Design

C329.1	Realize the concepts of Analog MOS devices and current mirror circuits.
C329.2	Design different configuration of Amplifiers and feedback circuits.
C329.3	Analyze the characteristics of frequency response of the amplifier and its noise.
C329.4	Analyze the performance of the stability and frequency compensation techniques of Op-Amp Circuits.
C329.5	Construct switched capacitor circuits and PLLs

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C329.1	3	-	3	-	2	-	-	-	-	-	-	-	3	3
C329.2	2	3	-	3	-	-	-	-	-	-	-	2	-	3
C329.3	3	-	3	-	2	-	-	-	-	-	-	-	3	3
C329.4	3	3	-	3	-	-	-	-	-	-	-	2	3	3
C329.5	3	-	3	-	2	-	-	-	-	-	-	2	3	-
C329	3	3	3	3	2	-	-	-	-	-	-	2	3	3

Course Name: GE8075 Intellectual Property Rights

C330.1	Characterize core concepts of Patents, Copyright and Related Rights, Trademarks
C330.2	Face the challenge in the field of laws and treaties governing intellectual property.
C330.3	Understand the important standards for registering, obtaining, and enforcing intellectual property rights at national, regional, and international levels
C330.4	Penetrate new markets with a minimum of risk, and to amortize the investments made in the research that led to the innovations in the first place.
C330.5	Create IPR consciousness; and familiarize in the documentation and administrative procedures relating to IPR in India

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C330.1	-	-	-	-	-	3	3	3	-	-	3	3		-
C330.2	-	-	-	-	-	3	3	3	-	-	3	3	-	-
C330.3	-	-	-	-	-	3	3	3	-	-	3	3	-	-
C330.4	-	-	-	-	-	3	3	3	-	-	3	3	-	-
C330.5	-	-	-	-	-	3	3	3	-	-	3	3	-	-
C330	-	-	-	-	-	3	3	3	-	-	3	3	-	-

Course Name: EC8092 Advanced Wireless Communication

C412.1	Apply the knowledge about the importance of MIMO in today's communication
C412.2	Compare multipath mitigation techniques and analyze their performance
C412.3	Understand the channel impairment mitigation using space-time block and trellis codes
C412.4	Understand various signaling schemes for fading channels
C412.5	Analyze the capacity of MIMO –OFDM systems

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C412.1	3	2	3	2	3	-	-	-	-	-	2	3	-	-
C412.2	2	3	2	3	2	-	-	-	-	-	2	3	-	-
C412.3	3	-	2	3	3	-	-	-	-	-	2	3	-	-
C412.4	3	3	2	2	-	-	-	-	-	-	2	3	-	-
C412.5	3	2	2	3	2	-	-	-	-	-	2	3	-	-
C412	3	3	3	3	3	-	-	-	-	-	2	3	-	-

Course Name: EC8071 Cognitive Radio

C413.1	Gain knowledge on the design principles on software defined radio and cognitive radio
C413.2	Understand the cognitive radio architecture.
C413.3	Design and implement algorithms for cognitive radio spectrum sensing and dynamic spectrum access
C413.4	Build experiments and projects with real time wireless applications
C413.5	Apply the knowledge of advanced features of cognitive radio for real world applications

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C413.1	3	-	3	-	3	-	-	-	-	-	-	-	-	3
C413.2	-	3	3	3	-	-	-	-	-	-	-	3	3	-
C413.3	3	3	-	3	2	-	-	-	-	-	-	3	3	3
C413.4	-	3	3	3	2	-	-	-	-	-	-	3	-	-
C413.5	3	-	3	3	2	-	-	-	-	-	-	-	3	3
C413	3	3	3	3	3	-	-	-	-	-	-	3	3	3

Course Name: EC8072 Foundation Skills in Integrated Product Development

C414.1	Define formulate and analyze a problem
C414.2	Solve specific problems independently or as part of a team
C414.3	Gain knowledge of the Innovation & Product Development process in the Business Context
C414.4	Work independently as well as in teams
C414.5	Manage a project from start to finish

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C414.1	3	2	3	2	3	-	-	-	-	-	2	3	-	-
C414.2	2	3	2	3	2	-	-	-	-	-	2	3	-	-
C414.3	3	-	2	3	3	-	-	-	-	-	2	3	-	-
C414.4	3	3	2	2	-	-	-	-	-	-	2	3	-	-
C414.5	3	2	2	3	2	-	-	-	-	-	2	3	-	-
C414	3	3	3	3	3	-	-	-	-	-	2	3	-	-

Course Name: CS8082 Machine Learning Techniques

C415.1	Differentiate between supervised, unsupervised, semi-supervised machine learning approaches
C415.2	Apply specific supervised or unsupervised machine learning algorithm for a particular problem
C415.3	Analyse and suggest the appropriate machine learning approach for the various types of problem
C415.4	Design and make modifications to existing machine learning algorithms to suit an individual application
C415.5	Provide useful case studies on the advanced machine learning algorithms

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C415.1	2	3	2	3	3	3	-	-	-	-	1	3	-	-
C415.2	2	2	3	3	3	2	-	-	-	-	-	2	-	-
C415.3	3	3	3	2	3	3	-	-	-	-	2	1	-	-
C415.4	2	2	2	2	3	3	-	-	-	-	-	1	-	-
C415.5	3	3	2	3	3	3	-	-	-	-	1	3	-	-
C415	3	3	3	3	3	3	-	-	-	-	1	2	-	-

Course Name: EC8005 Electronics Packaging and Testing

C416.1	Understand the various packaging types
C416.2	Understand the various electrical issues in packaging
C416.3	Enable design of packages which can withstand higher temperature, vibrations and shock
C416.4	Design of PCBs which minimize the EMI and operate at higher frequency
C416.5	Analyze the concepts of Testing methods

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C416.1	3	3	-	3	3	-	-	-	-	-	-	-	3	-
C416.2	-	3	3	3	-	-	-	-	-	-	-	3	3	-
C416.3	3	-	3	-	3	-	-	-	-	-	-	3	3	-
C416.4	3	3	-	3	-	-	-	-	-	-	-	-	-	-
C416.5	3	-	3	3	-	-	-	-	-	-	-	3	3	-
C416	3	3	3	3	3	-	-	-	-	-	-	3	3	-

Course Name: EC8006 Mixed Signal IC Design

C417.1	Apply the concepts for mixed signal MOS circuit
C417.2	Analyze the characteristics of IC based CMOS filters
C417.3	Design of various data converter architecture circuits
C417.4	Analyze the signal to noise ratio and modeling of mixed signals
C417.5	Design of oscillators and phase lock loop circuit

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C417.1	3	2	3	2	2	-	-	-	-	-	-	-	3	-
C417.2	2	3	2	3	1	-	-	-	-	-	-	2	3	-
C417.3	3	2	3	2	2	-	-	-	-	-	-	-	3	-
C417.4	3	3	2	2	2	-	-	-	-	-	-	2	3	-
C417.5	3	2	3	2	2	-	-	-	-	-	-	2	3	-
C417	3	3	3	3	2	-	-	-	-	-	-	2	3	-

Course Name: EC8072 Electro Magnetic Interference and Compatibility

C418.1	Gain enough knowledge to understand the concept of EMI / EMC related to product design & development.
C418.2	Analyze the different EM coupling principles and its impact on performance of electronic system
C418.3	Familiar with the electromagnetic interference and highlight the concepts of both susceptibility and immunity
C418.4	Analyze various EM compatibility issues with regard to the design of PCBs and ways to improve the overall system performance.
C418.5	Obtain broad knowledge of various EM radiation measurement techniques and the present leading edge industry standard

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C418.1	3	-	-	3	-	-	-	-	-	-	-	-	-	-
C418.2	-	3	3	-	3	-	-	-	-	-	-	3	-	-
C418.3	3	3	3	-	-	-	-	-	-	-	-	-	-	-
C418.4	-	-	3	3	3	-	-	-	-	-	-	3	-	-
C418.5	3	3	-	3	-	-	-	-	-	-	-	3	-	-
C418	3	3	3	3	3	-	-	-	-	-	-	3	-	-

Course Name: EC 8007 Low Power SOC Design

C419.1	Identify sources of power in an IC
C419.2	Understand the basic principle of SOC
C419.3	Analyze and design low power VLSI circuits using different circuit technologies for system on chip design
C419.4	Identify the techniques to reduce the power dissipation
C419.5	Design the circuits with low power dissipation.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C419.1	3	3	3	3	2	-	-	-	-	-	-	-	-	3
C419.2	2	3	-	3	-	-	-	-	-	-	-	2	-	2
C419.3	3	3	3	3	2	-	-	-	-	-	-	-	-	2
C419.4	3	3	-	3	-	-	-	-	-	-	-	2	-	3
C419.5	3	3	3	-	2	-	-	-	-	-	-	2	-	3
C419	3	3	3	3	2	-	-	-	-	-	-	2	-	3

Course Name: EC8008 Photonic Networks

C420.1	Apply the backbone infrastructure for our present and future communication needs
C420.2	Analyze the architectures and the protocol stack
C420.3	Compare the differences in the design of data plane, control plane , routing, switching, resource allocation methods, network management and protection methods in vogue
C420.4	Explain the concept of packet switching networks
C420.5	Know the advances in networking and the future trends.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C420.1	3	3	3	3	2	-	-	-	-	-	1	2	-	-
C420.2	2	3	1	3	-	-	-	-	-	-	-	2	-	-
C420.3	3	3	3	3	2	-	-	-	-	-	1	2	-	-
C420.4	3	3	1	3	-	-	-	-	-	-	-	2	-	-
C420.5	3	3	3	-	2	-	-	-	-	-	1	2	-	-
C420	3	3	3	3	2	-	-	-	-	-	1	2	-	-

Course Name: EC 8009 Compressive Sensing

C421.1	Appreciate the motivation and the necessity for compressed sensing technology
C421.2	Know reconstruct sparse signal from undersampled data
C421.3	Design a new algorithm or modify an existing algorithm for different application areas in wireless sensor network.
C421.4	Understand the concept of compressive sensing for wireless sensor networks
C421.5	Explain the applications of compressive sensing

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C421.1	3	3	2	2	1	-	-	-	-	-	-	3	-	-
C421.2	3	3	3	3	2	-	-	-	-	-	-	2	-	-
C421.3	3	2	2	2	1	-	-	-	-	-	-	2	-	-
C421.4	3	3	3	2	1	-	-	-	-	-	-	3	-	-
C421.5	3	2	2	2	2	-	-	-	-	-	-	3	-	-
C421	3	3	3	3	2	-	-	-	-	-	-	3	-	-

Course Name: GE8076 Professional Ethics in Engineering

C422.1	Compare and human values and code of ethics in engineering.
C422.2	Manipulate the new things from the case studies.
C422.3	Analyze strategies and critical thinking in real life situations.
C422.4	Demonstrate the responsibilities and rights of the professionals.
C422.5	Recognize and solve the Global issues in ethical actions.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C422.1	-	-	-	-	-	3	3	3	3	-	-	3	-	-
C422.2	-	-	-	-	-	3	3	3	3	-	-	3	-	-
C422.3	-	-	-	-	-	3	3	3	3	-	-	3	-	-
C422.4	-	-	-	-	-	3	3	3	2	-	-	2	-	-
C422.5	-	-	-	-	-	3	3	3	3	-	-	3	-	-
C422	-	-	-	-	-	3	3	3	3	-	-	3	-	-

Course Name: EC8010 Video Analytics

C423.1	Understand the functional block of a video analytic system
C423.2	Explain the foreground and background extraction.
C423.3	Understand the concept of classifiers.
C423.4	Design video analytic algorithms for security applications
C423.5	Design video analytic algorithms for business intelligence

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C423.1	3	3	3	-	-	-	-	-	-	-	-	3	-	-
C423.2	3	3	3	3	-	-	-	-	-	-	3	3	-	-
C423.3	3	3	3	3	-	-	-	-	-	-	3	3	-	-
C423.4	3	3	3	3	-	-	-	-	-	-	3	3	-	-
C423.5	3	3	3	3	-	-	-	-	-	-	3	3	-	-
C423	3	3	3	3	-	-	-	-	-	-	3	3	-	-

Course Name: EC8011 DSP Processing Architecture and Processing and Programming

C424.1	Understand the concepts of Digital Signal Processors
C424.2	Explain the functional block of TMS320C5X
C424.3	Explain the functional block of TMS320C6X
C424.4	Understand the programming for signal processing applications
C424.5	Explain the advanced programmable DSP processors

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C424.1	3	3	3	3	2	-	-	-	-	-	-	-	2	2
C424.2	3	3	-	2	-	-	-	-	-	-	-	2	2	2
C424.3	3	2	2	-	2	-	-	-	-	-	-	-	2	2
C424.4	3	2	-	1	-	-	-	-	-	-	-	1	3	3
C424.5	3	2	2	-	2	-	-	-	-	-	-	-	3	3
C424	3	3	2	2	2	-	-	-	-	-	-	2	3	3

Course Name: CS8086 Soft Computing

C425.1	Apply various soft computing frame works
C425.2	Design of various neural networks
C425.3	Understand the concept behind fuzzy systems
C425.4	Apply genetic programming
C425.5	Discuss hybrid soft computing

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C425.1	2	-	-	3	-	-	-	-	-	-	-	-	-	3
C425.2	2	3	-	-	2	-	-	-	-	-	-	3	-	-
C425.3	2	-	2	-	-	-	-	-	-	-	-	-	-	3
C425.4	-	3	-	3	2	-	-	-	-	-	-	3	-	-
C425.5	2	-	2	-	-	-	-	-	-	-	-	-	-	3
C425	2	3	2	3	2	-	-	-	-	-	-	3	-	3

Course Name: IT8006 Principles of Speech Processing

C426.1	Analyze speech signal characteristics
C426.2	Design speech compression techniques
C426.3	Configure speech recognition techniques
C426.4	Design speaker recognition systems
C426.5	Design text to speech synthesis systems

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C426.1	3	-	3	-	-	-	-	-	-	-	-	-	-	3
C426.2	3	-	-	3	3	-	-	-	-	-	-	3	-	3
C426.3	3	3	3	3	-	-	-	-	-	-	-	-	-	3
C426.4	3	-	3	3	-	-	-	-	-	-	-	3	-	3
C426.5	3	3	3	-	3	-	-	-	-	-	-	-	-	2
C426	3	3	3	3	-	-	-	-	-	-	-	3	-	3

Course Name: GE8073 Fundamentals of Nano Science

C427.1	Know about the science of Nanomaterials
C427.2	Demonstrate the preparation of Nanomaterials
C427.3	Explain the properties of various Nanomaterials
C427.4	Develop knowledge in characteristic Nanomaterials
C427.5	Explain the applications of Nanomaterials

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C427.1	3	3	3	3	2	-	-	-	-	-	1	1	-	3
C427.2	3	3	-	2	-	-	-	-	-	-	1	2	-	2
C427.3	3	2	2	-	2	-	-	-	-	-	1	1	-	2
C427.4	3	2	-	1	-	-	-	-	-	-	1	1	-	3
C427.5	3	2	2	-	2	-	-	-	-	-	1	1	-	3
C427	3	3	2	2	2	-	-	-	-	-	1	2	-	3

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Department of Mechanical Engineering
Course Outcomes (Cos) – Regulation 2017

Semester –I

Course Name: C101 - HS8151 Communicative English	
C101.1	Read articles of a general kind in magazines and newspapers.
C101.2	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.
C101.3	Comprehend conversations and short talks delivered in English.
C101.4	Write short essays of a general kind and personal letters and emails in English.
C101.5	Develop hints into informative paragraphs with the ideas given in the hints.
Course Name: C102 - MA8151 Engineering Mathematics - I	
C102.1	Solve maxima & minima problems using both the limit concept and rules of differentiation.
C102.2	Solve the problems based on maxima and minima for functions of two variables using partial derivative and total derivatives.
C102.3	Determine integrals using Riemann sums and techniques of integration such as, substitution, partial fractions and integration by parts and determine convergence/divergence of improper integrals.
C102.4	Acquire knowledge about evaluating double integrals and triple integrals and used to calculate area and volume.
C102.5	Apply various techniques in solving ordinary differential equations.
Course Name: C103 - PH8151 Engineering Physics	
C103.1	Recognize the elastic properties of different materials.
C103.2	Solve problems related to engineering applications by using LASER and fibre optics techniques.
C103.3	Illustrate the modern applications of thermal insulation materials.
C103.4	Elaborate the dual nature of the light based on quantum theory.
C103.5	Apply the knowledge gained on crystal physics, structure of the crystal and preparation of crystal in various methods.
Course Name: C104 - CY8151 Engineering Chemistry	
C104.1	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
C104.2	Critically evaluate adsorption isotherm in chemical equilibrium and chemical kinetics, including effects of pressure, temperature, catalysts.
C104.3	Prediction of equilibrium relations & their characterizations to construct phase diagrams and the alloy making.
C104.4	Differentiate between various fuels & analyze exhaust and flue gases.
C104.5	Have the knowledge of converting solar energy in to most needy electrical energy efficiently and economically to reduce the environmental pollution & design of energy storage devices.
Course Name: C105 - GE8151 Problem Solving and Python Programming	
C105.1	Develop algorithmic solutions to simple computational problems.

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C105.2	Demonstrate programs using simple Python statements and expressions.
C105.3	Explain control flow and functions concept in Python for solving problems.
C105.4	Use Python data structures – lists, tuples & dictionaries for representing compound data.
C105.5	Explain files, exception, modules and packages in Python for solving problems.
Course Name: C106 - GE8152 Engineering Graphics	
C106.1	Perform freehand sketching of basic geometrical constructions and multiple views of objects and plane curves.
C106.2	Project orthographic projections of lines and plane surfaces.
C106.3	Draw projections of solids for different position.
C106.4	Draw projections of section of solids and development of surfaces.
C106.5	Visualize and to project isometric and perspective sections of simple solids.
Course Name: C107 - GE8161 Problem Solving and Python Programming Laboratory	
C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them.
C107.4	Use Python lists, tuples, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.
Course Name: C108 - BS8161 Physics and Chemistry Laboratory	
C108.1	Determine the velocity and compressibility of ultrasonic wave using different medium.
C108.2	Find the young's modulus with different methods and rigidity modulus
C108.3	Find thermal conductivity of bad conductor and energy band of semiconductor.
C108.4	Understand the different types of hardness & alkalinities. Water quality criteria and standards of DO and Chloride.
C108.5	Analyze and understand the different types of electrodes and their usage in conductivity and in pH titrations.

SEMESTER –II

Course Name: C109 - HS8251 Technical English	
C109.1	Read technical texts and write area- specific texts effortlessly.
C109.2	Listen and comprehend lectures and talks in their area of specialisation successfully.
C109.3	Speak appropriately and effectively in varied formal and informal contexts.
C109.4	Write reports and winning job applications.
C109.5	Comprehend conversations and short talks delivered in English.

Course Name: C110 MA8251 Engineering Mathematics – II	
C110.1	Describe the concept of change quadratic form to canonical form and used in various fields of engineering.
C110.2	Describe the fundamentals in vector calculus and solve the problems related to multiple integrals.
C110.3	Solve the problems of conformal mapping and bilinear transformations related to engineering.
C110.4	Use the knowledge of complex integration with different techniques finding the integrals.
C110.5	Apply Laplace transforms techniques to solve ordinary differential equations.
Course Name: C111 - PH8251 Materials Science	
C111.1	Explain the various phase diagrams and their applications
C111.2	Elaborate the Fe-Fe3C phase diagram, various microstructures and alloys
C111.3	Discuss the mechanical properties of materials and their measurement
C111.4	Explain the magnetic, dielectric and superconducting properties of materials
C111.5	Discuss the basics of ceramics, composites and nanomaterials.
Course Name: C112 - BE8253 Basic Electrical, Electronics and Instrumentation Engineering	
C112.1	Determine the circuit parameters by using Kirchhoff's law and Network theorems.
C112.2	Calculate single phase and three phase power and understand the concept of wiring.
C112.3	Study the constructional details and characteristics of DC/AC machines.
C112.4	Study the behavior of semiconductor devices and its application in energy conversion.
C112.5	Choose appropriate instruments for electrical measurement for a specific application.
Course Name: C113 - GE8291 Environmental Science and Engineering	
C113.1	Describe the importance of environment, ecosystem & biodiversity.
C113.2	Characterize the impact of pollution & hazardous waste in a global, societal context.
C113.3	Explain the important role in conservation of natural resources for future generation.
C113.4	Identify contemporary issues that result in environmental degradation, its control measures.
C113.5	Summarize the issues of environment and human population in their professional undertakings.
Course Name: C114 - GE8292 Engineering Mechanics	
C114.1	Illustrate the vectorial and scalar representation of forces and moments.
C114.2	Analyse the rigid body in equilibrium.
C114.3	Evaluate the properties of surfaces and solids.
C114.4	Calculate dynamic forces exerted in rigid body.
C114.5	Determine the friction and the effects by the laws of friction.

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Course Name: C115 - GE8261 Engineering Practices Laboratory	
C115.1	Describe the carpentry components, plumbing works for Engineering Practices and applications.
C115.2	Discuss the importance of welding equipments; operations in smithy, foundry, and fitting shop and practice for assemble the Centrifugal pump and Air conditioner.
C115.3	Demonstrate and Infer the concepts of house wiring and able to design and conduct simulation and experiments.
C115.4	Employ and Illustrate the behaviour of various electronic components and logic circuits.
C115.5	Fabricate and Inspect the operation of various circuits and devices.
Course Name: 116 - BE8261 Basic Electrical, Electronics and Instrumentation Engineering Laboratory	
C116.1	Solve the given circuit with various theorems and methods.
C116.2	Demonstrate and infer the concepts of measuring instrument
C116.3	Conduct load test and study the performance of electrical machines.
C116.4	Design of diode and Transistor based application circuits
C116.5	Demonstrate the working principles involved in various transducers

SEMESTER –III

Course Name: C201 - MA8353 Transforms and Partial Differential Equations	
C201.1	Acquire the concepts of partial differential equations would provide the ability to formulate and determine the solution of partial differential equations.
C201.2	Apply the knowledge of Fourier series with different functions in engineering.
C201.3	Solve some of the wave, heat equations and two dimensional heat equations related to physical problems of engineering.
C201.4	Acquire the concept of Fourier transforms and applied in various topics in engineering discipline.
C201.5	Apply the Z-transforms techniques to solve any difference equations.
Course Name: C202 - ME8391 Engineering Thermodynamics	
C202.1	Apply the first law of thermodynamics for simple open and closed systems under steady and unsteady conditions.
C202.2	Apply second law of thermodynamics to open and closed systems and calculate entropy and availability.
C202.3	Apply Rankine cycle to steam power plant and compare few cycle improvement methods
C202.4	Derive simple thermodynamic relations of ideal and real gases
C202.5	Calculate the properties of gas mixtures and moist air and its use in psychometric processes
Course Name: C203 - CE8394 Fluid Mechanics and Machinery	
C203.1	Apply the mathematical knowledge to predict the properties and characteristics of a fluid.
C203.2	Analyse and calculate major and minor losses associated with pipe flow in piping networks.

C203.3	Predict the nature of physical quantities mathematically.
C203.4	Can critically analyse the performance of pumps.
C203.5	Can critically analyse the performance of turbines.
Course Name: C204 - ME8351 Manufacturing Technology - I	
C204.1	Explain different metal casting processes, associated defects, merits and demerits.
C204.2	Compare different metal joining processes.
C204.3	Summarize various hot working and cold working methods of metals.
C204.4	Explain various sheet metal making processes.
C204.5	Distinguish various methods of manufacturing plastic components.
Course Name: C205 - EE8353 Electrical Drives and Controls	
C205.1	Discuss the functional blocks, types, classes of duty, effects of heating and cooling and determine the power rating of electrical drive.
C205.2	Sketch the electrical and mechanical characteristics of various motors and discuss the braking methods of electrical drives.
C205.3	Explain the construction and operation of various starters for electrical motors
C205.4	Illustrate the conventional and solid state speed control strategies of DC motors
C205.5	Describe the various speed control methods of AC motors and state its applications.
Course Name: C206 - ME8361 Manufacturing Technology Laboratory - I	
C206.1	Demonstrate the safety precautions exercised in the mechanical workshop.
C206.2	Make the work piece as per given shape and size using Lathe.
C206.3	Join two metals using arc welding.
C206.4	Use sheet metal fabrication tools and make simple tray and funnel.
C206.5	Use different moulding tools, patterns and prepare sand moulds.
Course Name: C207 - ME8381 Computer Aided Machine Drawing	
C207.1	Acquire the knowledge of various standards and specifications about standard machine components.
C207.2	Follow the drawing standards, Fits and Tolerances
C207.3	Make drawings of assemblies with the help of part drawings given
C207.4	Re-create part drawings, sectional views and assembly drawings as per standards
C207.5	Able to model components of their choices using CAD software
Course Name: C208 - EE8361 Electrical Engineering Laboratory	
C208.1	Compute the performance of static and rotating DC, AC machine with varying loads
C208.2	Employ and discuss the various methods of starting and speed control for DC and AC motor

C208.3	Examine the internal and external characteristics of different types of DC generators
C208.4	Analyze and predetermine the regulation of Alternators using various methods.
C208.5	Experiment and determine the characteristics of synchronous machine with varying excitation
Course Name: C209- HS8381 Interpersonal Skills / Listening & Speaking	
C209.1	Listen and respond appropriately.
C209.2	Participate in group discussions.
C209.3	Make effective presentations.
C209.4	Participate confidently and appropriately in conversations both formal and informal.
C209.5	Give directions and instructions.

SEMESTER –IV

Course Name: C210 - MA8452 Statistics and Numerical Methods	
C210.1	Apply the concept of testing of hypothesis for small and large samples in real life problems
C210.2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
C210.3	Acquire the basic concepts and techniques of solving algebraic, transcendental equations, system of linear equations and eigen value problem of matrix can be obtained numerically.
C210.4	Acquire the knowledge of numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems
C210.5	Describe the various techniques and methods for solving first and second order ordinary differential equations.
Course Name: C211 - ME8492 Kinematics of Machinery	
C211.1	Discuss the basics of mechanism
C211.2	Calculate velocity and acceleration in simple mechanisms
C211.3	Develop CAM profiles
C211.4	Solve problems on gears and gear trains
C211.5	Examine friction in machine elements
Course Name: C212 - ME8451 Manufacturing Technology – II	
C212.1	Explain the mechanism of material removal processes.
C212.2	Describe the constructional and operational features of centre lathe and other special purpose lathes.
C212.3	Describe the constructional and operational features of shaper, planner, milling, drilling, sawing and broaching machines.
C212.4	Explain the types of grinding and other super finishing processes apart from gear manufacturing processes.
C212.5	Summarize numerical control of machine tools and write a part program.

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Course Name: C213 - ME8491 Engineering Metallurgy	
C213.1	Explain alloys and phase diagram, Iron-Iron carbon diagram and steel classification.
C213.2	Explain isothermal transformation, continuous cooling diagrams and different heat treatment processes.
C213.3	Clarify the effect of alloying elements on ferrous and non-ferrous metals.
C213.4	Summarize the properties and applications of non metallic materials.
C213.5	Explain the testing of mechanical properties.
Course Name: C214 - CE8395 Strength of Materials for Mechanical Engineers	
C214.1	Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes.
C214.2	Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.
C214.3	Apply basic equation of simple torsion in designing of shafts and helical spring
C214.4	Calculate the slope and deflection in beams using different methods.
C214.5	Analyze and design thin and thick shells for the applied internal and external pressures.
Course Name: C215 - ME8493 Thermal Engineering- I	
C215.1	Apply thermodynamic concepts to different air standard cycles and solve problems.
C215.2	Solve problems in single stage and multistage air compressors
C215.3	Explain the functioning and features of IC engines, components and auxiliaries.
C215.4	Calculate performance parameters of IC Engines.
C215.5	Explain the flow in Gas turbines and solve problems.
Course Name: C216 - ME8462 Manufacturing Technology Laboratory – II	
C216.1	use different machine tools to manufacturing gears
C216.2	Ability to use different machine tools to manufacturing gears.
C216.3	Ability to use different machine tools for finishing operations
C216.4	Ability to manufacture tools using cutter grinder
C216.5	Develop CNC part programming
Course Name: C217 - CE8381Strength of Materials and Fluid Mechanics and Machinery Laboratory	
C217.1	Ability to perform Tension, Torsion, Hardness, Compression, and Deformation test on Solid materials.
C217.2	Examine the microscopic properties of metals under different heat treatment process.
C217.3	Use the measurement equipments for flow measurement.
C217.4	Determine the frictional losses in pipes.
C217.5	Perform test on different fluid machinery

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Course Name: C218 - HS8461 Advanced Reading and Writing	
C218.1	Write different types of essays.
C218.2	Write winning job applications.
C218.3	Read and evaluate texts critically.
C218.4	Display critical thinking in various professional contexts.
C218.5	Write letter of recommendation.

SEMESTER –V

Course Name: C301 - ME8595 Thermal Engineering- II	
C301.1	Solve problems in Steam Nozzle
C301.2	Explain the functioning and features of different types of Boilers and auxiliaries and calculate performance parameters.
C301.3	Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems.
C301.4	Summarize the concept of Cogeneration, Working features of Heat pumps and Heat exchangers
C301.5	Solve problems using refrigerant table / charts and psychrometric charts
Course Name: C302 - ME8593 Design of Machine Elements	
C302.1	Explain the influence of steady and variable stresses in machine component design.
C302.2	Apply the concepts of design to shafts, keys and couplings.
C302.3	Apply the concepts of design to temporary and permanent joints.
C302.4	Apply the concepts of design to energy absorbing members, connecting rod and crank shaft.
C302.5	Apply the concepts of design to bearings.
Course Name: C303 - ME8501 Metrology and Measurements	
C303.1	Describe the concepts of measurements to apply in various metrological instruments
C303.2	Outline the principles of linear and angular measurement tools used for industrial applications
C303.3	Explain the procedure for conducting computer aided inspection
C303.4	Demonstrate the techniques of form measurement used for industrial components
C303.5	Discuss various measuring techniques of mechanical properties in industrial applications
Course Name: C304 - ME8594 Dynamics of Machines	
C304.1	Calculate static and dynamic forces of mechanisms.
C304.2	Calculate the balancing masses and their locations of reciprocating and rotating masses.
C304.3	Compute the frequency of free vibration.

C304.4	Compute the frequency of forced vibration and damping coefficient.
C304.5	Calculate the speed and lift of the governor and estimate the gyroscopic effect on automobiles, ships and airplanes.
Course Name: C306 - ME8511 Kinematics and Dynamics Laboratory	
C306.1	Analyze the motion and the dynamic forces acting on linkages, gears and cams
C306.2	Construct the characteristic curves for various governors
C306.3	Manipulate the gyroscopic couple and moment of inertia for given specimens by various methods
C306.4	Perform static and dynamic balancing of rotating and reciprocating masses
C306.5	Investigate the natural frequency of forced and free vibrations
Course Name: C307 - ME8512 Thermal Engineering Laboratory	
C307.1	Conduct Load test on IC Engines.
C307.2	Conduct performance test on Steam Boiler and Turbines.
C307.3	Find the heat transfer coefficient by various heat transfer modes.
C307.4	Conduct tests to evaluate the performance of parallel/counter flow heat exchanger apparatus and reciprocating air compressor.
C307.5	Conduct tests to evaluate the performance of refrigeration and air-conditioning test rigs.
Course Name: C308 - ME8513 Metrology and Measurements Laboratory	
C308.1	Determine the linear measurements of an object by using various measuring instruments.
C308.2	Measure the displacement, flatness and surface finish using various measurement instruments.
C308.3	Evaluate the parameters of the thread and gears using various measuring instruments.
C308.4	Examine the temperature, torque, vibration and force measurement using various apparatus.
C308.5	Measure and develop the 2D view of the object by using CMM.

SEMESTER –VI

Course Name: C309 - ME8651 Design of Transmission Systems	
C309.1	Apply the concepts of design to belts, chains and rope drives.
C309.2	Apply the concepts of design to spur, helical gears.
C309.3	Apply the concepts of design to worm and bevel gears.
C309.4	Apply the concepts of design to gear boxes .
C309.5	Apply the concepts of design to cams, brakes and clutches
Course Name: C310 - ME8691 Computer Aided Design and Manufacturing	
C310.1	Explain the 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics

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C310.2	Explain the fundamentals of parametric curves, surfaces and Solids
C310.3	Summarize the different types of Standard systems used in CAD
C310.4	Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines
C310.5	Summarize the different types of techniques used in Cellular Manufacturing and FMS
Course Name: C311 - ME8693 Heat and Mass Transfer	
C311.1	Apply heat conduction equations to different surface configurations under steady state and transient conditions and solve problems
C311.2	Apply free and forced convective heat transfer correlations to internal and external flows through/over various surface configurations and solve problems
C311.3	Explain the phenomena of boiling and condensation, apply LMTD and NTU methods of thermal analysis to different types of heat exchanger configurations and solve problems
C311.4	Explain basic laws for Radiation and apply these principles to radiative heat transfer between different types of surfaces to solve problems
C311.5	Apply diffusive and convective mass transfer equations and correlations to solve problems for different applications
Course Name: C312 - ME8692 Finite Element Analysis	
C312.1	Summarize the basics of finite element formulation.
C312.2	Apply finite element formulations to solve one dimensional Problems.
C312.3	Apply finite element formulations to solve two dimensional scalar Problems.
C312.4	Apply finite element method to solve two dimensional Vector problems.
C312.5	Apply finite element method to solve problems on iso parametric element and dynamic Problems.
Course Name: C313 - ME8694 Hydraulics and Pneumatics	
C313.1	Explain the Fluid power and operation of different types of pumps.
C313.2	Summarize the features and functions of Hydraulic motors, actuators and Flow control valves
C313.3	Explain the different types of Hydraulic circuits and systems
C313.4	Explain the working of different pneumatic circuits and systems
C313.5	Summarize the various trouble shooting methods and applications of hydraulic and pneumatic systems.
Course Name: C315 - ME8681 CAD / CAM Laboratory	
C315.1	Create various 3D models of machine elements.
C315.2	Develop the assembly module of machine elements.
C315.3	Explain the modern CNC control systems.
C315.4	Create the manual part programming for different machining processes.
C315.5	Interpret computer aided part programming in CNC machine tool.
Course Name: C316 - ME8682 Design and Fabrication Project	

C316.1	Demonstrate the different fabrication techniques involved in product manufacturing.
C316.2	Utilize their skills acquired in the previous semesters to design and fabricate
C316.3	Demonstrate the proper use of common metal fabrication tools and equipment.
C316.4	Design various machine tool components for industries
C316.5	Improve technical writing skills and create a project proposal and report on completion.
Course Name: C317 - HS8581 Professional Communication	
C317.1	Develop adequate Soft Skills required for the workplace.
C317.2	Make effective presentations.
C317.3	Participate confidently in Group Discussions.
C317.4	Attend job interviews and be successful.
C317.5	Set goals and make a career plan.

SEMESTER –VII

Course Name: C401 - ME8792 Power Plant Engineering	
C401.1	Explain the layout, construction and working of the components inside a thermal power plant.
C401.2	Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants.
C401.3	Explain the layout, construction and working of the components inside nuclear power plants.
C401.4	Explain the layout, construction and working of the components inside Renewable energy power plants.
C401.5	Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.
Course Name: C402 - ME8793 Process Planning and Cost Estimation	
C402.1	Select the process, equipment and tools for various industrial products.
C402.2	Prepare process planning activity chart
C402.3	Explain the concept of cost estimation.
C402.4	Compute the job order cost for different type of shop floor.
C402.5	Calculate the machining time for various machining operations.
Course Name: C403 - ME8791 Mechatronics	
C403.1	Discuss the interdisciplinary applications of Electronics, Electrical, Mechanical and Computer Systems for the Control of Mechanical, Electronic Systems and sensor technology.
C403.2	Discuss the architecture of Microprocessor and Microcontroller, Pin Diagram, Addressing Modes of Microprocessor and Microcontroller.
C403.3	Discuss Programmable Peripheral Interface, Architecture of 8255 PPI, and various device interfacing

C403.4	Explain the architecture, programming and application of programmable logic controllers to problems and challenges in the areas of Mechatronic engineering.
C403.5	Discuss various Actuators and Mechatronics system using the knowledge and skills acquired through the course and also from the given case studies
Course Name: C407 - ME8711 Simulation and Analysis Laboratory	
C407.1	Simulate the mechanical systems using mathematical simulation software
C407.2	Demonstrate stress analysis of various beams and truss.
C407.3	Perform modal analysis and harmonic analysis for beams and trusses
C407.4	Analyze thermal stresses in a 3D component
C407.5	Evaluate the vibrational frequency of beams.
Course Name: C408 - ME8781 Mechatronics Laboratory	
C408.1	Demonstrate the basic electrical, hydraulic, pneumatic and electro pneumatic Systems.
C408.2	Construct the Mechatronics system with the help of Microprocessor, PLC and other electrical and Electronics Circuits.
C408.3	Describe the interfacing of different actuation systems.
C408.4	Illustrate the PLC programming circuits.
C408.5	Demonstrate the real life examples with help of models and software tools.
Course Name: C409 - ME8712 Technical Seminar	
C409.1	Enhance the communication skills
C409.2	Make effective presentations
C409.3	Learn Recent advances in engineering / technology
C409.4	Develop their confidence and help them to attend presentations
C409.5	Develop adequate soft skills required for presentations

SEMESTER –VIII

Course Name: C410 - MG8591 Principles of Management	
C410.1	Summarize the concepts of management and managerial roles in sectors with respect to organizational environment
C410.2	Explain the planning, process and associate with decision making process under different conditions
C410.3	show the structure of organization with departmentation and recruitment process
C410.4	Built the effective communication in organization with innovative, motivational skills and leadership quality
C410.5	Apply budget and non budget control techniques for planning operations.
Course Name: C412 – ME8811 Project Work	
C410.1	Identify real world problems of mechanical engineering and related systems.

C410.2	Interpret the working of mechanical engineering systems.
C410.3	Apply the principles of mechanical engineering in real world systems.
C410.4	Criticize and experiment to arrive solutions for real world mechanical engineering problems.
C410.5	Analyze and evaluate to obtain solution for problems in mechanical engineering systems.

Elective – I (Semester –VI)

Course Name: C314- ME8091 Automobile Engineering	
C314.1	Recognize the various parts of the automobile and their functions and materials.
C314.2	Discuss the engine auxiliary systems and engine emission control.
C314.3	Distinguish the working of different types of transmission systems.
C314.4	Explain the Steering, Brakes and Suspension Systems.
C314.5	Predict possible alternate sources of energy for IC Engines.
Course Name: C314- PR8592 WELDING TECHNOLOGY	
C314.1	Understand the construction and working principles of gas and arc welding process.
C314.2	Understand the construction and working principles of resistance welding process.
C314.3	Understand the construction and working principles of various solid state welding process.
C314.4	Understand the construction and working principles of various special welding processes.
C314.5	Understand the concepts on weld joint design, weldability and testing of weldments.
Course Name: : C314- ME8096 Gas Dynamics and Jet Propulsion	
C314.1	Apply the concept of compressible flows in variable area ducts.
C314.2	Apply the concept of compressible flows in constant area ducts.
C314.3	Examine the effect of compression and expansion waves in compressible flow.
C314.4	Use the concept of gas dynamics in Jet Propulsion.
C314.5	Apply the concept of gas dynamics in Space Propulsion.
Course Name: C314- GE8075 Intellectual Property Rights	
C314.1	Ability to manage Intellectual Property portfolio to enhance the value of the firm.
C314.2	Understand the Registration process for IPR.
C314.3	Understand the various treaties on IPR.
C314.4	Understand the Digital Products and Law.
C314.5	Explain the enforcement of IPRs
Course Name: : C314- GE8073 Fundamentals of Nano Science	

C314.1	Recognize the basic concepts of Physics, Chemistry and Biology and Engineering.
C314.2	Describe the various methods of preparation of nonmaterials.
C314.3	Identify the suitable nonmaterials and their preparation techniques.
C314.4	Choose suitable characterization technique for analysing nonmaterials.
C314.5	Explain the various applications in nonmaterials.

Elective – II (Semester –VII)

Course Name: C405- ME8071 Refrigeration and Air conditioning	
C405.1	Explain the basic concepts of Refrigeration
C405.2	Explain the Vapor compression Refrigeration systems and to solve problems
C405.3	Discuss the various types of Refrigeration systems
C405.4	Calculate the Psychrometric properties and its use in psychrometric processes
C405.5	Explain the concepts of Air conditioning and to solve problems
Course Name: C405- ME8072 Renewable Sources of Energy	
C405.1	Discuss the importance and Economics of renewable Energy
C405.2	Discuss the method of power generation from Solar Energy
C405.3	Discuss the method of power generation from Wind Energy
C405.4	Explain the method of power generation from Bio Energy
C405.5	Explain the Tidal energy, Wave Energy, OTEC, Hydro energy, Geothermal Energy, Fuel Cells and Hybrid Systems.
Course Name: C405- ME8098 Quality Control and Reliability Engineering	
C405.1	Summarize the concept of Quality and Process control for variables
C405.2	Apply the process control for attributes
C405.3	Explain the concept of sampling and to solve problems
C405.4	Explain the concept of Life testing
C405.5	Explain the concept Reliability and techniques involved
Course Name: C405-ME8073 Unconventional Machining Processes	
C405.1	Explain the need for unconventional machining processes and its classification
C405.2	Compare various thermal energy and electrical energy based unconventional machining processes.
C405.3	Summarize various chemical and electro-chemical energy based unconventional machining processes.
C405.4	Explain various nano abrasives based unconventional machining processes

C405.5	Distinguish various recent trends based unconventional machining processes.
Course Name: C405-MG8491 Operations Research	
C405.1	List the problems like transportation and assignment problems in optimization techniques.
C405.2	Evaluate network models like the shortest path, minimum spanning tree and maximum flow problems.
C405.3	Decide right decisions in operations management using inventory control techniques.
C405.4	Define a right job to a right person using job sequencing.
C405.5	Relate a dynamic system as a quening model and compute important performance.
Course Name: C405-MF8071 Additive Manufacturing	
C405.1	Explain the various additive manufacturing in product development
C405.2	Identify and demonstrate cad model for additive manufacturing
C405.3	Compare the various liquid based and solid based manufacturing systems
C405.4	Summarize the power based additive manufacturing system
C405.5	Examine the additive manufacturing system in medical field
Course Name:C405- GE8077 Total Quality Management	
C405.1	To learn the Function and application of Quality measures
C405.2	Contrast the Leadership Qualities with motivation of employees
C405.3	Utilizing the design of Management Tools and techniques
C405.4	Categorize the knowledge of Quality Function Development and management techniques
C405.5	Prioritize the concepts and Need for ISO.

Elective – III (Semester –VII)

Course Name: C406- ME8099 Robotics	
C406.1	Explain the concepts of industrial robots, classification, specifications and coordinate systems
C406.2	Illustrate the different types of robot drive systems as well as robot end effectors.
C406.3	Apply the different sensors and image processing techniques in robotics to improve the ability of robots.
C406.4	Develop robotic programs for different tasks and familiarize with the kinematics motions of robot.
C406.5	Examine the implementation of robots in various industrial sectors and interpolate the economic analysis of robots.
Course Name: C406- ME8095 Design of Jigs, Fixtures and Press Tools	
C406.1	Summarize the different methods of Locating Jigs and Fixtures and Clamping principles
C406.2	Design and develop jigs and fixtures for given component

C406.3	Discuss the press working terminologies and elements of cutting dies
C406.4	Distinguish between Bending and Drawing dies.
C406.5	Discuss the different types of forming technique
Course Name: C406- ME8093 Computational Fluid Dynamics	
C406.1	Derive the governing equations and boundary conditions for Fluid dynamics
C406.2	Analyze Finite difference and Finite volume methods for Diffusion
C406.3	Analyze Finite volume method for Convective diffusion
C406.4	Analyze Flow field problems
C406.5	Explain and solve the Turbulence models and Mesh generation techniques
Course Name: C406- ME8097 Non Destructive Testing and Evaluation	
C406.1	Derive the governing equations and boundary conditions for Fluid dynamics
C406.2	Analyze Finite difference and Finite volume methods for Diffusion
C406.3	Analyze Finite volume method for Convective diffusion
C406.4	Analyze Flow field problems
C406.5	Explain and solve the Turbulence models and Mesh generation techniques
Course Name: C406- ME8092 Composite Materials and Mechanics	
C406.1	Summarize the various types of Fibers, Equations and manufacturing methods for Composite materials
C406.2	Derive Flat plate Laminate equations
C406.3	Analyze Lamina strength
C406.4	Analyze the thermal behavior of Composite laminates
C406.5	Analyze Laminate flat plates
Course Name: C406- GE8074 Human Rights	
C406.1	Understanding of the principles and institutions of international human rights law, including their origins, assumptions, contents, limits and potential
C406.2	Understand the importance of the Human Rights and different types of theories
C406.3	Assess the various theories proposed as the basis for the protection of human rights by UN
C406.4	Demonstrate an awareness of the Human rights in India and its constitutional provisions
C406.5	Appraise laws relating to human rights for different range of people and its implementation
Course Name: C406- GE8071 Disaster Management	
C406.1	Differentiate the types of disasters, causes and their impact on environment and society.
C406.2	Discover various methods of risk reduction measures as well as mitigation.

C406.3	Identify factors affecting vulnerabilities, development scenarios in the Indian context
C406.4	Draw the hazard and vulnerability profile of India.
C406.5	Originate disaster damage assessment and management.

Elective – IV (Semester –VIII)

Course Name: C411- IE8693 Production Planning and Control	
C411.1	Classify the various components and functions of production planning and control.
C411.2	Select the different processes, techniques and measurements for work study.
C411.3	Analyze the information needed for process planning and product planning.
C411.4	Describe the production scheduling, sequencing, charts and dispatching.
C411.5	Apply the recent trends like manufacturing requirement Planning (MRP II) and Enterprise Resource Planning (ERP).
Course Name: C411- MG8091 Entrepreneurship Development	
C411.1	Recognize the ability to provide a self analysis in the context of an entrepreneurial career
C411.2	Demonstrate the concept of motivation training to achieve the goal
C411.3	Choose the internal/external factor affecting a business/organization to evaluate business opportunities
C411.4	Analyze to find an attractive market that can be reached economically
C411.5	Evaluate people, processes and resources within a diverse organization
Course Name: C411- ME8094 Computer Integrated Manufacturing Systems	
C411.1	Explain the basic concepts of CAD, CAM and computer integrated manufacturing systems
C411.2	Summarize the production planning and control and computerized process planning
C411.3	Differentiate the different coding systems used in group technology
C411.4	Explain the concepts of flexible manufacturing system (FMS) and automated guided vehicle (AGV) system
C411.5	Classification of robots used in industrial applications
Course Name: C411- ME8074 Vibration and Noise Control	
C411.1	Summarize the Basics of Vibration
C411.2	Summarize the Basics of Noise
C411.3	Explain the Sources of Automotive Noise
C411.4	Discuss the Control techniques for vibration
C411.5	Describe the sources and control of Noise

Course Name: C411- EE8091 Micro Electro Mechanical Systems	
C411.1	Fabricate MEMES devices with the knowledge of semiconductors.
C411.2	Recall on the rudiments of micro fabrication techniques
C411.3	Identify various sensors and actuators for MEMS devices
C411.4	Apply MEMS for various machining process
C411.5	Determine different materials for MEMS
Course Name: C411- GE8076 Professional Ethics in Engineering	
C411.1	Identify the core values that shape the ethical behaviour of an engineer and Exposed awareness on professional ethics and human values
C411.2	Explain the basic perception of profession, professional ethics, various moral issues & uses of ethical theories.
C411.3	Apply various social issues, industrial standards, code of ethics and role of professional ethics in engineering field.
C411.4	Describe the responsibilities of an engineer for safety and risk benefit analysis, professional rights and responsibilities of an engineer.
C411.5	Acquire managerial skills to competate in an organization.

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Programme Coordinator

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Department of Mechanical Engineering

CO PO Matrices for Regulations 2017

Semester –I

Course Name: C101 - HS8151 Communicative English

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C101.1								3	3	3		3	1	1
C101.2								3	3	3		3	1	1
C101.3								3	3	3		3	1	1
C101.4								3	3	3		3	1	1
C101.5								3	3	3		3	1	1
Average								3	3	3		3	1	1
C101								3	3	3		3	1	1

Course Name: C102 - MA8151 Engineering Mathematics - I

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C102.1	3	2	2	2					2			2	2	2
C102.2	2	2	2	3					2			2	2	2
C102.3	3	3	2	2					2			1	2	2
C102.4	2	2	1	3					2			2	2	2
C102.5	3	2	2	2					3			2	2	2
Average	2.6	2.2	1.8	2.4					2.2			1.8	2	2
C102	3	3	2	3					3			2	2	2

Course Name: C103 - PH8151 Engineering Physics- I

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C103.1	3	3	3	2		2				2		2	2	2
C103.2	3		3							2		2	2	2
C103.3	3	2	3	3						2		2	2	2
C103.4	3	3	3	3		2				2		2	2	2
C103.5	3	3	3	3		2				2		2	2	2
Average	3	2.75	3	2.75		2.0				2		2	2	2
C103	3	3	3	3		2				2		2	2	2

Course Name: C104 - CY8151 Engineering Chemistry

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C104.1	3	2	3		2	3	3					2		
C104.2	3	1	1			1								
C104.3	3	1					2					1		
C104.4	3	2	2		1	2	3					2		
C104.5	3	2	2		1	2	3					2		
Average	3	1.6	2		1.3	2.0	2.75					1.75		
C104	3	2	2		2	2	3					2		

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Course Name: C105 - GE8151 Problem Solving and Python Programming

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C105.1	3	2	1			1						1	3	1
C105.2	3	2	1		1	1						1	3	1
C105.3	3	2	1			1						1	3	1
C105.4	3	2	1			1						1	3	1
C105.5	3	2	1	1		1						1	3	1
Average	3	2	1	1	1	1.0						1	3	1
C105	**3**	**2**	**1**	**1**	**1**	**1**						**1**	**3**	**1**

Course Name: C106 - GE8152 Engineering Graphics

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C106.1	3	3	3	2	2				1			3		2
C106.2	3	3	3	3	2				1			2		
C106.3	3	2	3	3	3				1			2		1
C106.4	3	3	3	2	3				1			2		1
C106.5	3	2	3	2	3				1			2		
Average	3	3	3	2	3				1			2		1
C106	**3**	**3**	**3**	**3**	**3**				**1**			**2**		**2**

Course Name: C107 - GE8161 Problem Solving and Python Programming Laboratory

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C107.1	3	3	3		3			3	3	3		3	3	1
C107.2	3	3	3		3			3	3	3		2	3	1
C107.3	3	3	3		3			3	3	3		3	3	1
C107.4	3	3	3		3			3	3	3		3	3	1
C107.5	3	3	3		3			3	3	3		3	3	1
Average	3	3	3		3			3	3	3		2.8	3	1
C107	**3**	**3**	**3**		**3**			**3**	**3**	**3**		**3**	**3**	**1**

Course Name: C108 - BS8161 Physics and Chemistry Laboratory

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C108.1	3	3	2	2	2	1	1					1	1	1
C108.2	3	3	2										1	1
C108.3	3	3	2	2	2	1	1					1	1	1
C108.4	3	3	2	2	-	1	1					1		
C108.5	3	3	2	2	2	1	1					1		
Average	3	3	2	2	2	1.0	1					1	1	1
C108	**3**	**3**	**2**	**2**	**2**	**1**	**1**					**1**	**1**	**1**

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Semester –II

Course Name: C109 - HS8251 Technical English

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C109.1								3	3	3		3		
C109.2								3	3	3		3		
C109.3								3	3	3		3		
C109.4								3	3	3		3		
C109.5								3	3	3		3		1
Average								3	3	3		3		1
C109								**3**	**3**	**3**		**3**		**1**

Course Name: C110 - MA8251 Engineering Mathematics - II

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C110.1	3	2	1	2					3			2	2	1
C110.2	2	3	2	3					2			1	2	1
C110.3	2	2	3	2					3			1	2	1
C110.4	2	2	1	2					2			1	2	1
C110.5	2	3	2	2	1				2		1	2	2	1
Average	2.2	2.4	1.8	2.2	1				2.4		1	1.4	2	1
C110	**3**	**3**	**2**	**3**	**1**				**3**		**1**	**2**	**2**	**1**

Course Name: C111 - PH8251 Materials Science

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C111.1	3	3	3	3		2				2		2		
C111.2	3	3	3	3		2				2		2		
C111.3	3	3	3	3		2				2		2		
C111.4	3	3	3	3		2				2		2		
C111.5	2	3	3	3		2				2		2		
Average	3	3	3	3		2				2		2		
C111	**3**	**3**	**3**	**3**		**2**				**2**		**2**		

Course Name: C112 - BE8253 Basic Electrical, Electronics and Instrumentation Engineering

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C112.1	3	2	1	1										
C112.2	3	2	1	1										
C112.3	2	1										1		
C112.4	2													
C112.5	2													
Average	3	2	1	1								1		
C112	**3**	**2**	**1**	**1**								**1**		

Course Name: C113 - GE8291 Environmental Science and Engineering

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C113.1	2	3	1			3	3	1						

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C113.2	3	3	2	1	1	3	3	2				1		
C113.3	3	3				3	3							
C113.4	3	3	1			3	3	1				1		
C113.5	3	3	1			3	3	1				1		
Average	3	3	1			3	3	1				1		
C113	**3**	**3**	**2**	**1**	**1**	**3**	**3**	**1**				**1**		

Course Name: C114 - GE8292 Engineering Mechanics

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C114.1	2	3	2	2		1						3		1
C114.2	2	3	2	2		1						3		1
C114.3	3	3	2	3		1						3		1
C114.4	3	3	2	2		1						2		1
C114.5	2	2	2	2		1						3		1
Average	3	3	2	3		1						3		1
C114	**3**	**3**	**2**	**3**		**1**						**3**		**1**

Course Name: C115 - GE8261 Engineering Practices Laboratory

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C115.1	2		2				1		2			1		
C115.2	2		2				1		2			1		
C115.3	2		2				1		2			1		
C115.4	2		2				1		2			1		
C115.5	2		2				1		2			1		
Average	2		2				1		2			1		
C115	**2**		**2**				**1**		**2**			**1**		

Course Name: C116 - BE8261 Basic Electrical, Electronics and Instrumentation Engineering Laboratory

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C116.1	3	2	3	2	1							1		
C116.2	2		3						1			1		
C116.3	2	2	3	2	1				1			2		
C116.4	3	2	3	2										
C116.5	2		3		2				1			2		
Average	3	2	3	2	2				1			2		
C116	**3**	**2**	**3**	**2**	**2**				**1**			**2**		

Semester –III

Course Name: C201 - MA8353 Transforms and Partial Differential Equations

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C201.1	3	2	3	2					2			1	3	2
C201.2	3	2	1	2					2			2	2	1
C201.3	2	2	1	1					3			1	1	2

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C201.4	3	2	2	2	1				3		1	2	2	2
C201.5	3	2	1	2	1				3		1	2	3	1
Average	2.8	2	1.6	1.8	1				2.6		1	1.6	3	2
C201	**3**	**2**	**2**	**2**	**1**				**3**		**1**	**2**	**3**	**2**

Course Name: C202 - ME8391 Engineering Thermodynamics

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C202.1	3	3	3	2		1				2			3	
C202.2	3	3	3	2		1				2			3	
C202.3	3	3	3	2		1				2			3	
C202.4	3	3	3	1		1				2			3	
C202.5	3	3	3	2		1				2			3	
Average	3	3	3	1.67		1				2			3	
C202	**3**	**3**	**3**	**2**		**1**				**2**			**3**	

Course Name: C203 - CE8394 Fluid Mechanics and Machinery

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C203.1	3	3	3	3									3	
C203.2	3	3	3	3									3	
C203.3	3	3	3	3									3	
C203.4	3	3	3	3										
C230.5	3	3	3	3										
Average	3	3	3	3									3	
C203	**3**	**3**	**3**	**3**									**3**	

Course Name: C204 - ME8351 Manufacturing Technology - I

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C204.1	3				2									2
C204.2	3				2									2
C204.3	3				2									3
C204.4	3				2									3
C204.5	3				2									3
Average	3				2									2.6
C204	**3**				**2**									**3**

Course Name: C205 - EE8353 Electrical Drives and Controls

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C205.1	2						1					1	1	1
C205.2	2				1		1					2	1	2
C205.3	2						1					2	1	1
C205.4	2				1		1					2	1	2
C205.5	2				1		1					2	1	2
Average	2				1		1					2	1	1.6
C205	**2**				**1**		**1**					**2**	**1**	**2**

Course Name: C206 - ME8361 Manufacturing Technology Laboratory - I

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PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C206.1	3				2	2								2
C206.2	3				2	2								2
C206.3	3				2	2								2
C206.4	3				2	2								2
C206.5	3				2	2								2
Average	3				2	2								2
C206	3				2	2								2

Course Name: C207 - ME8381 Computer Aided Machine Drawing

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C207.1	3	1			3	1						2		3
C207.2	3	2	2		3	2						2		3
C207.3	3	2	1		3	2						3		3
C207.4	3	2	2		3	2						3		3
C207.5	3	1	3		3	3						3		3
Average	3	1.6	2		2.6	2						2.6		3
C207	3	2	2		3	2						3		3

Course Name: C208 - EE8361 Electrical Engineering Laboratory

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C208.1	3	3		2	2				2					1
C208.2	3	3	2		3				2			3		2
C208.3	3	2	2	3	2	3						2	1	1
C208.4	3	3	2	3	2							2		
C208.5	3	3		3	2	3			3			3		
Average	3	3	2	3	3	3			3			3	1	1.3
C208	3	3	2	3	3	3			3			3	1	2

Course Name: C209 - HS8381 Interpersonal Skills / Listening & Speaking

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C209.1								3	3	3		3		
C209.2								3	3	3		3		
C209.3								3	3	3		3		
C209.4								3	3	3		3		
C209.5								3	3	3		3		
Average								3	3	3		3		
C209								3	3	3		3		

Semester –IV

Course Name: C210 - MA8452 Statistics and Numerical Methods

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C210.1	3	2	1	1					2			1	1	

C210.2	2	3	2	2					2			1	2	
C210.3	3	2	2	2					3			2		2
C210.4	3	3	2	3					3			2		2
C210.5	2	2	2	2					2			1		2
Average	2.6	2.4	1.8	2					2.4			1.4	1.5	2
C210	**3**	**3**	**2**	**2**					**3**			**2**	**2**	**2**

Course Name: C211 - ME8492 Kinematics of Machinery

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C211.1	3	1												2
C211.2	3	3	1	2										
C211.3	3	2	3	3										3
C211.4	3	3	1	3										2
C211.5	3	3	3	3	2									
Average	3	2.4	2	2.75	2									2.3
C211	**3**	**3**	**2**	**3**	**2**									**3**

Course Name: C212 - ME8451 Manufacturing Technology – II

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C212.1	3												1	2
C212.2	3													3
C212.3	3													3
C212.4	3													3
C212.5	3			2	1	1	1					1	1	3
Average	3			2	1	1	1					1	1	2.8
C212	**3**			**2**	**1**	**1**	**1**					**1**	**1**	**3**

Course Name: C213 - ME8491 Engineering Metallurgy

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C213.1	3				3							1	2	
C213.2	3				3					2		1	3	
C213.3	3				3							1	3	
C213.4	3				3					2		1		
C213.5	3				3					2		1	3	
Average	3				3					2		1	2.3	
C213	**3**				**3**					**2**		**1**	**3**	

Course Name: C214 - CE8395 Strength of Materials for Mechanical Engineers

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C214.1	3	3	2	2										2
C214.2	3	3	3	2										2
C214.3	3	3	3	3										2
C214.4	2	3	3	2										2
C214.5	3	3	3	3										2
Average	3	3	3	3										2
C214	**3**	**3**	**3**	**3**										**2**

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Course Name: C215 - ME8493 Thermal Engineering- I

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C215.1	3	3		3	2							2	3	
C215.2	3	3		3	2							2	3	
C215.3	3											2	3	
C215.4	3	3		3	2							2	3	
C215.5	3	3		3	2							2	3	
Average	3	3		3	2							2	3	
C215	3	3		3	2							2	3	

Course Name: C216 - ME8462 Manufacturing Technology Laboratory – II

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C216.1	3	2			2									2
C216.2	3				2									2
C216.3	3				2									2
C216.4	3				2									2
C216.5	3			2	2								1	3
Average	3	2		2	2								1	2.2
C216	3	2		2	2								1	3

Course Name: C217 - CE8381Strength of Materials and Fluid Mechanics and Machinery Laboratory

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C217.1	3	2	3									3		
C217.2	3	2	3									3		
C217.3	3	2	3									3		
C217.4	3	2	3									3		
C217.5	3	2	2									3		
Average	3	2	3									3		
C217	3	2	3									3		

Course Name: C218 - HS8461 Advanced Reading and Writing

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C218.1								3	3	3		3		
C218.2								3	3	3		3		
C218.3								3	3	3		3		
C218.4								3	3	3		3		
C218.5								3	3	3		3		
Average								3	3	3		3		
C218								3	3	3		3		

Semester –V

Course Name: C301 - ME8595 Thermal Engineering- II

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C301.1	3	3	2	3	2							3		

C301.2	3	3	2	3	2							3	3	
C301.3	3	3	2	3	2							3	3	
C301.4	3	3	2	3	2							3	3	
C301.5	3	3	2	3	2							3	3	
Average	3	3	2	3	2							3	3	
C301	3	3	2	3	2							3	3	

Course Name: C302 - ME8593 Design of Machine Elements

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C302.1	3	3	3	2								1		3
C302.2	3	3	3	3								1		3
C302.3	3	2	3	3								1		3
C302.4	3	3	3	2								1		3
C302.5	3	2	3	2		1	1			1		1		2
Average	3	2.6	3	2.4		1.0	1			1		1		2.8
C302	3	3	3	3		1	1			1		1		3

Course Name: C303 - ME8501 Metrology and Measurements

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C303.1	2									1		2		3
C303.2	2	2		1						1		2		3
C303.3	2					1				1		2		3
C303.4	2									1		2		3
C303.5	2						1			1		2	2	
Average	2	2		1		1	1			1		2	2	3
C303	2	2		1		1	1			1		2	2	3

Course Name: C304 - ME8594 Dynamics of Machines

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C304.1	3	2	3	2						1				2
C304.2	3	3	2	2	1									3
C304.3	3	3	3	2	1									2
C304.4	3	2	3	3	1									2
C304.5	3	3	2	2	1							1		3
Average	3	2.6	2.6	2.2	1					1		1		2.4
C304	3	3	3	3	1					1		1		3

Course Name: C306 - ME8511 Kinematics and Dynamics Laboratory

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C306.1	2	3	3	2										2
C306.2	3	3	1	2			1							3
C306.3	2	2	3	2		1								2
C306.4	3	3	2	2										2
C306.5	2	2	3	2		1	1							3
Average	2.4	2.6	2.4	2		1	1.0							2.4
C306	3	3	3	2		1	1							3

Course Name: C307 - ME8512 Thermal Engineering Laboratory

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C307.1	3	3		3	2							2	3	
C307.2	3	3		3	2							2	3	
C307.3	3	3		3	2							2	3	
C307.4	3	3		3	2							2	3	
C307.5	3	3		3								2	3	
Average	3	3		3	2							2	3	
C307	3	3		3	2							2	3	

Course Name: C308 - ME8513 Metrology and Measurements Laboratory

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C308.1	2	2	1			1	1			1				2
C308.2	2	2	1											3
C308.3	2	2	1											2
C308.4	3	3	2											2
C308.5	3	3	1	1					2			2		3
Average	2.4	2.4	1.2	1		1	1		2	1		2		2.2
C308	3	3	2	1		1	1		2	1		2		3

Semester –VI

Course Name: C309 - ME8651 Design of Transmission Systems

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C309.1	3	3	3	2		1	1	3				2		2
C309.2	3	3	3	2		1		3				2		3
C309.3	3	3	3	3		1		3				2		2
C309.4	3	3	3	3		1	1	3		1		2		3
C309.5	3	3	3	3		1	1	3				2		2
Average	3	3	3	3		1	1	3		1		2		3
C309	3	3	3	3		1	1	3		1		2		3

Course Name: C310 - ME8691 Computer Aided Design and Manufacturing

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C310.1	3	3	2	2	2							1		3
C310.2	3	3			1									3
C310.3	3	3			2									3
C310.4	3		3	3	3	2						3		3
C310.5	3			2	3	2	2	2	3					3
Average	3	3	3	3	3	2	2	2	3			3		3
C310	3	3	3	3	3	2	2	2	3			3		3

Course Name: C311 - ME8693 Heat and Mass Transfer

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C311.1	3	2	2	2									3	
C311.2	3	2	2	2									3	

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C311.3	2	3	2	2									3	
C311.4	2	3	2	2									3	
C311.5	3	2	2	1		1	1					1	3	
Average	2.6	2.4	2	1.8		1	1					1	3	
C311	**3**	**3**	**2**	**2**		**1**	**1**					**1**	**3**	

Course Name: C312 - ME8692 Finite Element Analysis

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C312.1	3	3	3									2		3
C312.2	3	3	2				2					2		3
C312.3	3	3	2									2		3
C312.4	3	3	2									2		3
C312.5	3	3	2			2						2		3
Average	3	3	2.2			2	2					2		3
C312	**3**	**3**	**3**			**2**	**2**					**2**		**3**

Course Name: C313 - ME8694 Hydraulics and Pneumatics

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C313.1	3													
C313.2	3													
C313.3	3													2
C313.4	3	2	3		2							2		3
C313.5	3	2	2	2								2		
Average	3	2	2.67	2	2							2		2.67
C313	**3**	**2**	**3**	**2**	**2**							**2**		**3**

Course Name: C315 - ME8681 CAD / CAM Laboratory

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C315.1	3		3	3	3									3
C315.2	3		3	3	3									3
C315.3	3		1	2										3
C315.4	3	2	2	2	3									3
C315.5	3	2	2	2	3			2						3
Average	3	2.40	2.2	2.5	3			2						3
C315	**3**	**3**	**3**	**3**	**3**			**2**						**3**

Course Name: C316 - ME8682 Design and Fabrication Project

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C316.1	3	2	2	1	2	2	2	1	2	3	3	3	3	2
C316.2	3	2	3	2	2	2	2	2	2	3	3	3	3	3
C316.3	2	2	2	1	2	2	3	2	3	3	2	2	2	3
C316.4	3	2	2	2	3	2	3	1	2	3	2	2	2	2
C316.5	2	1	1	1	3	2	2	2	3	3	3	2	2	2
Average	2.6	1.8	2	1.4	2.4	2	2.4	1.6	2.4	3	2.6	2.4	2.4	2.4
C316	**3**	**2**	**2**	**2**	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**3**	**3**	**3**

Course Name: C3187- HS8581 Professional Communication

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C317.1								3	3	3		3		
C317.2								3	3	3		3		
C317.3								3	3	3		3		
C317.4								3	3	3		3		
C317.5								3	3	3		3		
Average								3	3	3		3		
C317								**3**	**3**	**3**		**3**		

Semester –VII

Course Name: C401 - ME8792 Power Plant Engineering

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C401.1	3	2	2			2	3						3	
C401.2	3	2	2	2		2	2						3	
C401.3	3	2	2	3		3	3						3	
C401.4	3	2	2	2		2	2						3	
C401.5	3	2	3			2	3						3	
Average	3	2	2.2	2.3		2.2	2.6						3	
C401	**3**	**2**	**3**	**3**		**3**	**3**						**3**	

Course Name: C402 - ME8793 Process Planning and Cost Estimation

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C402.1	2			3										2
C402.2	2													1
C402.3	2	3												
C402.4	2	3	3	3								2		
C402.5	2	3	3	3		2	2					2		
Average	2	3	3	3		2	2					2		1.5
C402	**2**	**3**	**3**	**3**		**2**	**2**					**2**		**2**

Course Name: C403 - ME8791 Mechatronics

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C403.1	3	3	3	3										2
C403.2	3	3	3	2										2
C403.3	2	2	3	2										2
C403.4	3	3	2	3										2
C403.5	3	2	3	2	3							2		3
Average	2.8	2.6	2.8	2.4	3							2		3
C403	**3**	**3**	**3**	**3**	**3**							**2**		**3**

Course Name: C407 - ME8711 Simulation and Analysis Laboratory

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C407.1	3	2	3	2	3							2		3

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C407.2	3	3	3	3	3							2		3
C407.3	3	3	3	2	2							2		3
C407.4	3	3	3	3	2							2	3	
C407.5	3	3	3	3	3							2		3
Average	3	2.8	3	2.6	2.6							2	3	3
C407	3	3	3	3	3							2	3	3

Course Name: C408 - ME8781 Mechatronics Laboratory

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C408.1	3	2	3	3	3								3	2
C408.2	2	2	3	3	2								2	3
C408.3	2	3	3	3	2								2	2
C408.4	3	3	3	3	2								2	2
C408.5	3	3	3	2	3							2	3	3
Average	2.6	2.6	3	2.8	2.4							2	2.4	2.4
C408	3	3	3	3	3							2	3	3

Course Name: C409 - ME8712 Technical Seminar

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C409.1								3	3	3		3		
C409.2								3	3	3		3		
C409.3	3							3	3	3		3		3
C409.4								3	3	3		3		
C409.5								3	3	3		3		
Average	3							3	3	3		3		3
C409	3							3	3	3		3		3

Semester –VIII

Course Name: C410 - MG8591 Principles of Management

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C410.1						2	2	2		2	2			
C410.2							2	2		2	2			
C410.3						2	2	2	2	2	2			
C410.4								2	2	2		2		
C410.5								2		3	3			2
Average						2	2	2	2	3	3	2		2
C410						2	2	2	2	3	3	2		2

Course Name: C412 – ME811 Project Work

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C411.1	3	3	3	3		1		1	2	2	3	3	3	3
C411.2	3	3	3	3		1		1	2	2	3	3	3	3
C411.3	3	3	3	3		1	2	1	2	2	3	3	3	3
C411.4	3	3	3	3		1	2	1	2	2	3	3	3	3

C411.5	3	3	3	3	3	1	2	1	2	2	3	3	3	3
Average	3	3	3	3	3	1	2	1	2	2	3	3	3	3
C411	3	3	3	3	3	1	2	1	2	2	3	3	3	3

Elective – I (Semester –VI)

Course Name: C314- ME8091 Automobile Engineering

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C305.1	3	3	3	3	2									
C305.2	3			2	3							1		
C305.3	3	2	3	2	2							1		
C305.4	3	3	2		2							1		
C305.5	3	3	3	3								1		
Average	3	2.75	2.75	2.5								1		
C305	3	3	3	3	2							1		

Course Name: C314- PR8592 Welding Technology

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C305.1	3												3	
C305.2	3	2				1	1						3	
C305.3	3												3	2
C305.4	3			2									3	
C305.5	3	2	2	2								1	3	2
Average	3	2	2	2		1	1					1	3	2
C305	3	2	2	2		1	1					1	3	2

Course Name: C314- ME8096 Gas Dynamics and Jet Propulsion

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C305.1	3	3	3	2								2	3	
C305.2	3	3	3	2								2	3	
C305.3	3	3	3	2								2	3	
C305.4	3	3	3			2						2	3	
C305.5	3	3	3			2						2	3	
Average	3	3	3	2		2						2	3	
C305	3	3	3	2		2						2	3	

Course Name: C314- GE8075 Intellectual Property Rights

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C305.1						3	2	1				1		
C305.2						3	2					1		
C305.3						3	2	1				1		
C305.4						3	2	1				1		
C305.5						3	2	1				1		
Average						3	2	1				1		
C305						3	2	1				1		

Course Name: C314- GE8073 Fundamentals of Nano Science

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C305.1	2		3	3	2	3	2			2	1	3	3	2
C305.2	2	3	3	2	3	3	3	2		2	2	2	3	
C305.3			3	2	3	3	2	2		2	1		2	
C305.4	3	3	2	3	3	3	2			3	2	1	2	2
C305.5	2	3	3	2	3	2	2	3		1	2	1	3	2
Average	3	3	3	3	3	3	3	3		2	2	2	3	2
C305	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**		**2**	**2**	**2**	**3**	**2**

Elective – II (Semester –VII)

Course Name: C405- ME8071 Refrigeration and Air conditioning

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C405.1	3	3	3	2		2	3			3		3		
C405.2	3	3	3	3	2	2	2		2	2		2		
C405.3	3			2		2	2	2		2		2	2	
C405.4	3	3	3	3	2	3	2		2	2		2	2	
C405.5	3	3	3	3	3	2	3	2	2	2		3		
Average	3	3	3	3	3	3	3	2	2	3		3	2	
C405	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**3**		**3**	**2**	

Course Name: C405- ME8072 Renewable Sources of Energy

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C405.1	3	2	2			2	3			2	2	2	2	
C405.2	2	2	2		2	3	3		2	2	2	2		1
C405.3	3	2				3	3			2	2	2		
C405.4	2	2		2	2	2	3			2	2	2		
C405.5	2			2		2	3			2		2		
Average	3	2	2	2	2	3	3		2	2	2	2	2	1
C405	**3**	**2**	**2**	**2**	**2**	**3**	**3**		**2**	**2**	**2**	**2**	**2**	**1**

Course Name: C405- ME8098 Quality Control and Reliability Engineering

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C405.1	3	2	3	2	2		2		2			2	2	2
C405.2	3	2			2	2	2	2		2		2	2	3
C405.3	3	3	3	2	3	2	2		2		2	2	2	2
C405.4	3	3	3	2	3	2	2		2		2		2	2
C405.5	3				2	2	2		2		2	2		
Average	3	2.5	3	2	2.4	2	2	2	2	2	2	2	2	2.25
C405	**3**	**3**	**3**	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**

Course Name: C405-ME8073 Unconventional Machining Processes

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C405.1	1											1	1	2

C405.2	3	2	2	2								1		3
C405.3	3		2	2								1	2	2
C405.4	3	2	1	2								1		2
C405.5	3	2	2	2								1	3	2
Average	2.6	2	1.75	2								1	2.0	2.2
C405	**3**	**2**	**2**	**2**								**1**	**2**	**3**

Course Name: C405-MG8491 Operations Research

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C405.1	2	2	2		2		2	2		2	2	2	2	2
C405.2	2	2	2	2		3	3			2		2	2	2
C405.3	3	2		2	2		2		2	2		2	3	3
C405.4	2	2		2		2	2	2		2	2	3		2
C405.5	2	3	2		2		2		2	2		2	2	3
Average	3	3	2	2	2	3	3	2	2	2	2	3	3	3
C405	**3**	**3**	**2**	**2**	**2**	**3**	**3**	**2**	**2**	**2**	**2**	**3**	**3**	**3**

Course Name: C405-MF8071 Additive Manufacturing

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C405.1	3		3	2	2		2				2	2	3	
C405.2	3	2	2		2		2				2		3	2
C405.3	3		2	2	2		2				2	2	3	2
C405.4	3		2	2	2	2	2				2		3	
C405.5	3	2		2	2	2	2				2	2	3	3
Average	3	2	3	2	2	2	2				2	2	3	3
C405	**3**	**2**	**3**	**2**	**2**	**2**	**2**				**2**	**2**	**3**	**3**

Course Name: C405- GE8077 Total Quality Management

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C405.1			2			2	2	2	3	3		2		
C405.2								3	3	3	2	2		1
C405.3				2	1						2	2		
C405.4			3	2	1		2							
C405.5			3	2		3	3	3		2		2		
Average			2.3	2	1	3	3	2.25	2.4	3	2	2		1
C405			**3**	**2**	**1**	**3**	**3**	**3**	**3**	**3**	**2**	**2**		**1**

Elective – III (Semester –VII)

Course Name: C406- ME8099 Robotics

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C406.1	3	2	3	2										2
C406.2	3	3	3	2	3									2
C406.3	3	1	1	2	3									2

C406.4	3	3	3	2	2									
C406.5	3	3	3	2										2
Average	3	2.4	2.6	2	2.67							1		2
C406	**3**	**3**	**3**	**2**	**3**							**1**		**2**

Course Name: C406- ME8095 Design of Jigs, Fixtures and Press Tools

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C406.1	3	3	3							3		2		3
C406.2	3	3	3							3		2		3
C406.3	3	3	3		3	3				3		2		3
C406.4	3	3	3		3	3				3		2		3
C406.5	3	3	3		3	3				3		2		3
Average	3	3	3		3	3				3		2		3
C406	**3**	**3**	**3**		**3**	**3**				**3**		**2**		**3**

Course Name: C406- ME8093 Computational Fluid Dynamics

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C406.1	3	2							2			2		3
C406.2	3	3	3	2	3	2	2					3		3
C406.3	3	3			3	2						3		3
C406.4	3	3	2	2	3							3		2
C406.5	3	2		3	2							2		3
Average	3	3	3	3	3	2	2		2			3		2.8
C406	**3**	**3**	**3**	**3**	**3**	**2**	**2**		**2**			**3**		**3**

Course Name: C406- ME8097 Non Destructive Testing and Evaluation

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C406.1		2	3	2	3	3	2	2				3	3	2
C406.2	2	2	3	3	2	3	3	3		3	2	3	2	
C406.3	2	3	3	3	2	3	3	3		2	3	2	2	2
C406.4	2	3	3		2	3		3				3	2	2
C406.5		3	3	2	3	3	2	3		2	3	3	2	2
Average	2	3	3	3	3	3	3	3		3	3	3	3	2
C406	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**		**3**	**3**	**3**	**3**	**2**

Course Name: C406- ME8092 Composite Materials and Mechanics

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C406.1	3				2		2				2	2	2	
C406.2	3			2		2	2				2	2	2	
C406.3	3	2		2		2	2				2	2	2	
C406.4	3		2	2		2	2				2	2	2	
C406.5	3	2	3			2	2				2	2	3	
Average	3	2	3	2	2	2	2				2	2	2.2	
C406	**3**	**2**	**3**	**2**	**2**	**2**	**2**				**2**	**2**	**3**	

Course Name: C406- GE8074 Human Rights

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C406.1						2	3	3	2			2		
C406.2						2	3	3	2			2		
C406.3							3	3	2			2		
C406.4							3	3	2			2		
C406.5							3	3	2			2		
Average						1	3	3	2			2		
C406						**1**	**3**	**3**	**2**			**2**		

Course Name: C406- GE8071 Disaster Management

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C406.1	3			3	2	3	3			3		3		
C406.2	3			3		2	2			3		3		
C406.3	3			2	2	3	3			3		3		2
C406.4	3			2		2	2			2		3		
C406.5	3			3	2	3	3			3		3		2
Average	3			3	2	3	3			3		3		2
C406	**3**			**3**	**2**	**3**	**3**			**3**		**3**		**2**

Elective – IV (Semester –VIII)

Course Name: C411- IE8693 Production Planning and Control

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C411.1	2	2	2	3										3
C411.2	2	3	2	3										3
C411.3	2	1	1	3										3
C411.4	2	3	2	3										3
C411.5	2	3	2	3										3
Average	2	2.6	1.8	3										3
C411	**2**	**3**	**2**	**3**										**3**

Course Name: C411- MG8091 Entrepreneurship Development

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C411.1	2	2	2			2		2	2	2		2		2
C411.2	2	2			2	2		2	2	2		2		2
C411.3		2	2	2	2			2	2	2	2			
C411.4		3	2			2		2	2	2	2	2	2	2
C411.5		2				3	2	3	2	2	2	2		
Average	2	3	2	2	2	3	2	3	2	2	2	2	2	2
C411	**2**	**3**	**2**	**2**	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**2**

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Course Name: C411- ME8094 Computer Integrated Manufacturing Systems

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C411.1	3	2	2	3										3
C411.2	3	2	3	3	2									3
C411.3	3	3	3	3	2									2
C411.4	3	2	2	2	3									2
C411.5	3	2	2	2	3									2
Average	3	2.2	2.4	2.6	3									2.8
C411	3	3	3	3	3									3

Course Name: C411- ME8074 Vibration and Noise Control

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C411.1	3											2		1
C411.2	3	1	1		1							1		1
C411.3	3					1	1							
C411.4	3					1	1							
C411.5	3	2	2	2	2	1	1							1
Average	3	2	2	2	2	1	1					2		1
C411	3	2	2	2	2	1	1					2		1

Course Name: C411- EE8091 Micro Electro Mechanical Systems

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C411.1	3	2	3	2	3	2	2				2	2	2	2
C411.2	3		3		3		2	2		2		2		3
C411.3	2	2	2	2			3			2		2	3	
C411.4	3	3	3	2	2	2				2		2		2
C411.5	3	3	2	3	2	3		2			2	2	2	
Average	2.8	2.5	2.6	2.25	2.5	2.33	2.33	2		2	2	2	2.33	2.33
C411	3	3	3	3	3	3	3	2		2	2	2	3	3

Course Name: C411- GE8076 Professional Ethics in Engineering

PO / CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
C411.1							2	3						
C411.2						3	2	3	3	2				1
C411.3						3	3	3	3					1
C411.4						2		3						
C411.5								3	3		3			
Average						2.67	2.33	3	3	2	3			1
C411						3	3	3	3	2	3			1

Programme Coordinator

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Department of Mechanical Engineering

Program Level CO – PO &PSO Mapping – Regulation 2017

SLNo	Course Code	Subject Code	Course Name	PO												PSO	
				1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	C101	HS8151	Communicative English	-	-	-	-	-	-	-	3	3	3	-	3	1	1
2	C102	MA8151	Engineering Mathematics - I	3	3	2	3	-	-	-	-	3	-	-	2	2	2
3	C103	PH8151	Engineering Physics	3	3	3	3	-	2	-	-	-	2	-	2	2	2
4	C104	CY8151	Engineering Chemistry	3	2	2	-	2	2	3	-	-	-	-	2	-	-
5	C105	GE8151	Problem Solving and Python Programming	3	2	1	1	1	1	-	-	-	-	-	1	3	1
6	C106	GE8152	Engineering Graphics	3	3	3	3	3	-	-	-	1	-	-	2	-	2
7	C107	GE8161	Problem Solving and Python Programming Laboratory	3	3	3	-	3	-	-	3	3	3	-	3	3	1
8	C108	BS8161	Physics and Chemistry Laboratory	3	3	2	2	2	1	1	-	-	-	-	1	1	1
9	C109	HS8251	Technical English	-	-	-	-	-	-	-	3	3	3	-	3	-	1
10	C110	MA8251	Engineering Mathematics - II	3	3	2	3	1	-	-	-	3	-	1	2	2	1
11	C111	PH8251	Materials Science	3	3	3	3	-	2	-	-	-	2	-	2	-	-
12	C112	BE8253	Basic Electrical, Electronics and Instrumentation Engineering	3	2	1	1	-	-	-	-	-	-	-	1	-	-
13	C113	GE8291	Environmental Science and Engineering	3	3	2	1	1	3	3	1	-	-	-	1	-	-
14	C114	GE8292	Engineering Mechanics	3	3	2	3	-	1	-	-	-	-	-	3	-	1
15	C115	GE8261	Engineering Practices Laboratory	2	-	2	-	-	-	1	-	2	-	-	1	-	-
16	C116	BE8261	Basic Electrical, Electronics and Instrumentation Engineering Laboratory	3	2	3	2	2	-	-	-	1	-	-	2	-	-
17	C117	MA8353	Transforms and Partial Differential Equations	3	2	2	2	1	-	-	-	3	-	1	2	3	2
18	C201	ME8391	Engineering Thermodynamics	3	3	3	2	-	1	-	-	-	2	-	-	3	-
19	C202	CE8394	Fluid Mechanics and Machinery	3	3	3	3	-	-	-	-	-	-	-	2	1	-
20	C203	ME8351	Manufacturing Technology - I	3	-	-	-	2	-	-	-	-	-	-	2	1	1
21	C204	EE8353	Electrical Drives and Controls	2	-	-	-	1	-	1	-	-	-	-	2	1	2

22	C205	ME8361	Manufacturing Technology Laboratory - I	3	-	-	-	2	2	-	-	-	-	-	-	-	2
23	C206	ME8381	Computer Aided Machine Drawing	3	2	2	-	3	2	-	-	-	-	-	3	-	3
24	C207	EE8361	Electrical Engineering Laboratory	3	3	2	3	3	3	-	-	3	-	-	3	1	2
25	C208	HS8381	Interpersonal Skills / Listening & Speaking	-	-	-	-	-	-	-	3	3	3	-	3	-	-
26	C209	MA8452	Statistics and Numerical Methods	3	3	2	2	-	-	-	-	3	-	-	2	2	2
27	C210	ME8492	Kinematics of Machinery	3	3	2	3	2	-	-	-	-	-	-	-	-	3
28	C211	ME8451	Manufacturing Technology – II	3	-	-	2	1	1	1	-	-	-	-	1	1	3
29	C212	ME8491	Engineering Metallurgy	3	-	-	-	3	-	-	-	-	2	-	1	3	-
30	C213	CE8395	Strength of Materials for Mechanical Engineers	3	3	3	3	-	-	-	-	-	-	-	-	-	2
31	C214	ME8493	Thermal Engineering- I	3	3	-	3	2	-	-	-	-	-	-	2	3	-
32	C215	ME8462	Manufacturing Technology Laboratory – II	3	2	-	2	2	-	-	-	-	-	-	-	1	3
33	C216	CE8381	Strength of Materials and Fluid Mechanics and Machinery Laboratory	3	2	3	-	-	-	-	-	-	-	-	3	-	-
34	C217	HS8461	Advanced Reading and Writing	-	-	-	-	-	-	-	3	3	3	-	3	-	-
35	C218	ME8595	Thermal Engineering- II	3	3	2	3	2	-	-	-	-	-	-	3	3	-
36	C301	ME8593	Design of Machine Elements	3	3	3	3	-	1	1	-	-	1	-	1	-	3
37	C302	ME8501	Metrology and Measurements	2	2	-	1	-	1	1	-	-	1	-	2	2	3
38	C303	ME8594	Dynamics of Machines	3	3	3	3	1	-	-	-	-	1	-	1	-	3
39	C304		Open Elective I														
40	C305	ME8511	Kinematics and Dynamics Laboratory	3	3	3	2	-	1	1	-	-	-	-	-	-	3
41	C306	ME8512	Thermal Engineering Laboratory	3	3	-	3	2	-	-	-	-	-	-	2	3	-
42	C307	ME8513	Metrology and Measurements Laboratory	3	3	2	1	-	1	1	-	2	1	-	2	-	3
43	C308	ME8651	Design of Transmission Systems	3	3	3	3	-	1	1	3	-	1	-	2	-	3
44	C309	ME8691	Computer Aided Design and Manufacturing	3	3	3	3	3	2	2	2	3	-	-	3	-	3
45	C310	ME8693	Heat and Mass Transfer	3	3	2	2	-	1	1	-	-	-	-	1	3	-
46	C311	ME8692	Finite Element Analysis	3	3	3	-	-	2	2	-	-	-	-	2	-	3
47	C312	ME8694	Hydraulics and Pneumatics	3	2	3	2	2	-	-	-	-	-	-	1	-	3
48	C313		Professional Elective - I														

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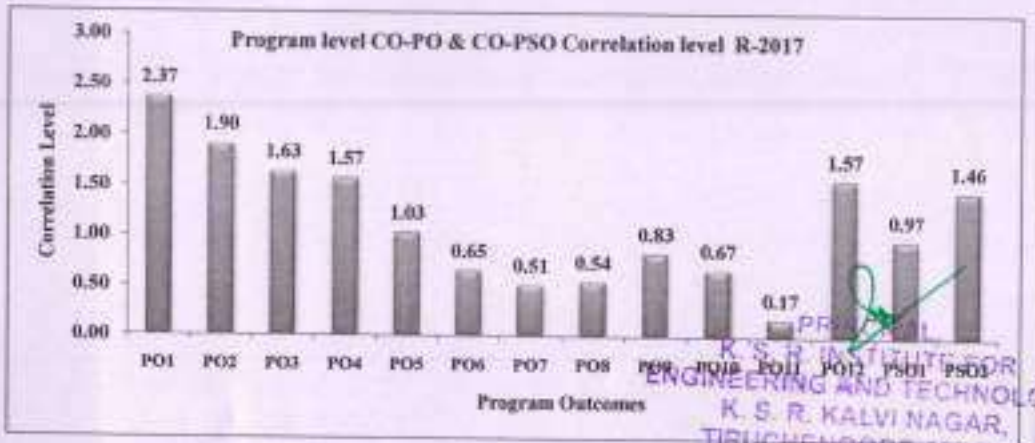
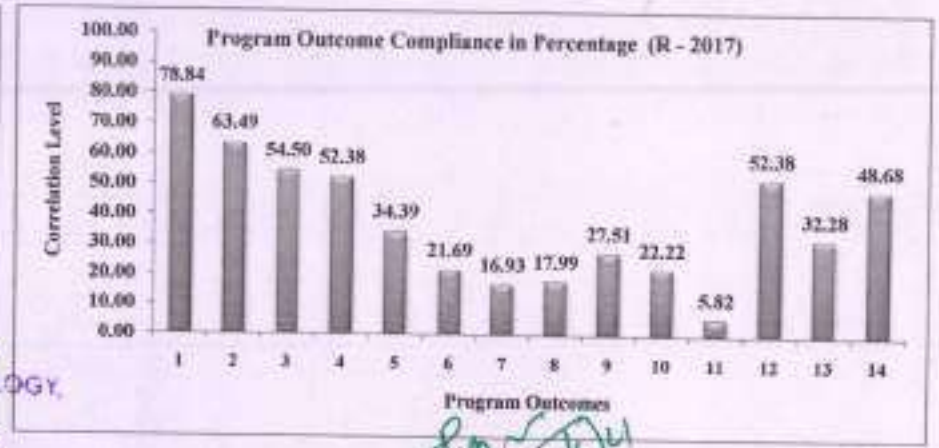
49	C314	ME8681	CAD / CAM Laboratory	3	3	3	3	3	-	-	2	-	-	-	-	-	3
50	C315	ME8682	Design and Fabrication Project	3	2	2	2	3	2	3	2	3	3	3	3	3	3
51	C316	HS8581	Professional Communication	-	-	-	-	-	-	-	3	3	3	-	3	-	-
52	C317	ME8792	Power Plant Engineering	3	2	3	3	-	3	3	-	-	-	-	-	3	-
53	C318	ME8793	Process Planning and Cost Estimation	2	3	3	3	-	2	2	-	-	-	-	2	-	2
54	C401	ME8791	Mechatronics	3	3	3	3	3	-	-	-	-	-	-	2	-	3
55	C402		Open Elective - II														
56	C403		Professional Elective – II														
57	C404		Professional Elective – III														
58	C405	ME8711	Simulation and Analysis Laboratory	3	3	3	3	3	-	-	-	-	-	-	2	3	3
59	C406	ME8781	Mechatronics Laboratory	3	3	3	3	3	-	-	-	-	-	-	2	3	3
60	C407	ME8712	Technical Seminar	3	-	-	-	-	-	-	3	3	3	-	3	-	3
61	C408	MG8591	Principles of Management	-	-	-	-	-	2	2	2	2	3	3	2	-	2
62	C409		Professional Elective– IV														
63	C410	ME8811	Project Work	3	3	3	3	3	1	2	1	2	2	3	3	3	3
			Total	**149**	**120**	**103**	**99**	**65**	**41**	**32**	**34**	**52**	**42**	**11**	**99**	**61**	**92**

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
2.37	1.90	1.63	1.57	1.03	0.65	0.51	0.54	0.83	0.67	0.17	1.57	0.97	1.46
78.84	63.49	54.50	52.38	34.39	21.69	16.93	17.99	27.51	22.22	5.82	52.38	32.28	48.68





Programme Coordinator

ANNA UNIVERSITY, CHENNAI
AFFILIATED INSTITUTIONS
B.TECH. INFORMATION TECHNOLOGY
REGULATIONS – 2017
CHOICE BASED CREDIT SYSTEM
I - VIII SEMESTERS CURRICULA

SEMESTER I

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	HS8151	Communicative English	HS	4	4	0	0	4
2.	MA8151	Engineering Mathematics - I	BS	4	4	0	0	4
3.	PH8151	Engineering Physics	BS	3	3	0	0	3
4.	CY8151	Engineering Chemistry	BS	3	3	0	0	3
5.	GE8151	Problem Solving and Python Programming	ES	3	3	0	0	3
6.	GE8152	Engineering Graphics	ES	6	2	0	4	4
PRACTICALS								
7.	GE8161	Problem Solving and Python Programming Laboratory	ES	4	0	0	4	2
8.	BS8161	Physics and Chemistry Laboratory	BS	4	0	0	4	2
			TOTAL	**31**	**19**	**0**	**12**	**25**

SEMESTER II

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	HS8251	Technical English	HS	4	4	0	0	4
2.	MA8251	Engineering Mathematics - II	BS	4	4	0	0	4
3.	PH8252	Physics for Information Science	BS	3	3	0	0	3
4.	BE8255	Basic Electrical, Electronics and Measurement Engineering	ES	3	3	0	0	3
5.	IT8201	Information Technology Essentials	PC	3	3	0	0	3
6.	CS8251	Programming in C	PC	3	3	0	0	3
PRACTICALS								
7.	GE8261	Engineering Practices Laboratory	ES	4	0	0	4	2
8.	CS8261	C Programming Laboratory	PC	4	0	0	4	2
9.	IT8211	Information Technology Essentials Laboratory	PC	2	0	0	2	1
			TOTAL	**30**	**20**	**0**	**10**	**25**

SEMESTER III

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	MA8351	Discrete Mathematics	BS	4	4	0	0	4
2.	CS8351	Digital Principles and System Design	ES	4	4	0	0	4
3.	CS8391	Data Structures	PC	3	3	0	0	3
4.	CS8392	Object Oriented Programming	PC	3	3	0	0	3
5.	EC8394	Analog and Digital Communication	PC	3	3	0	0	3
PRACTICALS								
6.	CS8381	Data Structures Laboratory	PC	4	0	0	4	2
7.	CS8383	Object Oriented Programming Laboratory	PC	4	0	0	4	2
8.	CS8382	Digital Systems Laboratory	ES	4	0	0	4	2
9.	HS8381	Interpersonal Skills/Listening & Speaking	EEC	2	0	0	2	1
			TOTAL	**31**	**17**	**0**	**14**	**24**

SEMESTER IV

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	MA8391	Probability and Statistics	BS	4	4	0	0	4
2.	CS8491	Computer Architecture	PC	3	3	0	0	3
3.	CS8492	Database Management Systems	PC	3	3	0	0	3
4.	CS8451	Design and Analysis of Algorithms	PC	3	3	0	0	3
5.	CS8493	Operating Systems	PC	3	3	0	0	3
6.	GE8291	Environmental Science and Engineering	HS	3	3	0	0	3
PRACTICALS								
7.	CS8481	Database Management Systems Laboratory	PC	4	0	0	4	2
8.	CS8461	Operating Systems Laboratory	PC	4	0	0	4	2
9.	HS8461	Advanced Reading and Writing	EEC	2	0	0	2	1
			TOTAL	**29**	**19**	**0**	**10**	**24**

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SEMESTER V

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	MA8551	Algebra and Number Theory	BS	4	4	0	0	4
2.	CS8591	Computer Networks	PC	3	3	0	0	3
3.	EC8691	Microprocessors and Microcontrollers	PC	3	3	0	0	3
4.	IT8501	Web Technology	PC	3	3	0	0	3
5.	CS8494	Software Engineering	PC	3	3	0	0	3
6.		Open Elective I	OE	3	3	0	0	3
PRACTICALS								
7.	EC8681	Microprocessors and Microcontrollers Laboratory	PC	4	0	0	4	2
8.	CS8581	Networks Laboratory	PC	4	0	0	4	2
9.	IT8511	Web Technology Laboratory	PC	4	0	0	4	2
			TOTAL	**31**	**19**	**0**	**12**	**25**

SEMESTER VI

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	IT8601	Computational Intelligence	PC	3	3	0	0	3
2.	CS8592	Object Oriented Analysis and Design	PC	3	3	0	0	3
3.	IT8602	Mobile Communication	PC	3	3	0	0	3
4.	CS8091	Big Data Analytics	PC	3	3	0	0	3
5.	CS8092	Computer Graphics and Multimedia	PC	3	3	0	0	3
6.		Professional Elective I	PE	3	3	0	0	3
PRACTICALS								
7.	CS8662	Mobile Application Development Laboratory	PC	4	0	0	4	2
8.	CS8582	Object Oriented Analysis and Design Laboratory	PC	4	0	0	4	2
9.	IT8611	Mini Project	EEC	2	0	0	2	1
10.	HS8581	Professional Communication	EEC	2	0	0	2	1
			TOTAL	**30**	**18**	**0**	**12**	**24**

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SEMESTER VII

Sl.No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	MG8591	Principles of Management	HS	3	3	0	0	3
2.	CS8792	Cryptography and Network Security	PC	3	3	0	0	3
3.	CS8791	Cloud Computing	PC	3	3	0	0	3
4.		Open Elective II	OE	3	3	0	0	3
5.		Professional Elective II	PE	3	3	0	0	3
6.		Professional Elective III	PE	3	3	0	0	3
PRACTICALS								
7.	IT8711	FOSS and Cloud Computing Laboratory	PC	4	0	0	4	2
8.	IT8761	Security Laboratory	PC	4	0	0	4	2
			TOTAL	**26**	**18**	**0**	**8**	**22**

SEMESTER VIII

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.		Professional Elective IV	PE	3	3	0	0	3
2.		Professional Elective V	PE	3	3	0	0	3
PRACTICALS								
3.	IT8811	Project Work	EEC	20	0	0	20	10
			TOTAL	**26**	**6**	**0**	**20**	**16**

TOTAL NO. OF CREDITS: 185

PROFESSIONAL ELECTIVES (PE)

SEMESTER VI

ELECTIVE - I

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	IT8076	Software Testing	PE	3	3	0	0	3
2.	CS8077	Graph Theory and Applications	PE	3	3	0	0	3
3.	IT8071	Digital Signal Processing	PE	3	3	0	0	3
4.	IT8001	Information Storage and Management	PE	3	3	0	0	3
5.	CS8072	Agile Methodologies	PE	3	3	0	0	3
6.	IT8072	Embedded Systems	PE	3	3	0	0	3
7.	GE8075	Intellectual Property Rights	PE	3	3	0	0	3

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SEMESTER VII
ELECTIVE - II

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	IT8002	Web Development Frameworks	PE	3	3	0	0	3
2.	CS8082	Machine Learning Techniques	PE	3	3	0	0	3
3.	IT8003	Formal Languages and Automata Theory	PE	3	3	0	0	3
4.	CS8081	Internet of Things	PE	3	3	0	0	3
5.	IT8075	Software Project Management	PE	3	3	0	0	3
6.	IT8074	Service Oriented Architecture	PE	3	3	0	0	3
7.	GE8077	Total Quality Management	PE	3	3	0	0	3

SEMESTER VII
ELECTIVE - III

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	CS8079	Human Computer Interaction	PE	3	3	0	0	3
2.	CS8073	C# and .Net Programming	PE	3	3	0	0	3
3.	CS8088	Wireless Adhoc and Sensor Networks	PE	3	3	0	0	3
4.	GE8072	Foundation Skills in Integrated Product Development	PE	3	3	0	0	3
5.	CS8071	Advanced Topics on Databases	PE	3	3	0	0	3
6.	GE8074	Human Rights	PE	3	3	0	0	3
7.	GE8071	Disaster Management	PE	3	3	0	0	3

SEMESTER VIII
ELECTIVE - IV

SI. No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	CS8085	Social Network Analysis	PE	3	3	0	0	3
2.	CS8086	Soft Computing	PE	3	3	0	0	3
3.	CS8074	Cyber Forensics	PE	3	3	0	0	3
4.	IT8073	Information Security	PE	3	3	0	0	3
5.	EC8093	Digital Image Processing	PE	3	3	0	0	3
6.	IT8004	Network Management	PE	3	3	0	0	3
7.	GE8076	Professional Ethics in Engineering	PE	3	3	0	0	3

SEMESTER VIII
ELECTIVE - V

SI.No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	CS8080	Information Retrieval Techniques	PE	3	3	0	0	3
2.	CS8078	Green Computing	PE	3	3	0	0	3
3.	CS8084	Natural Language Processing	PE	3	3	0	0	3
4.	IT8077	Speech Processing	PE	3	3	0	0	3
5.	IT8078	Web Design and Management	PE	3	3	0	0	3
6.	IT8005	Electronic Commerce	PE	3	3	0	0	3
7.	GE8073	Fundamentals of Nano Science	PE	3	3	0	0	3

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE OUTCOME

REGULATION – 2017

Semester - I

COURSE NAME: HS8151 COMMUNICATIVE ENGLISH	
C101.1	Readarticlesofageneral kindin magazinesandnewspapers.
C101.2	Participateeffectivelyininformalconversations;introducethemselvesandtheirfriends andexpressopinionsin English.
C101.3	ComprehendconversationsandshorttalksdeliveredinEnglish.
C101.4	WriteshortessaysofageneralkindandpersonallettersandemailsinEnglish.
C101.5	Develop hints into informative paragraphs with the ideas given in the hints.
COURSE NAME: MA8151 ENGINEERING MATHEMATICS - I	
C102.1	Solve maxima & minima problems using both the limit concept and rules of differentiation.
C102.2	Solve the problems based on maxima and minima for functions of two variables using partial derivative and total derivatives.
C102.3	Determine integrals using Riemann sums and techniques of integration such as, substitution, partial fractions and integration by parts and determine convergence/divergence of improper integrals.
C102.4	Acquire knowledge about evaluating double integrals and triple integrals and used to calculate area and volume.
C102.5	Apply various techniques in solving ordinary differential equations.
COURSE NAME: PH8151 ENGINEERING PHYSICS	
C103.1	Recognize the elastic properties of different materials.
C103.2	Solve problems related to engineering applications by using LASER and fibre optics techniques.
C103.3	Illustrate the modern applications of thermal insulation materials.
C103.4	Elaborate the dual nature of the light based on quantum theory.
C103.5	Apply the knowledge gained on crystal physics, structure of the crystal and preparation of crystal in various methods.
COURSE NAME: CY8151 ENGINEERING CHEMISTRY	
C104.1	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
C104.2	Critically evaluate adsorption isotherm in chemical equilibrium and chemical kinetics, including effects of pressure, temperature, catalysts.
C104.3	Prediction of equilibrium relations & their characterizations to construct phase diagrams and the alloy making.
C104.4	Differentiate between various fuels & analyze exhaust and flue gases.
C104.5	Have the knowledge of converting solar energy in to most needy electrical energy efficiently and economically to reduce the environmental pollution & design of energy storage devices.

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COURSE NAME: GE8151 PROBLEM SOLVING AND PYTHON PROGRAMMING	
C105.1	Develop algorithmic solutions to simple computational problems.
C105.2	Demonstrate programs using simple Python statements and expressions.
C105.3	Explain control flow and functions concept in Python for solving problems.
C105.4	Use Python data structures – lists, tuples & dictionaries for representing compound data.
C105.5	Explain files, exception, modules and packages in Python for solving problems.
COURSE NAME: GE8152 ENGINEERING GRAPHICS	
C106.1	Perform freehand sketching of basic geometrical constructions and multiple views of objects and plane curves.
C106.2	Project orthographic projections of lines and plane surfaces.
C106.3	Draw projections of solids for different position.
C106.4	Draw projections of section of solids and development of surfaces.
C106.5	Visualize and to project isometric and perspective sections of simple solids.
COURSE NAME: GE8161 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY	
C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs step-wise by defining functions and calling them.
C107.4	Use Python lists, tuples, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.
COURSE NAME: BS8161 PHYSICS AND CHEMISTRY LABORATORY	
C108.1	Determine the velocity and compressibility of ultrasonic wave using different medium.
C108.2	Find the young's modulus with different methods and rigidity modulus
C108.3	Find thermal conductivity of bad conductor and energy band of semiconductor.
C108.4	Understand the different types of hardness & alkalinities. Water quality criteria and standards of DO and Chloride.
C108.5	Analyze and understand the different types of electrodes and their usage in conductivity and in pH titrations.

Semester - II

COURSE NAME: HS8251 TECHNICAL ENGLISH	
C109.1	Readtechnical textsandwritearea-specific textseffortlessly.
C109.2	Listenandcomprehend lectures andtalksintheirareaofspecialisation successfully.
C109.3	Speak appropriately andeffectively in varied formalandinformal contexts.
C109.4	Write reportsandwinningjobapplications.
C109.5	ComprehendconversationsandshorttalksdeliveredinEnglish.
COURSE NAME: MA8251 ENGINEERING MATHEMATICS – II	
C110.1	Describe the concept of change quadratic form to canonical form and used in various fields of engineering.
C110.2	Describe the fundamentals in vector calculus and solve the problems related to multiple integrals.
C110.3	Solve the problems of conformal mapping and bilinear transformations related to engineering.
C110.4	Use the knowledge of complex integration with different techniques finding the integrals.
C110.5	Apply Laplace transforms techniques to solve ordinary differential equations.
COURSE NAME: PH8252 PHYSICS FOR INFORMATION SCIENCE	
C111.1	Discuss the concepts of classical, quantum free electron theory and calculate the carrier concentration in metals.
C111.2	Explain the basic of physics related to properties of semiconductor and its types to solve practical problems related to semiconductor materials used for engineering applications.
C111.3	Illustrate the magnetic material, optical data storage devices and its engineering applications.
C111.4	Solve the problems related to engineering applications by LED.
C111.5	Develop the basic concepts of carbon nanotubes and its applications.
COURSE NAME: BE8255 BASIC ELECTRICAL,ELECTRONICS AND MEASUREMENT ENGINEERING	
C112.1	Discuss the essentials of electric circuits and analysis.
C112.2	Explain the basic operation of electric machines and transformers.
C112.3	Know the Introduction of renewable sources and common domestic loads.
C112.4	Describe the various applications of op-amp, Semiconductor devices, Rectifier, D/A and A/D converters & Timer and Regulator ICs.
C112.5	Illustrate the concepts of measurement and metering for electric circuits.
COURSE NAME: IT8201 INFORMATION TECHNOLOGY ESSENTIALS	
C113.1	Design and deploy web.
C113.2	Design and deploy dynamic web.
C113.3	Describe the basics of networking.
C113.4	Describe the basics of mobile communications.
C113.5	Develop information systems.

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COURSE NAME: CS8251 PROGRAMING IN C	
C114.1	Develop simple applications in C using basic constructs.
C114.2	Design and implement applications using arrays and strings.
C114.3	Develop and implement applications in C using functions and pointers.
C114.4	Develop applications in C using structures.
C114.5	Design applications using sequential and random access file processing.
COURSE NAME: GE8251 ENGINEERING PRACTICES LABORATORY	
C115.1	Describe the carpentry components, plumbing works for Engineering Practices and applications.
C115.2	Discuss the importance of welding equipments; operations in smithy, foundry, and fitting shop and practice for assemble the Centrifugal pump and Air conditioner.
C115.3	Demonstrate and infer the concepts of house wiring and able to design and conduct experiments.
C115.4	Determine the energy in single phase circuit and measure the electrical quantities like current, voltage, resistance etc.
C115.5	Fabricate various electronic components and illustrate the behavior of various circuits like rectifier circuits, logic circuits etc.
COURSE NAME: CS8261 C PROGRAMMING LABORATORY	
C116.1	Develop C programs for simple applications.
C116.2	Design solutions making use of basic constructs, arrays and strings.
C116.3	Develop C programs involving functions and recursion.
C116.4	Implement concepts of pointers and structures for high-end applications.
C116.5	Design applications using sequential and random access file processing.
COURSE NAME: IT6212 – INFORMATION TECHNOLOGY ESSENTIALS LABORATORY	
C117.1	Design interactive websites using basic HTML tags, different styles, links and with all.
C117.2	Create client side and server side programs using scripts using PHP.
C117.3	Create applications with PHP connected to database.
C117.4	Implement the technologies behind computer networks and mobile communication.
C117.5	Create Personal Information System.

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Semester - III

COURSE NAME: MA8351 – DISCRETE MATHEMATICS	
C201.1	Acquire the concepts needed to test the logic of a program and apply the rules of inference and methods of proof.
C201.2	Compute numbers of possible outcomes of elementary combinatorial processes such as permutations and combinations. Derive closed-form and asymptotic expressions from series and recurrences for growth rates of processes.
C201.3	Apply graph theory models of data structures and state machines to solve problems of connectivity and constraint satisfaction, for example, scheduling.
C201.4	Acquire the concepts and properties of algebraic structures such as groups, rings and fields.
C201.5	Classify the functions which transform a finite set into another finite set which relates to input and output functions and identify structures on many levels in engineering.
COURSE NAME: CS8351 – DIGITAL PRINCIPLES AND SYSTEM DESIGN	
C202.1	Analyze different methods used for simplification of Boolean expressions.
C202.2	Design and implement combinational circuits using logic gates and write simple HDL codes for the circuits.
C202.3	Design and implement synchronous sequential circuits using flip-flops and write simple HDL codes for the circuits.
C202.4	Analysis and Design procedure for asynchronous sequential circuits.
C202.5	Describe the different types of memory devices and implement combinational circuits using PLDs.
COURSE NAME: CS8391 – DATA STRUCTURES	
C203.1	Implement abstract data types for linear data structures.
C203.2	Apply different linear data structures to problem solutions.
C203.3	Implement various tree data structures.
C203.4	Solve real world problems using graph techniques.
C203.5	Analyze various searching and sorting algorithms.
COURSE NAME: CS8392 – OBJECT ORIENTED PROGRAMMING	
C204.1	Develop Java programs using OOP principles.
C204.2	Develop Java programs with the concepts inheritance and interfaces.
C204.3	Build Java applications using exceptions and I/O streams.
C204.4	Develop Java applications with threads and generics classes.
C204.5	Develop interactive Java programs using swings.
COURSE NAME: EC8394 – ANALOG AND DIGITAL COMMUNICATION	
C205.1	Interpret analogcommunicationtechniques.
C205.2	Illustrate dataand pulsecommunicationtechniques.
C205.3	Infer digitalcommunicationtechniques.
C205.4	Analyze Source and Errorcontrolcoding.
C205.5	Summarize on multi-user radio communication.

COURSE NAME: CS8381 – DATA STRUCTURES LABORATORY	
C206.1	Implement linear and non-linear data structure operations.
C206.2	Design and implement various tree structures to solve problems.
C206.3	Analyze the performance of graph traversal algorithms.
C206.4	Compare the performance of various sorting and searching algorithms.
C206.5	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval.
COURSE NAME: CS8383 – OBJECT ORIENTED PROGRAMMING LABORATORY	
C207.1	Develop and implement Java programs for simple applications that make use of classes, packages and interfaces.
C207.2	Develop and implement Java programs with array list and exception handling.
C207.3	Develop and implement Java programs with multithreading.
C207.4	Design applications using file processing, generic programming and event handling.
C207.5	Develop Application using Graphical User Interface.
COURSE NAME: CS8382 – DIGITAL SYSTEMS LABORATORY	
C208.1	Analyze different methods used for simplification of Boolean expressions.
C208.2	Design and implement combinational circuits using logic gates and write simple HDL codes for the circuits.
C208.3	Design and implement synchronous sequential circuits using flip-flops and write simple HDL codes for the circuits.
C208.4	Analysis and Design procedure for asynchronous sequential circuits.
C208.5	Describe the different types of memory devices and implement combinational circuits using PLDs.
COURSE NAME: HS8381 – INTERPERSOANL SKILLS/LISTENING AND SPEAKING	
C209.1	Listenandrespondappropriately.
C209.2	Express opinions and make active participation ingroupdiscussions.
C209.3	Make effective presentations.
C209.4	Construct enquiries and responses confidentlyandappropriately in conversationsboth formal and informal.
C209.5	Show directions and give instructions.

Semester - IV

COURSE NAME: MA8391 – PROBABILITY AND STATISTICS	
C210.1	Acquire the knowledge of the fundamental concepts of probability and standard distributions which can describe real life phenomenon.
C210.2	Describe the basic concepts of one and two dimensional random variables and apply in engineering applications.
C210.3	Apply the concept of testing of hypothesis for small and large samples in real life problems.
C210.4	Apply the basic concepts of classifications of design of experiments in the field of agriculture and statistical quality control.
C210.5	Acquire the knowledge sampling distributions and statistical techniques used in engineering and management problems.

COURSE NAME: CS8491 – COMPUTER ARCHITECTURE	
C211.1	Identify the basics structure of computers, operations and instructions.
C211.2	Design arithmetic and logic unit.
C211.3	Illustrate pipelined execution and design control unit.
C211.4	Construct parallel processing architectures.
C211.5	Compare the various memory systems and I/O communication.
COURSE NAME: CS8492 – DATABASE MANAGEMENT SYSTEMS	
C212.1	Classify the modern and futuristic database applications based on size and complexity.
C212.2	Map ER model to Relational model to perform database design effectively.
C212.3	Write queries using normalization criteria and optimize queries.
C212.4	Compare and contrast various indexing strategies in different database systems.
C212.5	Appraise how advanced databases differ from traditional databases.
COURSE NAME: CS8451 – DESIGN AND ANALYSIS OF ALGORITHMS	
C213.1	Describe the fundamentals of algorithms and asymptotic performance analysis of recursive, Non- recursive algorithms.
C213.2	Describe the brute-force, divide and conquer algorithms and analyze the time and space complexity.
C213.3	Solve the problems on dynamic programming, greedy technique algorithms and measure the complexity.
C213.4	Illustrate the iterative improvement problems.
C213.5	Determine the complexity levels of branch-and-bound, back tracking, approximation algorithms.
COURSE NAME: CS8493 – OPERATING SYSTEMS	
C214.1	Interpret the basic concepts and functions of operating systems.
C214.2	Analyze various scheduling algorithms, deadlock, prevention and avoidance algorithms.
C214.3	Compare and contrast various memory management schemes.
C214.4	Apply the functionality of file systems.
C214.5	Perform administrative tasks on Linux Servers, iOS and Android Operating Systems.
COURSE NAME: GE8291 – ENVIRONMENTAL SCIENCE AND ENGINEERING	
C215.1	Describe the importance of environment, ecosystem & biodiversity.
C215.2	Characterize the impact of pollution & hazardous waste in a global, societal context.
C215.3	Explain the important role in conservation of natural resources for future generation.
C215.4	Identify contemporary issues that result in environmental degradation, its control measures.
C215.5	Summarize the issues of environment and human population in their professional undertakings.

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COURSE NAME: CS8481 – DATABASE MANAGEMENT SYSTEMS LABORATORY	
C216.1	Use typical data definitions and manipulation commands.
C216.2	Design applications to test Nested and Join Queries.
C216.3	Implement simple applications that use Views.
C216.4	Implement applications that require a Front-end Tool.
C216.5	Analyze the use of Tables, Views, Functions and Procedures.
COURSE NAME: CS8461 – OPERATING SYSTEMS LABORATORY	
C217.1	Compare the performance of various CPU Scheduling Algorithms.
C217.2	Implement Deadlock avoidance and Detection Algorithms.
C217.3	Implement Semaphores.
C217.4	Create processes and implement IPC.
C217.5	Analyze the performance of the various Page Replacement Algorithms and Implement File Organization and File Allocation Strategies.
COURSE NAME: HS8461 – ADVANCED READING AND WRITING	
C218.1	Write different types of essays.
C218.2	Write winning job applications.
C218.3	Read and evaluate texts critically.
C218.4	Display critical thinking in various professional contexts.
C218.5	Write letter of recommendation.

Semester – V

COURSE NAME: MA8551 ALGEBRA AND NUMBER THEORY	
C301.1	Apply the basic notions of groups, rings, fields which will then be used to solve related problems.
C301.2	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
C301.3	Demonstrate accurate and efficient use of advanced algebraic techniques.
C301.4	Demonstrate their mastery by solving non - trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text.
C301.5	Apply integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.
COURSE NAME:CS8591 COMPUTER NETWORKS	
C302.1	Recognize the basic layers and its functions in computer networks and Evaluate the performance of a network.
C302.2	Demonstrate the basics of how data flows from one node to another.
C302.3	Analyze and design routing algorithms.
C302.4	Design protocols for various functions in the network.
C302.5	Analyze the working of various application layer protocols.

COURSE NAME: EC8691 MICROPROCESSORS AND MICROCONTROLLERS	
C303.1	Execute programs based on 8086 microprocessor.
C303.2	Design Memory Interfacing circuits.
C303.3	Design and interface I/O circuits.
C303.4	Execute programs based on 8051 microcontroller.
C303.5	Design and implement 8051 microcontroller based systems.
COURSE NAME:IT8501 WEB TECHNOLOGY	
C304.1	Design simple web pages using markup languages like HTML and XHTML.
C304.2	Create dynamic web pages using DHTML and java script that is easy to navigate and use.
C304.3	Program server side web pages that have to process request from client side web pages.
C304.4	Represent web data using XML and develop web pages using JSP.
C304.5	Compare various web services and how these web services interact.
COURSE NAME: CS8494 SOFTWARE ENGINEERING	
C305.1	Identify the key activities in managing a software project.
C305.2	Compare different process models.
C305.3	Concepts of requirements engineering and Analysis Modeling.
C305.4	Apply systematic procedure for software design and deployment.
C305.5	Compare and contrast the various testing and maintenance.
COURSE NAME:EC8681 MICROPROCESSORS AND MICROCONTROLLERS LABORATORY	
C307.1	Write ALP Programmes for fixed and Floating Point and Arithmetic operations.
C307.2	Interface different I/Os with processor.
C307.3	Generate waveforms using Microprocessors.
C307.4	Execute Programs in 8051.
C307.5	Explain the difference between simulator and Emulator.
COURSE NAME:CS8581 NETWORK LABORATORY	
C308.1	Implement various protocols using TCP and UDP.
C308.2	Compare the performance of different transport layer protocols.
C308.3	Use simulation tools to analyze the performance of various network protocols.
C308.4	Analyze various routing algorithms.
C308.5	Implement error correction codes.

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COURSE NAME: IT8511 WEB TECHNOLOGY LABORATORY	
C309.1	Design simple web pages using markup languages like HTML and XHTML.
C309.2	Create dynamic web pages using DHTML and java script that is easy to navigate and use.
C309.3	Program server side web pages that have to process request from client side web pages.
C309.4	Represent web data using XML and develop web pages using JSP.
C309.5	Compare various web services and how these web services interact.

SEMESTER VI

COURSE NAME: IT8601 COMPUTATIONAL INTELLIGNCE	
C310.1	Provide a basic exposition to the goals and methods of Computational Intelligence.
C310.2	Demonstrate the design of intelligent computational techniques.
C310.3	Apply the Intelligent techniques for problem solving.
C310.4	Improve problem solving skills using the acquired knowledge in the areas of, reasoning, natural language understanding, computer vision, automatic programming and machine learning.
C310.5	Apply Computational Intelligence techniques primarily for machine learning.
COURSE NAME:CS8592 OBJECT ORIENTED ANALYSIS AND DESIGN	
C311.1	Express software design with UML diagrams.
C311.2	Design software applications using OO concepts.
C311.3	Identify various scenarios based on software requirements.
C311.4	Transform UML based software design into pattern based design using design patterns.
C311.5	Analyze the various testing methodologies for OO software.
COURSE NAME: IT8602 MOBILE COMMUNICATION	
C312.1	Explain the basics of mobile telecommunication system.
C312.2	Illustrate the generations of telecommunication systems in wireless network.
C312.3	Explain the architecture of Wireless LAN technologies.
C312.4	Determine the functionality of network layer and Identify a routing protocol for a given Ad hoc networks.
C312.5	Explain the functionality of Transport and Application layer.
COURSE NAME:CS8091 BIG DATA ANALYTICS	
C313.1	Work with big data tools and its analysis techniques.
C313.2	Analyze data by utilizing clustering and classification algorithms.
C313.3	Apply different mining algorithms and recommendation systems for large volumes of data.
C313.4	Perform analytics on data streams.
C313.5	UseNoSQL databases for applications.

COURSE NAME: CS8092 COMPUTER GRAPHICS AND MULTIMEDIA	
C314.1	Apply Illumination, color models and clipping techniques to graphics.
C314.2	Design two dimensional graphics and apply their transformations.
C314.3	Design three dimensional graphics and apply their transformations.
C314.4	Use different types of multimedia file format.
C314.5	Design basic 3d scenes using blender.
COURSE NAME:CS8662 MOBILE APPLICATION DEVELOBMENT LABORATORY	
C316.1	Develop mobile applications using GUI and Layouts.
C316.2	Develop mobile applications using Event Listener.
C316.3	Develop mobile applications using Databases.
C316.4	Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multithreading and GPS.
C316.5	Analyze and discover own mobile app for simple needs.
COURSE NAME:CS8562 OBJECT ORIENTED ANALYSIS AND DESIGN LABORATORY	
C317.1	Perform OO analysis and design for a given problem specification.
C317.2	Identify and map basic software requirements in UML mapping.
C317.3	Improve the software quality using design patterns and to explain the rationale behind applying specific design patterns.
C317.4	Develop code in appropriate with design.
C317.5	Test the compliance of the software with the SRS.
COURSE NAME: IT8611 MINI PROJECT	
C318.1	Analyze complex engineering problems through literature survey.
C318.2	Prepare Software Requirement Specification document based on requirement analysis.
C318.3	Design architecture to provide creative solutions to problems.
C318.4	Utilize the concepts of software development life cycle to implement the design by coding.
C318.5	Evaluate using testing techniques and create reports.
COURSE NAME: HS8581 PROFESSIONAL COMMUNICATION	
C319.1	Self enhancement with professional values.
C319.2	Make effective presentations.
C319.3	Participate confidently in Group Discussions.
C319.4	Attend job interviews and be successful in them.
C319.5	Develop adequate Soft Skills required for the workplace.

SEMESTER VII

COURSE NAME: MG8591 PRINCIPLES OF MANAGEMENT	
C320.1	Identify the various types of business organization, organization culture and environment.
C320.2	Use planning tools and techniques in application development.
C320.3	Demonstrate organization structure and performance management.
C320.4	Compare and contrast various theories of motivation.
C320.5	Evaluate various budgetary and non-budgetary control techniques.
COURSE NAME:CS8792 CRYPTOGRAPHY AND NETWORK SECURITY	
C401.1	Recognize the fundamentals of networks security, security architecture, threats and Vulnerabilities.
C401.2	Apply the different cryptographic operations of symmetric cryptographic algorithms.
C401.3	Apply the different cryptographic operations of public key cryptography.
C401.4	Apply the various Authentication schemes to simulate different applications.
C401.5	Compare and contrast various Security practices and System security standards.
COURSE NAME: CS8791 CLOUD COMPUTING	
C402.1	Articulate the main concepts, key technologies, strengths and limitations of cloud computing.
C402.2	Explain the key and enabling technologies that help in the development of cloud.
C402.3	Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models.
C402.4	Explain the core issues of cloud computing such as resource management and security.
C402.5	Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.
COURSE NAME: IT8711 FOSS AND CLOUD COMPUTING LABORATORY	
C406.1	Configure various virtualization tools such as Virtual Box, VMware workstation.
C406.2	Design and deploy a web application in a PaaS environment.
C406.3	Learn how to simulate a cloud environment to implement new schedulers.
C406.4	Install and use a generic cloud environment that can be used as a private cloud.
C406.5	Manipulate large data sets in a parallel environment.
COURSE NAME: IT 8761 SECURITY LABORATORY	
C407.1	Develop code for classical Encryption Techniques to solve the problems.
C407.2	Build cryptosystems by applying symmetric and public key encryption algorithms.
C407.3	Construct code for authentication algorithms.
C407.4	Develop a signature scheme using Digital signature standard.
C407.5	Demonstrate the network security system using open source tools.

SEMESTER VIII

COURSE NAME:IT8811 PROJECT WORK	
C410.1	Analyze complex engineering problems through literature survey.
C410.2	Prepare Software Requirement Specification document based on requirement analysis.
C410.3	Design architecture to provide creative solutions to problems.
C410.4	Utilize the concepts of software development life cycle to implement the design by coding.
C410.5	Evaluate using testing techniques and create reports.

PROFESSIONAL ELECTIVES
SEMESTER VI
ELECTIVES - I

COURSE NAME:IT8076 SOFTWARE TESTING	
C315.1	Design test cases suitable for a software development for different domains.
C315.2	Identify suitable tests to be carried out.
C315.3	Prepare test planning based on the document.
C315.4	Document test plans and test cases designed.
C315.5	Use automatic testing tools to develop and validate a test plan.
COURSE NAME:CS8077 GRAPH THEORY AND APPLICATION	
C321.1	Explain the basic concepts of graphs, and different types of graphs
C321.2	Demonstrate the properties and theorems with respect to trees.
C321.3	Apply suitable graph model for solving applications.
C321.4	Represent the graph and apply related theorems.
C321.5	Apply suitable graph algorithms to find shortest path.
COURSE NAME:IT8071 DIGITAL SIGNAL PROCESSING	
C322.1	Perform mathematical operations on signals.
C322.2	Perform sampling on continuous-time signals to get discrete time signal by applying advanced knowledge of the sampling theory.
C322.3	Transform the time domain signal into frequency domain signal and vice-versa.
C322.4	Apply the relevant theoretical knowledge to design the digital IIR/FIR filters for the given analog specifications.
C322.5	Implement the concepts of DSP in various applications.
COURSE NAME:IT8001 INFORMATION STORAGE AND MANAGEMENT	
C323.1	Illustrate the logical and physical components of a Storage infrastructure.
C323.2	Evaluate storage architectures, including storage subsystems, DAS, SAN, NAS, and CAS.
C323.3	Compare the various forms and types of Storage Virtualization.
C323.4	Describe the different role in providing disaster recovery and business continuity capabilities.
C323.5	Distinguish different remote replication technologies.

COURSE NAME:CS8072 AGILE METHODOLOGIES	
C324.1	Realize the importance of interacting with business stakeholders in determining the requirements for a software system.
C324.2	Perform iterative software development processes: how to plan them, how to execute them.
C324.3	Point out the impact of social aspects on software development success.
C324.4	Develop techniques and tools for improving team collaboration and software quality.
C324.5	Perform Software process improvement as an ongoing task for development teams.
COURSE NAME:IT8072 EMBEDDED SYSTEM	
C325.1	Describe the architecture and programming of ARM processor.
C325.2	Explain the concepts of embedded systems.
C325.3	Demonstrate the concepts of peripherals and interfacing of sensors.
C325.4	Use the system design techniques to develop firmware.
C325.5	Illustrate the code for constructing a system.
COURSE NAME:GE8075 INTELLECTUAL PROPERTY RIGHTS	
C326.1	Explain the basic concepts of IPR, patents and copyrights.
C326.2	Demonstrate the registration of IPRs in India and abroad.
C326.3	Recognize the various agreements and legislations related to IPR.
C326.4	Identify the digital products and IP laws.
C326.5	Manage Intellectual Property portfolio to enhance the value of the firm.

SEMESTER VII
ELECTIVES - II

COURSE NAME:IT8002 WEB DEVELOPMENT FRAMEWORKS	
C404.1	Analyze the fundamentals of web framework.
C404.2	Use the concept of Java web framework.
C404.3	Implement the concept using Struts framework.
C404.4	Apply the concept of python web framework to the problem solutions.
C404.5	Analyze various Web frameworks.

COURSE NAME:CS8082 MACHINE LEARNING TECHNIQUES	
C411.1	Differentiate between supervised, unsupervised, semi-supervised machine learning approaches.
C411.2	Apply specific supervised or unsupervised machine learning algorithm for a particular problem.
C411.3	Analyze and suggest the appropriate machine learning approach for the various types of problem.
C411.4	Design and make modifications to existing machine learning algorithms to suit an individual application.
C411.5	Provide useful case studies on the advanced machine learning algorithms.
COURSE NAME:IT8003 FORMAL LANGUAGES AND AUTOMATA THEORY	
C412.1	Design a finite automaton for a specific language.
C412.2	Design a Turing machine.
C412.3	Select appropriate grammar for the implementation of compiler phases.
C412.4	Design and implement techniques used for optimization by a compiler.
C412.5	Write a very simple code generator.
COURSE NAME:CS8081 INTERNET OF THINGS	
C413.1	Explain the concept of IoT.
C413.2	Analyze various protocols for IoT.
C413.3	Design a PoC of an IoT system using Rasperry Pi/Arduino.
C413.4	Apply data analytics and use cloud offerings related to IoT.
C413.5	Analyze applications of IoT in real time scenario.
COURSE NAME:IT8075 SOFTWARE PROJECT MANAGEMENT	
C414.1	Infer Project Management principles, framework while developing software.
C414.2	Analyze software process models and software effort estimation techniques.
C414.3	Estimate the risks involved in various project activities.
C414.4	Define the checkpoints, project reporting structure, project progress and tracking mechanisms using project management principles.
C414.5	Explain staff selection process and the issues related to people management.
COURSE NAME:IT8074 SERVICE ORIENTED ARCHITECTURE	
C415.1	Identify XML technologies.
C415.2	Illustrate service orientation, benefits of SOA.
C415.3	Explain web services and WS standards.
C415.4	Use web services extensions to develop solutions.
C415.5	Apply service modeling, service oriented analysis and design for application development.

COURSE NAME: GE8077 TOTAL QUALITY MANAGEMENT	
C416.1	Illustrate the basic concepts and elements of TQM.
C416.2	Explain the various TQM principles.
C416.3	Compare the different tools and techniques available in TQM.
C416.4	Apply the TQM tools and techniques in applications.
C416.5	Analyze the various quality systems.

SEMESTER VII
ELECTIVES - III

COURSE NAME:CS8079 HUMAN COMPUTER INTERACTION	
C405.1	Design effective dialog for HCI.
C405.2	Design effective HCI for individuals and persons with disabilities.
C405.3	Assess the importance of user feedback.
C405.4	Explain the HCI implications for designing multimedia/ ecommerce/ e-learning web sites.
C405.5	Develop meaningful user interface.
COURSE NAME:CS8073 C#AND.NET PROGRAMMING	
C417.1	Identify the major elements of the .NET frame work.
C417.2	Explain how C# fits into the .NET platform.
C417.3	Write various applications using C# Language in the .NET Framework.
C417.4	Develop distributed applications using .NET Framework.
C417.5	Create mobile applications using .NET compact Framework.
COURSE NAME:CS8088 WIRELESS ADHOC AND SENSOR NETWORKS	
C418.1	Identify different issues in wireless ad hoc and sensor networks.
C418.2	Explain various transport layer protocols developed for ad hoc networks.
C418.3	Analyze MAC and routing protocols in wireless sensor networks.
C418.4	Analyze transport layer protocols in and sensor networks.
C418.5	Evaluate security issues in ad hoc and sensor networks,
COURSE NAME:GE8072 FOUNDATION SKILLS IN INTEGRATED PRODUCT DEVELOPMENT	
C419.1	Define, formulate and analyze a problem.
C419.2	Solve specific problems independently or as part of a team.
C419.3	Gain knowledge of the Innovation and Product Development process in the business context.
C419.4	Work independently as well as in teams.
C419.5	Manage a project from start to finish.
COURSE NAME:CS8071 ADVANCED TOPICS ON DATABASES	
C420.1	Explain the basic concepts of parallel and distributed databases.
C420.2	Develop relational databases and optimize database performance in practice.
C420.3	Compare and contrast various types of databases.
C420.4	Design faster algorithms in solving practical database problems.
C420.5	Implement intelligent databases and various data models.

COURSE NAME: GE8074 HUMAN RIGHTS	
C421.1	Identify the notion and classification of Rights.
C421.2	Explain various theories of Human Rights.
C421.3	Illustrate the theories and perspectives of UN Laws.
C421.4	Explain Human Rights in India and constitutional provisions.
C421.5	Analyze implementation of Human Rights in educational institutions and social movements.
COURSE NAME: GE8071DISASTER MANAGEMENT	
C422.1	Differentiate the types of disasters, causes and their impact on environment and society.
C422.2	Assess vulnerability and various methods of risk reduction measures as well as mitigation.
C422.3	Draw the hazard and vulnerability profile of India, scenarios in the Indian context.
C422.4	Apply disaster damage assessment and management.
C422.5	Analyze applications and field works of disaster management.

SEMESTER VIII
ELECTIVES - IV

COURSE NAME:CS8085 SOCIAL NETWORK ANALYSIS	
C408.1	Develop semantic web related applications.
C408.2	Represent knowledge using ontology.
C408.3	Extract and detect communities in social networks.
C408.4	Predict human behavior in social web and related communities.
C408.5	Visualize social networks.
COURSE NAME:CS8086 SOFT COMPUTING	
C423.1	Explain the basic concepts of soft computing.
C423.2	Illustrate about artificial neural networks.
C423.3	Analyze fuzzy systems using the fuzzy relations.
C423.4	Integrate various soft computing techniques for complex problems.
C423.5	Apply suitable soft computing techniques for various applications.
COURSE NAME:CS8074 CYBER FORENSICS	
C424.1	Identify the basics of computer forensics.
C424.2	Apply number of different computer forensic tools to a given scenario.
C424.3	Analyze and validate forensics data.
C424.4	Identify the vulnerabilities in a given network infrastructure.
C424.5	Implement real-world hacking techniques to test system security.
COURSE NAME:IT8073 INFORMATIOM SECURITY	
C425.1	Discuss the basics of information security.
C425.2	Illustrate the legal, ethical and professional issues in information security.
C425.3	Demonstrate the aspects of risk management.
C425.4	Compare various standards in the Information Security System.
C425.5	Design and implementation of Security Techniques.

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COURSE NAME:EC8093 DIGITAL IMAGE PROCESSING	
C426.1	Identify the basics and fundamentals of digital image processing, such as digitization, sampling, quantization, and 2D-transforms.
C426.2	Operate on images using the techniques of smoothing, sharpening and enhancement.
C426.3	Explain the restoration concepts and filtering techniques.
C426.4	Illustrate the basics of segmentation and features extraction for color models.
C426.5	Explain the image compression and recognition methods for color models.
COURSE NAME:IT8004 NETWORK MANAGEMENT	
C427.1	Gather, derive, define and validate real requirements for the specified network.
C427.2	Analyze different types of requirements from the user, application, device and network component.
C427.3	Develop traceability between requirements, architecture decisions, and design decisions.
C427.4	Implement how and where addressing and routing, security, network management, and performance are required in the network.
C427.5	Use SNMPv1, v2 and v3 protocols.
COURSE NAME: GE8076 PROFESSIONAL ETHICS IN ENGINEERING	
C428.1	Describe morals, values, ethics and its importance.
C428.2	Outline the basic concepts of engineering ethics and moral behavior of an engineer.
C428.3	Compare and contrast the various industrial standards and responsibilities of engineers to society.
C428.4	Analyze the safety, risks, rights and responsibility of engineers while developing the product.
C428.5	Create code of conduct for complex problems.

SEMESTER VIII
ELECTIVES - V

COURSE NAME:CS8080 INFORMATION RETRIEVAL TECHNIQUES	
C409.1	Use an open source search engine framework and explore its capabilities.
C409.2	Analyze various Information Retrieval models.
C409.3	Apply appropriate method of classification or clustering.
C409.4	Design and implement innovative features in a search engine.
C409.5	Design and implement a recommender system.
COURSE NAME:CS8078 GREEN COMPUTING	
C429.1	Acquire knowledge to adopt green computing practices to minimize negative impacts on the environment.
C429.2	Enhance the skill in energy saving practices in their use of hardware.
C429.3	Analyze the design and development models in green computing.
C429.4	Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders.
C429.5	Implement the ways to minimize equipment disposal requirements.

COURSE NAME:CS8084 NATURAL LANGUAGE PROCESSING	
C430.1	Tag a given text with basic Language features.
C430.2	Design an innovative application using NLP components.
C430.3	Implement a rule based system to tackle morphology/syntax of a language.
C430.4	Design a tag set to be used for statistical processing for real-time applications.
C430.5	Compare and contrast the use of different statistical approaches for different types of NLP applications.
COURSE NAME:IT8077 SPEECH PROCESSING	
C431.1	Create new algorithms with speech processing.
C431.2	Derive new speech models.
C431.3	Perform various language phonetic analysis.
C431.4	Create a new speech identification system.
C431.5	Generate a new speech recognition system.
COURSE NAME:IT8078 WEB DESIGN AND MANAGEMENT	
C432.1	Explain the basic concepts in HTML.
C432.2	Illustrate the concepts of CSS.
C432.3	Design Website using HTML CSS and JS.
C432.4	Design Responsive Sites.
C432.5	Manage, Maintain and Support Web Apps.
COURSE NAME:IT8005 ELECTRONIC COMMERCE	
C433.1	Identify the traditional commerce and E-commerce and its role.
C433.2	Discuss modern computing infrastructures from the perspective of the internet and organizations.
C433.3	Design an application using web based tools and software.
C433.4	Discuss and explain theoretical and practical issues of conducting business over the internet and how to prevent the data.
C433.5	Explore specific tools, techniques and methods in e-business with online advertisement.
COURSE NAME: GE8073 FUNDAMENTAL OF NANO SCIENCE	
C434.1	Relate the material science with nanoscience.
C434.2	Compare the top-down and bottom-up approaches for preparation phase.
C434.3	Design lithographic devices for nanoscale devices.
C434.4	Analyze the environmental needs for working with nano materials.
C434.5	Differentiate various techniques and tools available for nano science.

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K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

CO-PO AND CO-PSO MAPPING

REGULATION - 2017

Semester - I

HS8151 COMMUNICATIVE ENGLISH - C101														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101.1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C101.2	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C101.3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C101.4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C101.5	-	-	-	-	-	-	-	3	3	3	-	3	-	1
C101	-	-	-	-	-	-	-	3	3	3	-	3	-	1

MA8151 ENGINEERING MATHEMATICS - I C102														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C102.1	3	2	2	2	-	-	-	-	2	-	-	2	-	-
C102.2	2	2	2	3	-	-	-	-	2	-	-	2	-	-
C102.3	3	3	2	2	-	-	-	-	2	-	-	1	-	-
C102.4	2	2	1	3	-	-	-	-	2	-	-	2	-	-
C102.5	3	2	2	2	-	-	-	-	3	-	-	2	2	-
C102	2.6	2.2	1.8	2.4	-	-	-	-	2.2	-	-	1.8	2	-

PH8151 ENGINEERING PHYSICS - C103														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C103.1	3	3	3	2	-	2	-	-	-	2	-	2	-	-
C103.2	3	-	3	-	-	-	-	-	-	2	-	2	-	-
C103.3	3	2	3	3	-	-	-	-	-	2	-	2	-	-
C103.4	3	3	3	3	-	2	-	-	-	2	-	2	-	-
C103.5	3	3	3	3	-	2	-	-	-	2	-	2	-	-
C103	3	2.75	3	2.75	-	2.0	-	-	-	2	-	2	-	-

CY8151 ENGINEERING CHEMISTRY - C104														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C104.1	3	2	3	-	2	3	3	-	-	-	-	2	-	-
C104.2	3	1	1	-	-	1	-	-	-	-	-	-	-	-
C104.3	3	1	-	-	-	-	2	-	-	-	-	1	-	-
C104.4	3	2	2	-	1	2	3	-	-	-	-	2	-	-
C104.5	3	2	2	-	1	2	3	-	-	-	-	2	-	-
C104	3	1.6	2	-	1.3	2.0	2.8	-	-	-	-	1.8	-	-

GE8151 PROBLEM SOLVING AND PYTHON PROGRAMMING - C105														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C105.1	3	2	1	-	-	1	-	-	-	-	-	1	3	1
C105.2	3	2	1	-	1	1	-	-	-	-	-	1	3	1
C105.3	3	2	1	-	-	1	-	-	-	-	-	1	3	1
C105.4	3	2	1	-	-	1	-	-	-	-	-	1	3	1
C105.5	3	2	1	1	-	1	-	-	-	-	-	1	3	1
C105	3	2	1	1	1	1.0	-	-	-	-	-	1	3	1

GE8152 ENGINEERING GRAPHICS - C106														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C106.1	3	3	3	2	2	-	-	-	2	-	-	3	-	-
C106.2	3	3	3	3	2	-	-	-	2	-	-	2	-	-
C106.3	3	2	3	3	3	-	-	-	2	-	-	2	-	-
C106.4	3	3	3	2	3	-	-	-	2	-	-	2	-	-
C106.5	3	2	3	2	3	-	-	-	2	-	-	2	-	-
C106	3	2.6	3	2.4	2.6	-	-	-	2	-	-	2.2	-	-

GE8161 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY- C107														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C107.1	3	3	3	-	3	-	-	3	3	3	-	3	3	1
C107.2	3	3	3	-	3	-	-	3	3	3	-	2	3	1
C107.3	3	3	3	-	3	-	-	3	3	3	-	3	3	1
C107.4	3	3	3	-	3	-	-	3	3	3	-	3	3	1
C107.5	3	3	3	-	3	-	-	3	3	3	-	3	3	1
C107	3	3	3	-	3	-	-	3	3	3	-	2.8	3	1

BS8161 PHYSICS AND CHEMISTRY LABORATORY - C108														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C108.1	3	3	2	2	2	1	1	-	-	-	-	1	-	-
C108.2	3	3	2	-	-	-	-	-	-	-	-	-	-	-
C108.3	3	3	2	2	2	1	1	-	-	-	-	1	-	-
C108.4	3	3	2	2	-	1	1	-	-	-	-	1	-	-
C108.5	3	3	2	2	2	1	1	-	-	-	-	1	-	-
C108	3	3	2	2	2	1.0	1	-	-	-	-	1	-	-

Semester - II

HS8251 TECHNICAL ENGLISH - C109														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C109.1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C109.2	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C109.3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C109.4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C109.5	-	-	-	-	-	-	-	3	3	3	-	3	-	1
C109	-	-	-	-	-	-	-	3	3	3	-	3	-	1

MA8251 ENGINEERING MATHEMATICS – II- C110														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C110.1	3	2	1	2	-	-	-	-	3	-	-	2	2	-
C110.2	2	3	2	3	-	-	-	-	2	-	-	1	-	-
C110.3	2	2	3	2	-	-	-	-	3	-	-	1	-	-
C110.4	2	2	1	2	-	-	-	-	2	-	-	1	-	-
C110.5	2	3	2	2	1	-	-	-	2	-	1	2	-	-
C110	2.2	2.4	1.8	2.2	1	-	-	-	2.4	-	1	1.4	2	-

PH8252 PHYSICS FOR INFORMATION SCIENCE - C111														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C111.1	3	3	3	3	-	-	-	-	-	2	-	2	-	-
C111.2	3	3	3	3	-	-	-	-	-	2	-	2	-	-
C111.3	3	3	3	3	-	2	-	-	-	2	-	2	-	-
C111.4	3	3	3	3	-	2	-	-	-	2	-	2	-	-
C111.5	2	3	3	3	-	2	-	-	-	2	-	2	-	-
C111	2.8	3	3	3	-	2.0	-	-	-	2	-	2	-	-

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: BE8255 BASIC ELECTRICAL,ELECTRONICS AND MEASUREMENT ENGINEERING - C112														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C112.1	3	3	1	3	2	2	-	-	-	-	-	2	-	-
C112.2	3	2	1	1	-	1	-	-	-	-	-	-	-	-
C112.3	3	1	-	-	-	3	-	-	-	-	-	2	-	-
C112.4	3	2	-	2	-	-	-	-	-	-	-	-	-	-
C112.5	3	1	-	-	-	-	-	-	-	-	-	1	-	-
C112	3	1.8	1	2	2	2.0	-	-	-	-	-	-	-	-

IT8201 INFORMATION TECHNOLOGY ESSENTIALS - C113														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C113.1	3	2	2	-	3	-	-	-	2	2	-	1	-	2
C113.2	3	3	3	-	3	-	-	-	2	2	-	2	2	2
C113.3	3	3	3	-	3	-	-	-	2	2	-	-	-	-
C113.4	3	-	-	-	-	-	-	-	-	2	-	-	-	-
C113.5	3	3	3	-	3	-	-	-	2	2	-	2	2	2
C113	3	2.8	2.8	-	3	-	-	-	2	2	-	1.7	2	2

CS8251 PROGRAMING IN C - C114														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C114.1	3	3	3	-	2	-	-	2	2	1	-	3	3	-
C114.2	3	3	3	-	2	-	-	2	2	1	-	3	3	2
C114.3	3	3	3	-	2	-	-	2	2	1	-	3	3	2
C114.4	3	3	3	-	2	-	-	2	2	1	-	3	3	-
C114.5	3	3	3	-	2	-	-	2	2	1	-	3	3	2
C114	3	3	3	-	2	-	-	2	2	1	-	3	3	2

GE8251 ENGINEERING PRACTICES LABORATORY- C115														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C115.1	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115.2	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115.3	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115.4	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115.5	2	-	2	-	-	-	1	-	2	-	-	1	-	-
C115	2	-	2	-	-	-	1	-	2	-	-	1	-	-

CS8261 C PROGRAMMING LABORATORY - C116														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C116.1	3	3	3	-	-	-	-	-	-	-	-	2	3	1
C116.2	3	3	3	-	3	-	-	-	-	-	-	2	3	2
C116.3	3	3	3	-	3	-	-	-	-	-	-	2	3	2
C116.4	3	3	3	-	3	-	-	-	-	-	-	2	3	2
C116.5	3	3	3	-	3	-	-	-	-	-	-	2	3	2
C116	3	3	3	-	3	-	-	-	-	-	-	2	3	1.8

IT6212 – INFORMATION TECHNOLOGY ESSENTIALS LABORATORY - C117														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C117.1	3	3	3	-	3	-	-	-	2	2	-	2	-	2
C117.2	3	3	3	-	3	-	-	-	2	2	-	2	2	2
C117.3	3	3	3	-	3	-	-	-	2	2	-	2	2	2
C117.4	3	-	-	-	-	-	-	-	-	2	-	2	-	-
C117.5	3	3	3	-	3	-	-	-	2	2	-	2	2	2
C117	3	3	3	-	3	-	-	-	2	2	-	2	2	2

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MA8351 – DISCRETE MATHEMATICS - C201														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201.1	2	3	1	1	-	-	-	-	3	-	-	2	-	-
C202.2	1	2	3	2	-	-	-	-	2	-	-	1	-	-
C202.3	3	2	2	2	-	-	-	-	3	-	-	2	-	-
C202.4	2	1	2	3	-	-	-	-	2	-	-	1	-	-
C202.5	2	2	1	2	-	-	-	-	2	-	-	1	2	-
C202	2	2	1.8	2	-	-	-	-	2.4	-	-	1.4	2	-

CS8351 – DIGITAL PRINCIPLES AND SYSTEM DESIGN - C202														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	3	3	3	3	-	2	-	-	1	-	-	1	-	-
C202.2	3	3	3	3	2	2	3	-	1	-	2	2	-	-
C202.3	3	3	3	3	2	2	3	-	1	-	2	2	-	-
C202.4	2	1	2	2	-	1	-	-	1	1	-	3	-	-
C202.5	3	3	3	3	2	2	3	-	1	1	2	3	-	-
C202	2.8	2.6	2.8	2.8	2	1.8	3	-	1	1	2	2.2	-	-

CS8391 – DATA STRUCTURES - C203														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C203.1	3	2	2	-	-	-	-	-	-	-	-	-	3	1
C203.2	3	2	2	1	-	-	-	-	1	-	-	-	3	-
C203.3	3	3	2	2	-	-	-	-	-	-	-	-	3	-
C203.4	3	3	3	2	-	-	-	-	2	-	-	-	3	-
C203.5	3	3	3	1	-	-	-	-	-	-	-	-	3	1
C203	3	2.6	2.4	1.5	-	-	-	-	1.5	-	-	-	3	1

CS8392 – OBJECT ORIENTED PROGRAMMING - C204														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C204.1	2	3	3	3	-	-	-	-	2	-	-	-	3	3
C204.2	3	3	3	2	-	-	-	-	2	-	-	-	2	3
C204.3	3	3	2	2	-	-	-	-	2	-	-	-	1	3
C204.4	2	3	2	2	-	-	-	-	2	-	-	-	2	3
C204.5	3	3	3	2	-	-	-	-	3	-	-	-	-	-
C204	2.6	3	2.6	2.2	-	-	-	-	2.2	-	-	-	3	3

EC8394 – ANALOG AND DIGITAL COMMUNICATION - C205														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	3	2	2	2	-	-	-	-	-	-	-	-	-	-
C205.2	3	2	2	2	-	-	-	-	-	-	-	-	-	-
C205.3	3	2	2	2	-	-	-	-	-	-	-	-	-	-
C205.4	3	2	2	2	-	-	-	-	-	-	-	-	-	-
C205.5	3	1	1	1	-	-	-	-	-	-	-	-	-	-
C205	3.0	1.8	1.8	1.8	-	-	-	-	-	-	-	-	-	-

CS8381 – DATA STRUCTURES LABORATORY - C206														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	3	2	2	1	-	-	-	-	1	-	-	-	3	1
C206.2	3	2	2	1	-	-	-	-	1	-	-	-	3	-
C206.3	3	2	3	2	-	-	-	-	2	-	-	-	3	-
C206.4	2	3	3	2	-	-	-	-	2	-	-	-	3	-
C206.5	3	3	3	2	-	-	-	-	2	-	-	-	-	-
C206	2.8	2.4	2.6	1.6	-	-	-	-	1.6	-	-	-	3	1

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CS8383 – OBJECT ORIENTED PROGRAMMING LABORATORY - C207														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C207.1	3	2	2	1	-	1	-	-	3	-	-	-	3	3
C207.2	3	2	2	1	-	2	-	-	3	-	-	-	3	3
C207.3	3	2	3	2	-	1	-	-	3	-	-	-	3	3
C207.4	2	3	3	2	-	2	-	-	3	-	-	-	3	3
C207.5	3	3	3	2	-	2	-	-	3	-	-	-	3	3
C207	2.8	2.4	2.6	1.6	-	1	-	-	3	-	-	-	3	3

CS8382 – DIGITAL SYSTEMS LABORATORY - C208														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C208.1	3	3	3	3	-	2	-	-	1	-	-	1	-	-
C208.2	3	3	3	3	2	2	3	-	1	-	2	2	-	-
C208.3	3	3	3	3	2	2	3	-	1	-	2	2	-	-
C208.4	2	1	2	2	-	1	-	-	1	1	-	3	-	-
C208.5	3	3	3	3	2	2	3	-	1	1	2	3	-	-
C208	2.8	2.6	2.8	2.8	2	1.8	3	-	1	1	2	2.2	-	-

HS8381 – INTERPERSOANL SKILLS/LISTENING AND SPEAKING - C209														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C209.1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C209.2	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C209.3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C209.4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C209.5	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C209	-	-	-	-	-	-	-	3.0	3.0	3.0	-	3.0	-	-

Semester - IV

MA8391 – PROBABILITY AND STATISTICS - C210														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C210.1	3	2	1	1	-	-	-	-	3	-	-	2	-	-
C210.2	1	2	3	2	-	-	-	-	2	-	-	1	-	-
C210.3	3	2	1	1	-	-	-	-	2	-	-	1	-	-
C210.4	3	3	2	2	-	-	-	-	2	-	-	1	-	-
C210.5	3	2	2	1	-	-	-	-	2	-	-	1	2	-
C210	2.6	2.2	1.8	1.4	-	-	-	-	2.2	-	-	1.2	2	-

CS8491 – COMPUTER ARCHITECTURE - C211														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C211.1	3	2	2	-	-	-	-	-	-	-	-	-	-	-
C211.2	3	2	2	1	-	-	-	-	1	-	-	-	-	-
C211.3	3	3	2	2	-	-	-	-	-	-	-	-	-	-
C211.4	3	3	3	2	-	-	-	-	2	-	-	-	-	-
C211.5	3	3	3	1	-	-	-	-	-	-	-	-	-	-
C211	3	3	3	3	-	-	-	-	2	-	-	-	-	-

CS8492 – DATABASE MANAGEMENT SYSTEMS - C212														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	2	2	2	-	-	-	-	-	-	-	-	-	2	3
C212.2	2	2	2	-	-	-	-	-	-	-	-	-	-	-
C212.3	3	2	2	-	-	-	-	-	-	-	-	-	-	-
C212.4	3	2	3	-	-	-	-	-	-	-	-	-	-	-
C212.5	3	2	3	-	-	-	-	-	-	-	-	-	-	3
C212	2.6	2	2.4	-	-	-	-	-	-	-	-	-	2	3

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CS8451 – DESIGN AND ANALYSIS OF ALGORITHMSS - C213														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C213.2	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C213.3	3	3	2	2	-	-	-	-	-	-	-	-	-	-
C213.4	2	3	2	2	-	-	-	-	-	-	-	-	-	1
C213.5	2	2	2	2	-	-	-	-	-	-	-	-	2	1
C213	2.2	2.4	2	2	-	-	-	-	-	-	-	-	2	1

CS8493 – OPERATING SYSTEMS - C214														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C214.1	2	1	2	-	-	-	-	-	-	-	-	-	-	-
C214.2	2	1	2	-	-	-	-	-	-	-	-	-	-	2
C214.3	3	1	2	-	-	-	-	-	-	-	-	-	2	2
C214.4	2	1	2	-	-	-	-	-	-	-	-	-	2	2
C214.5	3	1	3	-	-	-	-	-	-	-	-	-	3	2
C214	2.4	1	2.2	-	-	-	-	-	-	-	-	-	2	2

GE8291 – ENVIRONMENTAL SCIENCE AND ENGINEERING - C215														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C215.1	2	3	1	-	-	3	3	1	-	-	-	1	-	-
C215.2	3	3	2	1	1	3	3	2	-	-	-	1	-	-
C215.3	3	3	-	-	-	3	3	-	-	-	-	-	-	-
C215.4	3	3	1	-	-	3	3	1	-	-	-	1	-	-
C215.5	3	3	1	-	-	3	3	1	-	-	-	1	-	-
C215	2.8	3	1.3	1	1	3	3	1.3	-	-	-	1	-	-

CS8481 – DATABASE MANAGEMENT SYSTEMS LABORATORY - C216														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C216.1	2	2	2	-	2	-	-	-	-	-	-	-	2	3
C216.2	2	2	2	-	-	-	-	-	-	-	-	-	-	-
C216.3	2	2	3	-	-	-	-	-	-	-	-	-	-	-
C216.4	3	2	3	-	-	-	-	-	-	-	-	-	-	-
C216.5	3	2	3	-	-	-	-	-	-	-	-	-	-	-
C216	2.4	2	2.6	-	2	-	-	-	-	-	-	-	2	3

CS8461 – OPERATING SYSTEMS LABORATORY - C217														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C217.1	2	1	2	-	-	-	-	-	-	-	-	-	-	-
C217.2	2	1	2	-	-	-	-	-	-	-	-	-	-	2
C217.3	3	1	2	-	-	-	-	-	-	-	-	-	2	2
C217.4	2	1	2	-	-	-	-	-	-	-	-	-	2	2
C217.5	3	1	3	-	-	-	-	-	-	-	-	-	3	2
C217	2.4	1	2.2	-	-	-	-	-	-	-	-	-	2.3	2

HS8461 – ADVANCED READING AND WRITING - C218														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C218.1	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C218.2	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C218.3	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C218.4	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C218.5	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C218	-	-	-	-	-	-	-	3	3	3	-	3	-	-

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MA8551 ALGEBRA AND NUMBER THEORY- C301														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C301.1	2	2	2	-	-	-	-	-	-	-	-	-	-	-
C301.2	2	2	2	-	-	-	-	-	-	-	-	-	-	-
C301.3	3	2	2	-	-	-	-	-	-	-	-	-	-	-
C301.4	3	3	2	-	-	-	-	-	-	-	-	-	2	-
C301.5	3	3	2	-	-	-	-	-	-	-	-	-	2	-
C301	2.6	2.4	2	-	-	-	-	-	-	-	-	-	2	-

CS8591 COMPUTER NETWORKS- C302														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C302.1	2	1	2	-	-	-	-	-	-	-	-	-	-	-
C302.1	2	1	2	-	-	-	-	-	-	-	-	-	-	-
C302.3	3	1	2	-	-	-	-	-	-	-	-	-	-	-
C302.4	3	1	2	-	-	-	-	-	-	-	-	-	-	1
C302.5	3	1	2	-	-	-	-	-	-	-	-	-	2	1
C302	2.6	1	2	-	-	-	-	-	-	-	-	-	2	1

EC8691 MICROPROCESSORS AND MICROCONTROLLERS- C303														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C303.1	2	2	2	-	-	-	-	-	-	-	-	-	-	-
C303.2	2	2	2	-	-	-	-	-	-	-	-	-	-	-
C303.3	2	2	3	-	-	-	-	-	-	-	-	-	-	-
C303.4	3	2	3	-	-	-	-	-	-	-	-	-	2	-
C303.5	3	2	2	-	-	-	-	-	-	-	-	-	2	-
C303	2.4	2	2.4	-	-	-	-	-	-	-	-	-	2	-

IT8501 WEB TECHNOLOGY- C304														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C304.1	2	1	1	-	1	-	-	-	-	-	-	-	-	2
C304.2	2	1	1	-	2	-	-	-	-	-	-	-	-	2
C304.3	3	1	1	-	3	-	-	-	-	-	-	-	2	3
C303.4	3	1	1	-	3	-	-	-	-	-	-	-	2	3
C304.5	3	1	1	-	3	-	-	-	-	-	-	-	2	3
C304	2.6	1	1	-	2.4	-	-	-	-	-	-	-	2	2.5

CS8494 SOFTWARE ENGINEERING - C305														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C305.1	2	1	2	-	-	-	-	-	-	-	-	-	-	-
C305.2	2	1	2	-	-	-	-	-	-	-	-	-	-	-
C305.3	3	1	2	-	-	-	-	-	-	-	-	-	-	-
C305.4	3	1	2	-	-	-	-	-	-	-	-	-	2	-
C305.5	3	1	2	-	-	-	-	-	-	-	-	-	2	2
C305	2.6	1	2	-	-	-	-	-	-	-	-	-	2	2

EC8681 MICROPROCESSORS AND MICROCONTROLLERS LABORATORY- C307														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C307.1	2	1	2	-	-	-	-	-	-	-	-	-	-	-
C307.2	2	2	2	-	-	-	-	-	-	-	-	-	-	-
C307.3	3	2	3	-	-	-	-	-	-	-	-	-	-	-
C307.4	2	1	2	-	2	-	-	-	-	-	-	-	-	-
C307.5	3	2	2	-	2	-	-	-	-	-	-	-	-	-
C307	2.4	1.6	2.2	-	2	-	-	-	-	-	-	-	-	-

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CS8581 NETWORK LABORATORY-C308														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C308.1	3	1	1	-	-	-	-	-	-	-	-	-	-	1
C308.2	3	1	2	-	-	-	-	-	-	-	-	-	-	1
C308.3	3	1	2	-	-	-	-	-	-	-	-	-	-	1
C308.4	3	1	2	-	2	-	-	-	-	-	-	-	2	1
C308.5	3	1	2	-	2	-	-	-	-	-	-	-	2	1
C308	3	1	1.8	-	2	-	-	-	-	-	-	-	2	1

IT8511 WEB TECHNOLOGY LABORATORY-C309														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C309.1	2	1	1	-	2	-	-	-	-	-	-	-	3	3
C309.2	2	1	1	-	2	-	-	-	-	-	-	-	3	3
C309.3	3	1	1	-	3	-	-	-	-	-	-	-	3	3
C309.4	2	1	1	-	3	-	-	-	-	-	-	-	3	3
C309.5	3	1	1	-	3	-	-	-	-	-	-	-	3	3
C309	2.4	1	1	-	2.6	-	-	-	-	-	-	-	3	3

SEMESTER VI

IT8601 COMPUTATIONAL INTELLIGNCE-C310														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C310.1	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C310.2	2	2	3	3	-	-	-	-	-	-	-	-	-	-
C310.3	2	3	3	3	-	-	-	-	-	-	-	-	2	2
C310.4	3	3	3	3	-	-	-	-	-	-	-	-	2	2
C310.5	3	2	3	3	-	2	-	-	-	-	-	-	2	2
C310	2.4	2.4	2.8	2.8	-	2	-	-	-	-	-	-	2	2

CS8592 OBJECT ORIENTED ANALYSIS AND DESIGN-C311														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C311.1	2	2	2	3	-	-	-	-	-	-	-	-	-	-
C311.2	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C311.3	2	3	2	3	-	-	-	-	-	-	-	-	3	2
C311.4	3	3	3	3	-	-	-	-	-	-	-	-	3	2
C311.5	3	3	3	2	-	-	-	-	-	-	-	-	3	2
C311	2.4	2.6	2.4	2.6	-	-	-	-	-	-	-	-	3	2

IT8602 MOBILE COMMUNICATION-C312														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C312.1	2	2	3	-	-	-	-	-	-	-	-	-	-	-
C312.2	3	2	2	-	-	-	-	-	-	-	-	-	-	-
C312.3	2	2	2	-	-	-	-	-	-	-	-	-	2	-
C312.4	3	2	3	-	-	-	-	-	-	-	-	-	2	2
C312.5	3	2	2	-	-	-	-	-	-	-	-	-	2	2
C312	2.6	2	2.4	-	-	-	-	-	-	-	-	-	2	2

CS8091 BIG DATA ANALYTICS-C313														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C313.1	2	3	2	2	-	-	-	-	-	-	-	-	-	-
C313.2	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C313.3	2	3	2	2	-	-	-	-	-	-	-	-	-	-
C313.4	3	3	3	3	-	-	-	-	-	-	-	-	-	-
C313.5	3	3	3	3	-	2	-	-	-	-	-	-	-	2
C313	2.4	2.8	2.4	2.4	-	2	-	-	-	-	-	-	-	2

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CS8092 COMPUTER GRAPHICS AND MULTIMEDIA-C314														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C314.1	2	-	2	-	-	-	-	-	-	-	-	-	-	-
C314.2	2	-	2	-	-	-	-	-	-	-	-	-	-	-
C314.3	3	-	3	-	-	-	-	-	-	-	-	-	-	-
C314.4	2	-	3	-	2	-	-	-	-	-	-	-	-	2
C314.5	2	-	3	-	2	-	-	-	-	-	-	-	-	2
C314	2.2	-	2.6	-	2	-	-	-	-	-	-	-	-	2

CS8662 MOBILE APPLICATION DEVELOBMENT LABORATORY-C316														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C316.1	1	-	2	-	3	-	-	-	-	-	-	-	3	3
C316.2	1	-	2	-	3	-	-	-	-	-	-	-	3	3
C316.3	1	-	2	-	3	-	-	-	-	-	-	-	3	3
C316.4	1	-	2	-	3	-	-	-	-	-	-	-	3	3
C316.5	1	-	2	-	3	-	-	-	-	-	-	-	3	3
C316	1	-	2	-	3	-	-	-	-	-	-	-	3	3

CS8562 OBJECT ORIENTED ANALYSIS AND DESIGN LABORATORY-C317														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C317.1	2	2	2	2	2	-	-	-	-	-	-	-	2	2
C317.2	2	3	2	2	2	-	-	-	-	-	-	-	3	2
C317.3	3	2	2	2	3	-	-	-	-	-	-	-	2	2
C317.4	3	3	3	2	3	-	-	-	-	-	-	-	3	3
C317.5	2	2	3	2	3	-	-	-	-	-	-	-	3	3
C317	2.4	2.4	2.4	2	2.6	-	-	-	-	-	-	-	2.5	2.25

IT8611 MINI PROJECT-C318														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C318.1	3	3	2	1	2	-	-	-	-	-	-	-	3	3
C318.2	3	3	2	1	2	-	-	-	-	-	-	-	3	3
C318.3	3	2	3	1	3	-	-	-	-	-	-	-	3	3
C318.4	3	3	3	1	2	3	3	-	-	-	-	-	3	3
C318.5	3	3	3	1	3	3	3	-	-	-	-	-	3	3
C318	3	2.8	2.6	1	2.4	3	3	-	-	-	-	-	3	3

Semester - VII

MG8591 PRINCIPLES OF MANAGEMENT-C320														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C320.1	-	-	-	-	-	-	-	-	2	3	3	-	-	-
C320.2	-	-	-	-	-	-	-	-	2	3	3	2	-	-
C320.3	-	-	-	-	-	-	-	2	-	3	3	-	-	-
C320.4	-	-	-	-	-	-	-	2	2	3	3	2	-	-
C320.5	-	-	-	-	-	-	-	2	2	3	3	2	-	-
C320	-	-	-	-	-	-	-	2	2	3	3	2	-	-

CS8792 CRYPTOGRAPHY AND NETWORK SECURITY - C401														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C401.2	2	2	3	2	-	-	-	-	-	-	-	-	-	-
C401.3	2	3	3	2	-	-	-	-	-	-	-	-	1	-
C401.4	3	3	2	2	-	2	-	-	-	-	-	-	1	3
C401.5	3	3	3	2	-	2	-	-	-	-	-	-	1	3
C401	2.4	2.6	2.6	2	-	2	-	-	-	-	-	-	1	3

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CS8791 CLOUD COMPUTING - C402														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C402.1	2	2	3	2	-	-	-	-	-	-	-	-	1	1
C402.2	2	2	3	2	-	-	-	-	-	-	-	-	1	1
C402.3	2	2	2	2	-	-	-	-	-	-	-	-	1	1
C402.4	2	3	2	2	-	2	-	-	-	-	-	-	1	1
C402.5	2	3	3	2	-	2	-	-	-	-	-	-	1	2
C402	2	2.4	2.6	2	-	2	-	-	-	-	-	-	1	2

IT8711 FOSS AND CLOUD COMPUTING LABORATORY-C406														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C406.1	2	2	2	2	2	-	-	-	-	-	-	-	-	2
C406.2	2	3	2	2	2	-	-	-	-	-	-	-	-	1
C406.3	2	2	3	2	3	-	-	-	-	-	-	-	2	2
C406.4	2	3	2	2	2	2	-	-	-	-	-	-	2	2
C406.5	2	3	2	2	3	2	-	-	-	-	-	-	2	2
C406	2	2.6	2.2	2	2.4	2	-	-	-	-	-	-	2	1.8

IT8761 SECURITY LABORATORY - C407														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C407.1	2	2	2	2	-	-	-	-	-	-	-	-	2	2
C407.2	2	2	2	2	-	-	-	-	-	-	-	-	2	2
C407.3	2	3	2	2	-	-	-	-	-	-	-	-	3	3
C407.4	3	3	2	2	-	-	-	-	-	-	-	-	3	3
C407.5	3	3	3	2	-	3	-	-	-	-	-	-	3	3
C407	2.4	2.6	2.2	2	-	3	-	-	-	-	-	-	2.5	2.5

Semester - VIII

IT8811 PROJECT WORK - C410														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C410.1	3	3	1	3	-	-	-	-	3	1	-	2	1	1
C410.2	3	3	1	2	-	-	-	-	3	1	-	-	-	-
C410.3	3	3	3	3	2	2	1	1	3	1	2	2	2	2
C410.4	3	3	3	3	3	2	1	1	3	-	-	2	3	3
C410.5	3	3	3	3	3	2	1	1	3	1	1	2	3	3
C410	3	3	2.2	2.8	2.7	2	1	1	3	1	1.5	2	2.3	2.3

ELECTIVES

IT8076 SOFTWARE TESTING – C315														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C315.1	2	2	-	2	-	-	-	-	-	-	-	-	-	-
C315.2	2	2	-	2	-	-	-	-	-	-	-	-	-	-
C315.3	2	2	-	2	-	-	-	-	-	-	-	-	-	-
C315.4	2	2	-	2	-	-	-	-	-		-	-	-	-
C315.5	2	2	-	2	-	-	-	-	-	-	-		3	3
C315	2	2	-	2	-	-	-	-	-	-	-	-	3.0	3.0

CS8077 - GRAPH THEORY AND APPLICATION – C321														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C321.1	2	2	1	1	-	-	-	-	-	-	-	-	-	-
C321.2	2	2	1	1	-	-	-	-	-	-	-	-	-	-
C321.3	3	2	2	3	-	-	-		-	-	-	-	-	-
C321.4	2	3	2	3	-	-	-	-	-	-	-	-	2	2
C321.5	2	3	2	3	-	-	-	-	-	-	-	-	2	2
C321	2.2	2.4	1.6	2.2	-	-	-	-	-	-	-	-	2	2

IT8071 DIGITAL SIGNAL PROCESSING – C322

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C322.1	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C322.2	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C322.3	3	2	3	2	-	-	-	-	-	-	-	-	-	-
C322.4	2	3	2	3	-	2	2	-	-	-	-	-	-	-
C322.5	3	3	2	3	-	2	2	-	-	-	-	-	-	-
C322	2.4	2.4	2.2	2.4	-	2	2	-	-	-	-	-	-	-

IT8001 INFORMATION STORAGE AND MANAGEMENT – C323

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C323.1	2	2	-	-	-	-	-	-	-	-	-	-	-	-
C323.2	3	2	-	-	-	-	-	-	-	-	-	-	-	-
C323.3	2	3	-	-	-	-	-	-	-	-	-	-	-	-
C323.4	3	2	-	-	-	-	-	-	-	-	-	-	-	2
C323.5	2	2	-	-	-	-	-	-	-	-	-	-	-	2
C323	2.4	2.2	-	-	-	-	-	-	-	-	-	-	-	2.0

CS8072 AGILE METHODOLOGIES – C324

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C324.1	3	-	-	-	-	-	-	-	-	-	-	-	-	-
C324.2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
C324.3	3	-	-	-	-	-	-	-	-	-	3	-	-	-
C324.4	3	-	-	-	-	-	-	-	3	3	2	-	3	2
C324.5	3	-	-	-	-	-	-	-	3	3	3	-	3	2
C324	3	-	-	-	-	-	-	-	3	3	2.667	-	3.0	2.0

IT8072 EMBEDDED SYSTEM – C325

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C325.1	2	2	2	-	-	-	-	-	-	-	-	-	-	-
C325.2	2	2	2	-	-	-	-	-	-	-	-	-	-	-
C325.3	2	2	3	-	-	2	-	-	-	-	-	-	-	-
C325.4	2	2	2	-	-	2	3	-	-	-	-	-	-	-
C325.5	2	2	3	-	-	-	3	-	-	-	-	-	-	-
C325	2	2	2.4	-	-	2	3	-	-	-	-	-	-	-

GE8075 INTELLECTUAL PROPERTY RIGHTS – C326

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C326.1	-	-	-	-	-	-	-	3	-	3	3	-	-	-
C326.2	-	-	-	-	-	-	-	3	-	3	3	-	-	-
C326.3	-	-	-	-	-	-	-	3	-	3	3	-	-	-
C326.4	-	-	-	-	-	-	-	3	-	3	3	-	-	-
C326.5	-	-	-	-	-	-	-	3	-	3	3	-	-	-
C326	-	-	-	-	-	-	-	3	-	3	3	-	-	-

IT8002 WEB DEVELOPMENT FRAMEWORKS– C404

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C404.1	2	-	2	-	-	-	-	-	-	-	-	-	-	1
C404.2	2	-	2	-	-	-	-	-	-	-	-	-	-	2
C404.3	2	-	3	-	-	-	-	-	-	-	-	-	-	2
C404.4	2	-	3	-	3	-	-	-	-	-	-	-	-	3
C404.5	2	-	2	-	3	-	-	-	-	-	-	-	-	3
C404	2	-	2.4	-	3.0	-	-	-	-	-	-	-	-	2.2

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CS8082 MACHINE LEARNING TECHNIQUES – C411

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C411.1	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C411.2	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C411.3	3	2	2	2	-	-	-	-	-	-	-	-	-	-
C411.4	3	2	2	2	-	2	-	-	-	-	-	-	2	2
C411.5	3	3	3	2	-	2	-	-	-	-	-	-	2	2
C411	2.6	2.2	2.2	2	-	2	-	-	-	-	-	-	2.0	2.0

IT8003 FORMAL LANGUAGES AND AUTOMATA THEORY– C412

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C412.1	2	2	3	3	-	-	-	-	-	-	-	-	-	-
C412.2	2	3	2	2	-	-	-	-	-	-	-	-	-	-
C412.3	2	2	3	2	-	-	-	-	-	-	-	-	3	2
C412.4	3	3	2	3	-	2	-	-	-	-	-	-	2	2
C412.5	3	2	2	2	-	2	-	-	-	-	-	-	3	2
C412	2.4	2.4	2.4	2.4	-	2	-	-	-	-	-	-	2.667	2

CS8081 INTERNET OF THINGS– C413

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C413.1	2	-	2	-	2	-	-	-	-	-	-	-	-	3
C413.2	2	-	2	-	2	-	-	-	-	-	-	-	-	3
C413.3	2	-	2	-	2	3	2	-	-	-	-	-	2	3
C413.4	2	-	2	-	3	3	3	-	-	-	-	-	2	3
C413.5	2	-	2	-	3	3	3	-	-	-	-	-	2	3
C413	2	-	2	-	2.4	3	2.7	-	-	-	-	-	2.0	3.0

IT8075 SOFTWARE PROJECT MANAGEMENT – C414

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C414.1	1	2	1	-	-	-	-	-	2	2	3	-	-	-
C414.2	1	2	2	-	-	-	-	-	3	2	3	-	-	-
C414.3	1	1	1	-	-	-	-	-	2	3	3	-	-	-
C414.4	1	1	1	-	-	-	-	-	3	3	3	-	-	-
C414.5	2	1	2	-	-	-	-	-	3	3	3	-	-	-
C414	1.2	1.4	1.4	-	-	-	-	-	2.6	2.6	3	-	-	-

IT8074 SERVICE ORIENTED ARCHITECTURE – C415

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C415.1	2	2	2	-	-	-	-	-	-	-	-	-	-	-
C415.2	2	3	2	-	-	-	-	-	-	-	-	-	-	-
C415.3	3	2	3	-	-	-	-	-	-	-	-	-	-	-
C415.4	2	3	2	-	-	2	-	-	-	-	-	-	-	2
C415.5	3	3	3	-	-	2	2	-	-	-	-	-	-	2
C415	2.4	2.6	2.4	-	-	2	2	-	-	-	-	-	-	2.0

GE8077 TOTAL QUALITY MANAGEMENT – C416

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C416.1	-	-	-	-	-	-	-	3	2	3	3	2	-	-
C416.2	-	-	-	-	-	-	-	3	2	3	3	2	-	-
C416.3	-	-	-	-	-	-	-	3	2	3	3	3	-	-
C416.4	-	-	-	-	-	-	-	3	2	3	3	2	-	-
C416.5	-	-	-	-	-	-	-	3	2	3	3	3	-	-
C416	-	-	-	-	-	-	-	3	2	3	3	2.4	-	-

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CS8079 HUMAN COMPUTER INTERACTION – C405

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C405.1	2	2	3	2	-	-	-	-	-	-	-	-	-	-
C405.2	2	2	3	2	-	-	-	-	-	-	-	-	-	-
C405.3	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C405.4	3	3	2	2	-	-	-	-	-	-	-	-	-	2
C405.5	2	3	3	2	-	3	-	-	-	-	-	-	-	2
C405	3	2.4	2.6	2	-	3	-	-	-	-	-	-	-	2.0

CS8073 C#AND.NET PROGRAMMING– C417

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C417.1	2	-	2	-	-	-	-	-	-	-	-	-	2	2
C417.2	2	-	2	-	-	-	-	-	-	-	-	-	2	2
C417.3	2	-	3	-	2	-	-	-	-	-	-	-	2	3
C417.4	2	-	3	-	2	-	-	-	-	-	-	-	2	3
C417.5	2	-	3	-	3	-	-	-	-	-	-	-	3	3
C417	2	-	2.6	-	2.3	-	-	-	-	-	-	-	2.2	2.6

CS8088 WIRELESS ADHOC AND SENSOR NETWORKS – C418

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C418.1	2	2	3	-	-	-	-	-	-	-	-	-	-	-
C418.2	2	3	3	-	-	-	-	-	-	-	-	-	-	-
C418.3	2	2	2	-	-	-	-	-	-	-	-	-	-	-
C418.4	3	3	2	-	-	-	-	-	-	-	-	-	-	2
C418.5	3	2	3	-	-	-	-	-	-	-	-	-	-	2
C418	2.4	2.4	2.6	-	-	-	-	-	-	-	-	-	-	2.0

GE8072 FOUNDATION SKILLS IN INTEGRATED PRODUCT DEVELOPMENT – C419

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C419.1	2	2	2	2	-	2	2	-	-	-	2	-	-	-
C419.2	2	2	3	2	-	2	2	-	-	-	2	-	-	-
C419.3	2	2	2	2	-	2	2	-	-	-	2	-	-	-
C419.4	3	3	2	2	-	2	2	-	-	-	3	-	2	2
C419.5	3	3	2	2	-	2	2	-	-	-	3	-	2	2
C419	2.4	2.4	2.2	2	-	2	2	-	-	-	2.4	-	2.0	2.0

CS8071 ADVANCED TOPICS ON DATABASES – C420

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C420.1	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C420.2	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C420.3	3	3	2	2	-	-	-	-	-	-	-	-	-	-
C420.4	3	3	3	2	-	-	-	-	-	-	-	-	2	3
C420.5	3	3	3	2	-	-	-	-	-	-	-	-	2	3
C420	2.6	2.6	2.4	2	-	-	-	-	-	-	-	-	2.0	3.0

GE8074 HUMAN RIGHTS – C421

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C421.1	-	-	-	-	-	2	-	-	-	-	-	-	-	-
C421.2	-	-	-	-	-	2	-	-	-	-	-	-	-	-
C421.3	-	-	-	-	-	2	-	-	-	-	-	-	-	-
C421.4	-	-	-	-	-	2	-	2	2	2	-	-	-	-
C421.5	-	-	-	-	-	2	2	2	2	2	-	-	-	-
C421	-	-	-	-	-	2	2	2	2	2	-	-	-	-

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GE8071 DISASTER MANAGEMENT – C422

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C422.1	2	2	2	-	-	3	2	-	-	-	-	-	-	-
C422.2	2	2	2	-	-	3	2	-	-	-	-	-	-	-
C422.3	2	2	2	-	-	3	2	-	-	-	-	-	-	-
C422.4	2	2	2	-	-	2	3	-	-	-	-	-	-	-
C422.5	2	2	2	-	-	2	3	-	-	-	-	-	-	-
C422	2	2	2	-	-	2.6	2.4	-	-	-	-	-	-	-

CS8085 SOCIAL NETWORK ANALYSIS – C408

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C408.1	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C408.2	2	2	2	3	-	-	-	-	-	-	-	-	-	-
C408.3	2	2	3	2	-	-	-	-	-	-	-	-	-	-
C408.4	3	3	3	3	-	-	-	-	-	-	-	-	-	-
C408.5	3	3	3	3	-	-	-	-	-	-	-	-	-	-
C408	2.4	2.4	2.6	2.6	-	-	-	-	-	-	-	-	-	-

CS8086 SOFT COMPUTING– C423

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C423.1	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C423.2	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C423.3	2	2	3	2	-	-	-	-	-	-	-	-	-	-
C423.4	2	3	3	3	-	-	-	-	-	-	-	-	-	2
C423.5	2	3	3	3	-	-	-	-	-	-	-	-	-	2
C423	2	2.4	2.6	2.4	-	-	-	-	-	-	-	-	-	2.0

CS8074 CYBER FORENSICS– C424

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C424.1	2	2	2	2	-	-	-	-	-	-	-	-	-	3
C424.2	2	2	2	3	-	-	-	-	-	-	-	-	-	3
C424.3	3	2	2	2	-	-	-	-	-	-	-	-	-	3
C424.4	3	3	3	3	-	-	-	-	-	-	-	-	-	3
C424.5	3	3	3	3	-	-	-	-	-	-	-	-	-	3
C424	2.6	2.4	2.4	2.6	-	-	-	-	-	-	-	-	-	3.0

IT8073 INFORMATIOM SECURITY– C425

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C425.1	2	2	2	2	-	-	-	-	-	-	-	-	-	2
C425.2	2	2	3	2	-	-	-	-	-	-	-	-	-	2
C425.3	2	3	2	2	-	-	-	-	-	-	-	-	-	2
C425.4	3	3	3	2	-	-	-	-	-	-	-	-	-	2
C425.5	3	3	2	3	-	-	-	-	-	-	-	-	-	2
C425	3	2.6	2.4	2.2	-	-	-	-	-	-	-	-	-	2.0

GE8076 PROFESSIONAL ETHICS IN ENGINEERING– C428

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C428.1	-	-	-	-	-	-	-	3	-	-	-	3	-	-
C428.2	-	-	-	-	-	-	-	3	-	-	-	3	-	-
C428.3	-	-	-	-	-	-	-	3	-	-	-	3	-	-
C428.4	-	-	-	-	-	-	-	3	-	-	-	3	-	-
C428.5	-	-	-	-	-	-	-	3	-	-	-	3	-	-
C428	-	-	-	-	-	-	-	3	-	-	-	3	-	-

CS8080 INFORMATION RETRIEVAL TECHNIQUES– C409

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C409.1	2	2	2	-	-	-	-	-	-	-	-	-	-	2
C409.2	2	3	2	-	-	-	-	-	-	-	-	-	-	2
C409.3	3	2	2	-	-	-	-	-	-	-	-	-	-	2
C409.4	3	3	3	-	-	-	-	-	-	-	-	-	-	2
C409.5	3	2	3	-	-	-	-	-	-	-	-	-	-	2
C409	2.6	2.4	2.4	-	-	-	-	-	-	-	-	-	-	2.0

CS8078 GREEN COMPUTING– C429

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C429.1	2	2	3	-	-	2	2	-	-	-	-	-	-	2
C429.2	2	2	2	-	-	2	2	-	-	-	-	-	-	2
C429.3	2	3	3	-	-	2	3	-	-	-	-	-	-	2
C429.4	3	2	2	-	-	3	3	-	-	-	-	-	-	2
C429.5	3	3	2	-	-	3	3	-	-	-	-	-	-	2
C429	2.4	2.4	2.4	-	-	2.4	2.6	-	-	-	-	-	-	2.0

CS8084 NATURAL LANGUAGE PROCESSING C430

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C430.1	2	2	2	2	-	-	-	-	-	-	-	-	-	-
C430.2	2	3	2	2	-	-	-	-	-	-	-	-	-	-
C430.3	2	2	2	2	-	-	-	-	-	-	-	-	-	2
C430.4	3	3	3	3	-	-	-	-	-	-	-	-	-	2
C430.5	3	3	3	3	-	-	-	-	-	-	-	-	-	2
C430	2.4	2.6	2.4	2.4	-	-	-	-	-	-	-	-	-	2.0

IT8077 SPEECH PROCESSING– C431

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C431.1	2	3	2	2	-	-	-	-	-	-	-	-	-	-
C431.2	2	3	2	3	-	-	-	-	-	-	-	-	-	-
C431.3	3	3	2	3	-	-	-	-	-	-	-	-	2	2
C431.4	3	2	2	2	-	-	-	-	-	-	-	-	2	2
C431.5	3	2	3	2	-	-	-	-	-	-	-	-	2	2
C431	2.6	2.6	2.2	2.4	-	-	-	-	-	-	-	-	2.0	2.0

IT8078 WEB DESIGN AND MANAGEMENT– C432

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C432.1	2	-	2	-	-	-	-	-	-	-	-	-	2	3
C432.2	2	-	3	-	-	-	-	-	-	-	-	-	2	3
C432.3	2	-	3	-	-	-	-	-	-	-	-	-	2	3
C432.4	3	-	2	-	-	-	-	-	-	-	-	-	2	3
C432.5	3	-	2	-	-	-	-	-	-	-	-	-	2	3
C432	2.4	-	2.4	-	-	-	-	-	-	-	-	-	2.0	3.0

IT8005 ELECTRONIC COMMERCE– C433

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C433.1	2	1	1	-	-	-	-	-	-	-	2	2	-	2
C433.2	2	1	1	-	-	-	-	-	-	-	2	2	-	2
C433.3	3	1	1	-	-	-	-	-	-	-	2	3	-	2
C433.4	3	1	1	-	-	-	-	-	-	-	2	3	-	2
C433.5	3	1	1	-	-	-	-	-	-	-	3	3	-	2
C433	2.6	1	1	-	-	-	-	-	-	-	2.2	2.6	-	2.0

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GE8073 FUNDAMENTAL OF NANO SCIENCE– C434

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C434.1	2	2	2	-	-	-	-	-	-	-	-	-	-	-
C434.2	2	2	2	-	-	-	-	-	-	-	-	-	-	-
C434.3	3	3	2	-	-	-	-	-	-	-	-	-	-	-
C434.4	3	3	2	-	-	-	-	-	-	-	-	-	-	-
C434.5	2	2	3	-	-	-	-	-	-	-	-	-	-	-
C434	2.4	2.4	2.2	-	-	-	-	-	-	-	-	-	-	-

KSR INSTITUITE FOR ENGINEERING AND TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

PROGRAM LEVEL COURSE - PO AND PSO MATRIX

REGULATION – 2017

Course	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	HS8151 Communicative English	-	-	-	-	-	-	-	3	3	3	-	3	-	1
C102	MA8151 Engineering Mathematics - I	3	2	2	2	-	-	-	-	2	-	-	2	2	-
C103	PH8151 Engineering Physics	3	3	3	2	-	2		-	-	2	-	2	-	-
C104	CY8151 Engineering Chemistry	3	2	3	-	2	3	3	-	-	-	-	2	-	-
C105	GE8151 Problem Solving and Python Programming	3	2	1	-	1	1	-	-	-	-	-	1	3	1
C106	GE8152 Engineering Graphics	3	3	3	2	2		-	-	2	-	-	3	-	-
C107	GE8161 Problem Solving and Python Programming Laboratory	3	3	3	-	3	-	-	3	3	3	-	3	3	1
C108	BS8161 Physics and Chemistry Laboratory	3	3	2	2	2	1	1	-	-	-	-	1	-	-
C109	HS8251 Technical English	-	-	-	-	-	-	-	3	3	3		3	-	2
C110	MA8251 Engineering Mathematics - II	3	2	1	2	-	-	-	-	3	-	-	2	2	
C111	PH8252 Physics for Information Science	3	3	3	3	-	-	-	-	-	2	-	2	-	-
C112	BE8255 Basic Electrical, Electronics and Measurement Engineering	3	3	1	3	2	2	-	-	-	-	-	2	-	-
C113	IT8201 Information Technology Essentials	3	2	2	-	3	-	-	-	2	2	-	1	2	2

Course	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C114	CS8251 Programming in C	3	3	3	-	2	-	-	2	2	1	-	3	3	1
C115	GE8261 Engineering Practices Laboratory	2	-	2	-	-	-	1	-	2		-	1	-	-
C116	CS8261 C Programming Laboratory	3	3	3	-	3	-	-	-	-	-	-	2	3	1
C117	IT8211 Information Technology Essentials Laboratory	3	3	3	-	3	-	-	-	2	2	-	2	2	2
C201	MA8351 Discrete Mathematics	2	3	1	1	-	-	-	-	3	-	-	2	2	-
C202	CS8351 Digital Principles and System Design	3	3	3	3	2	2	3	-	1	1	2	1	-	-
C203	CS8391 Data Structures	3	2	2	1	-	-	-	-	1	-	-	-	3	1
C204	CS8392 Object Oriented Programming	2	3	3	3	-	-	-	-	2	-	-	-	3	3
C205	EC8394 Analog and Digital Communication	3	2	2	2	-	-	-	-	-	-	-	-	-	-
C206	CS8381 Data Structures Laboratory	3	2	2	1	-	-	-	-	1	-	-	-	3	1
C207	CS8383 Object Oriented Programming Laboratory	3	2	2	1	-	1	-	-	3	-	-	-	3	3
C208	CS8382 Digital Systems Laboratory	3	3	3	3	2	2	3	-	1	1	2	1	-	-
C209	HS8381 Interpersonal Skills/Listening & Speaking	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C210	MA8391 Probability and Statistics	3	2	1	1	-	-	-	-	3	-	-	2	2	-
C211	CS8491 Computer Architecture	3	3	3	3	-	-	-	-	2	-				
C212	CS8492 Database Management Systems	2	2	2	-	-	-	-	-	-	-	-	2	3	

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Course	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213	CS8451 Design and Analysis of Algorithms	2	2	2	2	-	-	-	-	-	-	-	-	2	1
C214	CS8493 Operating Systems	2	1	2	-	-	-	-	-	-	-	-	-	2	2
C215	GE8291 Environmental Science and Engineering	2	3	1	1	1	3	3	1	-	-	-	1	-	-
C216	CS8481 Database Management Systems Laboratory	2	2	2	-	2	-	-	-	-	-	-	-	2	3
C217	CS8461 Operating Systems Laboratory	2	1	2	-		-	-	-	-	-	-	-	2	2
C218	HS8461 Advanced Reading and Writing	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C301	MA8551 Algebra and Number Theory	2	2	2	-	-	-	-	-	-	-	-	-	2	
C302	CS8591 Computer Networks	2	1	2	-	-	-	-	-	-	-	-	-	2	1
C303	EC8691 Microprocessors and Microcontrollers	2	2	2	-	-	-	-	-	-	-	-	-	2	-
C304	IT8501 Web Technology	2	1	1	-	1	-	-	-	-	-	-	-	2	2
C305	CS8494 Software Engineering	2	1	2	-	-	-	-	-	-		-	-	2	2
C307	EC8681 Microprocessors and Microcontrollers Laboratory	2	1	2	-	2	-	-	-	-	-	-	-	-	-
C308	CS8581 Networks Laboratory	3	1	1	-	2	-	-	-	-	-	-	-	2	1
C309	IT8511 Web Technology Laboratory	2	1	1	-	2	-	-	-	-	-	-	-	3	3
C310	IT8601 Computational Intelligence	2	2	2	2	-	2	-	-	-	-	-	-	2	2
C311	CS8592 Object Oriented Analysis and Design	2	2	2	3	-	-	-	-	-	-	-	-	3	2

Course	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C312	IT8602 Mobile Communication	2	2	3		-	-	-	-	-	-	-	-	2	2
C313	CS8091 Big Data Analytics	2	3	2	2	-	2	-	-	-	-	-	-	-	2
C314	CS8092 Computer Graphics and Multimedia	2	-	2	-	2	-	-	-	-	-	-	-	-	2
C316	CS8662 Mobile Application Development Laboratory	1	-	2	-	3	-	-	-	-	-	-	-	3	3
C317	CS8582 Object Oriented Analysis and Design Laboratory	2	2	2	2	2	-	-	-	-	-	-	-	2	2
C318	IT8611 Mini Project	3	3	2	1	2	3	3	-	-	-	-	-	3	3
C319	HS8581 Professional Communication	-	-	-	-	-	-	-	3	3	3	-	3	-	-
C320	MG8591 Principles of Management	-	-	-	-	-	-	-	2	2	3	3	2	-	-
C401	CS8792 Cryptography and Network Security	2	2	2	2	-	2	-	-	-	-	-	-	1	3
C402	CS8791 Cloud Computing	2	2	3	2	-	2	-	-	-	-	-	-	1	2
C406	IT8711 FOSS and Cloud Computing Laboratory	2	2	2	2	2	2	-	-	-	-	-	-	2	2
C407	IT8761 Security Laboratory	3	3	3	2	-	3	-	-	-	-	-	-	3	3
C410	IT8811 Project Work	3	3	3	3	3	2	2	1	3	3	3	2	3	3

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PO DISSEMINATION AMONG STAKE HOLDERS

- **Department, Staff Room, Class Room.**
- **Websites, Newsletters, Magazines**
- **Survey Forms, Log books, Lab records,**

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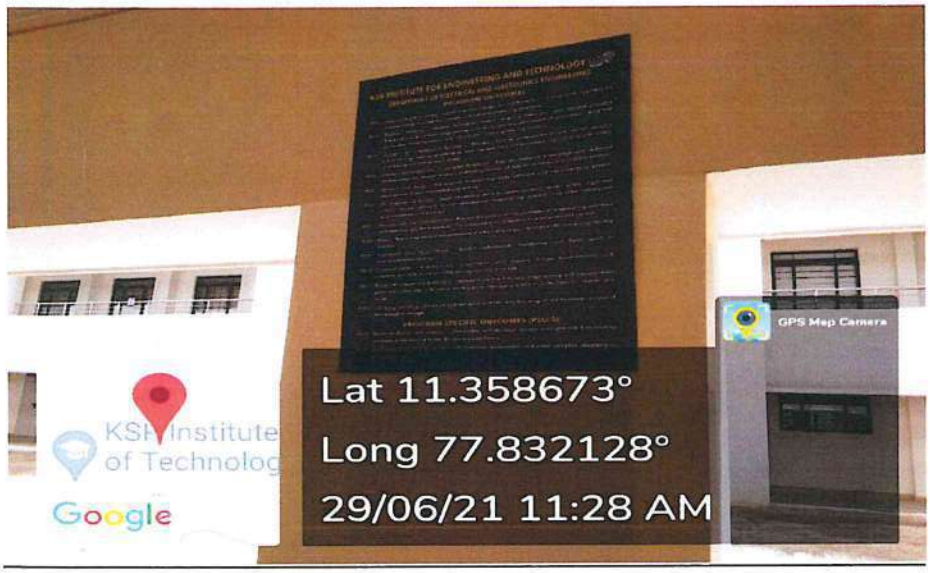

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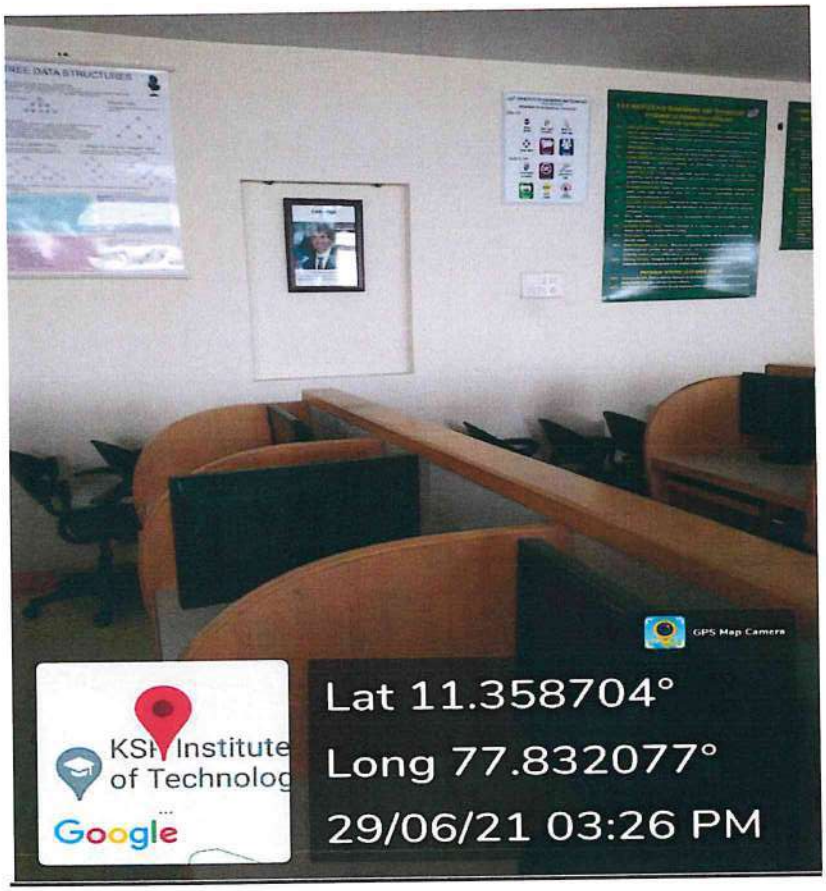
PROGRAM OUTCOMES (POS) DISSEMINATION – LABORATORY



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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DEPARTMENT OF MECHANICAL ENGINEERING

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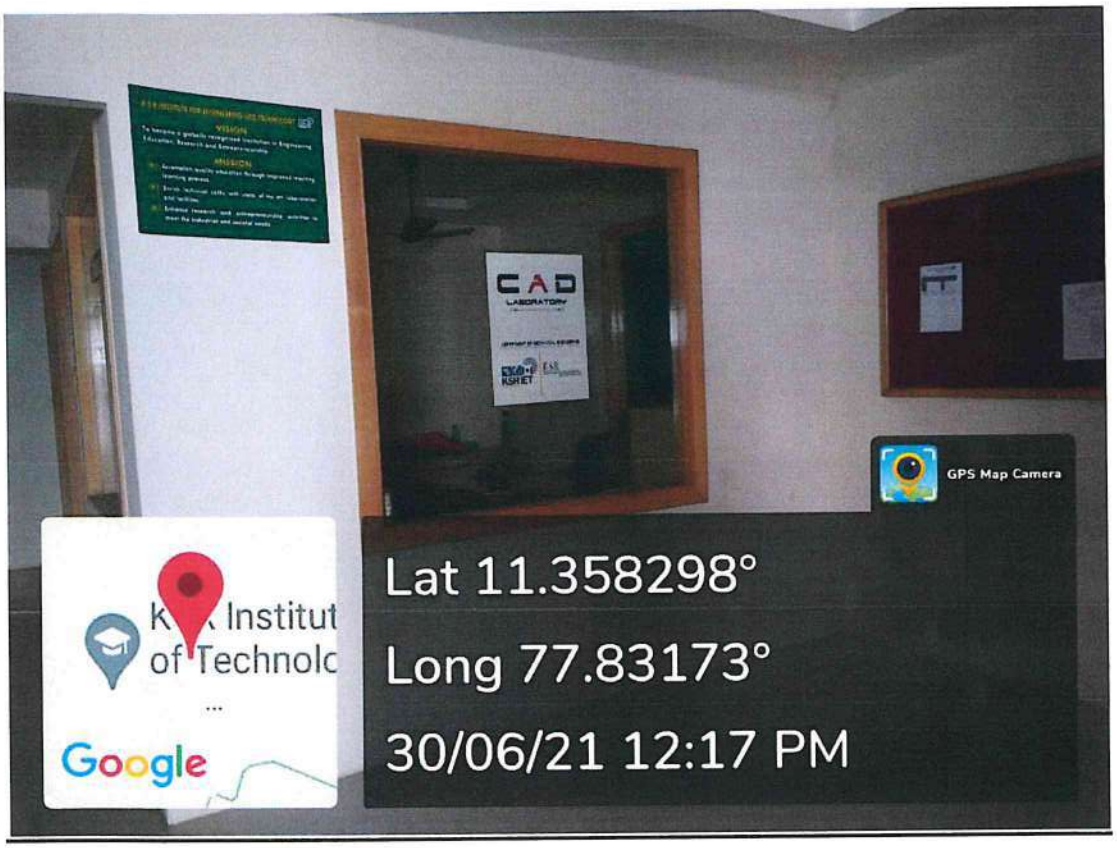

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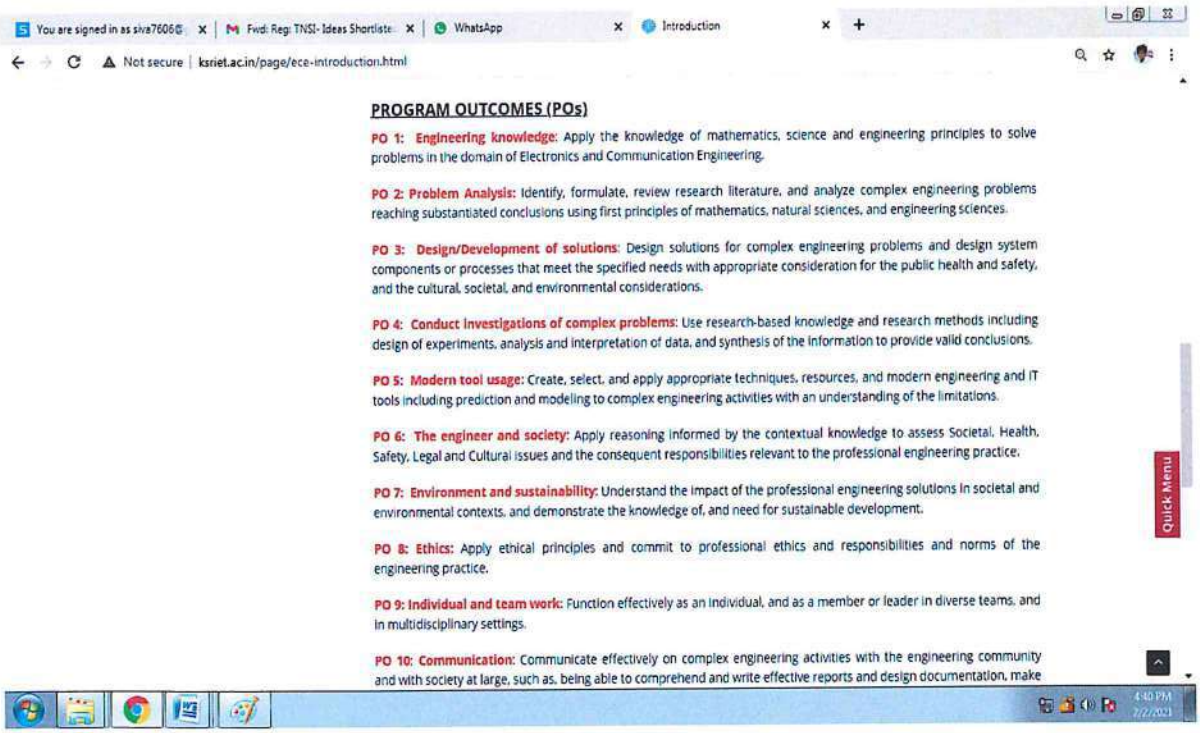

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PROGRAM OUTCOMES (POs)

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PO 6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess Societal, Health, Safety, Legal and Cultural issues and the consequent responsibilities relevant to the professional engineering practice.

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PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make

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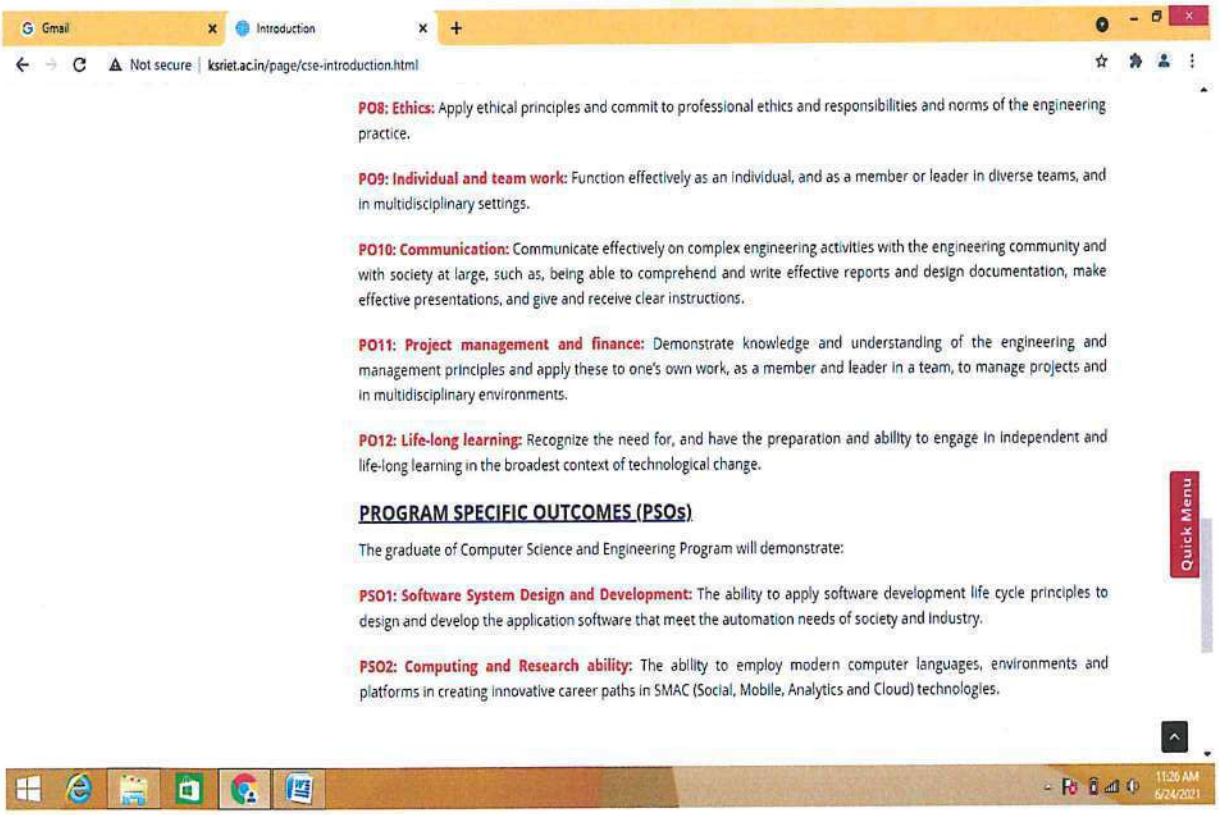

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PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

The graduate of Computer Science and Engineering Program will demonstrate:

PSO1: Software System Design and Development: The ability to apply software development life cycle principles to design and develop the application software that meet the automation needs of society and industry.

PSO2: Computing and Research ability: The ability to employ modern computer languages, environments and platforms in creating innovative career paths in SMAC (Social, Mobile, Analytics and Cloud) technologies.

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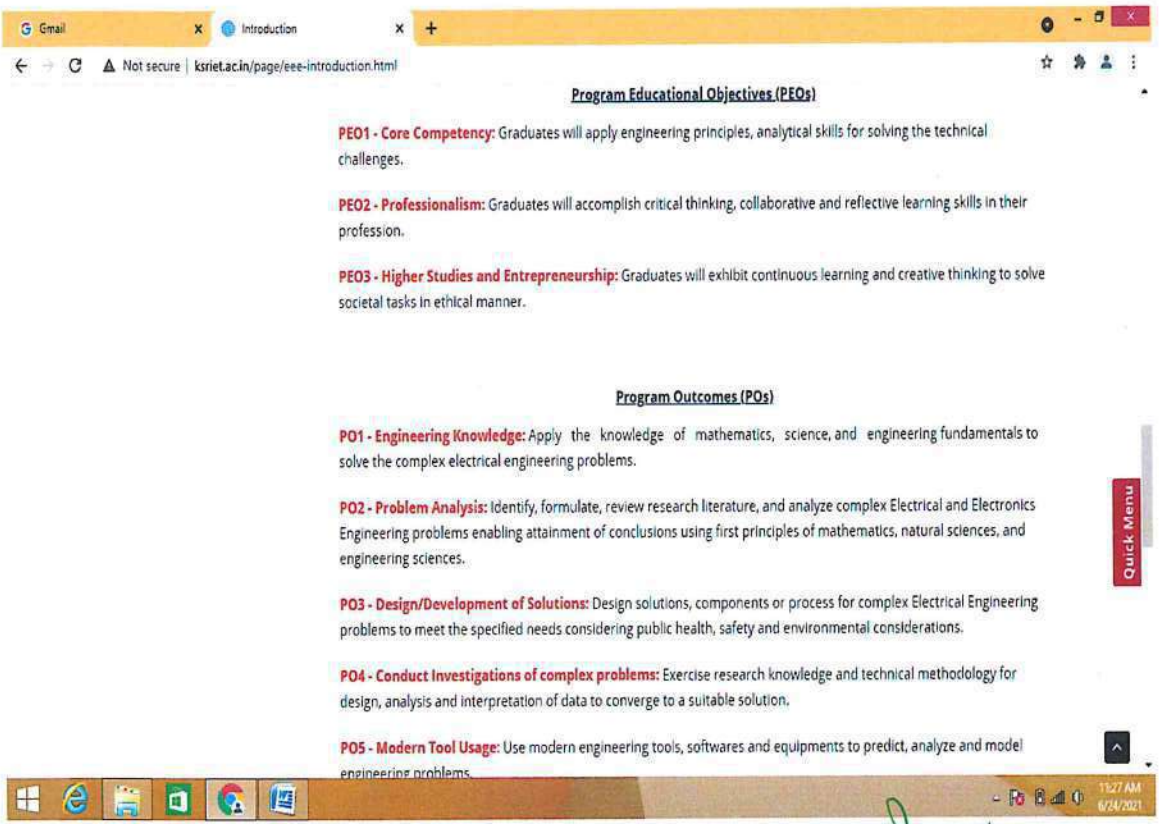

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Program Educational Objectives (PEOs)

PEO1 - Core Competency: Graduates will apply engineering principles, analytical skills for solving the technical challenges.

PEO2 - Professionalism: Graduates will accomplish critical thinking, collaborative and reflective learning skills in their profession.

PEO3 - Higher Studies and Entrepreneurship: Graduates will exhibit continuous learning and creative thinking to solve societal tasks in ethical manner.

Program Outcomes (POs)

PO1 - Engineering Knowledge: Apply the knowledge of mathematics, science, and engineering fundamentals to solve the complex electrical engineering problems.

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PO5 - Modern Tool Usage: Use modern engineering tools, softwares and equipments to predict, analyze and model engineering problems.

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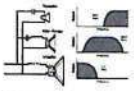
NEWSLETTER AND MAGAZINE

Speakers can be categorized according to the frequency range that they are designed for:

- **Woofers:** speakers designed specifically for low frequencies (less than 200 Hz)
- **Midrange:** speakers designed to accommodate frequencies ranging from 500 Hz to 3000 Hz
- **Tweeter:** a dedicated speaker type specifically designed to handle frequencies above those of midrange speakers
- **Full-range speakers:** capable of handling frequencies ranging from 100 Hz to 15,000 Hz

Such a three-way speaker system is illustrated below.



A typical three-way speaker system consisting of a tweeter, a midrange speaker, and a woofer.

Amplifiers 101

Audio amplifier have three types of classification.

- Preamplifier
- Low-power amplifier
- Power amplifier

An *audio preamplifier* (often shortened to "pre-amp") is an electronic device that amplifies a very weak signal from a microphone, as an example, into signals strong enough to manipulate. Pre-amps are often simple, fixed-gain amplifiers designed specifically for low-noise performance.

A *low-power amplifier* is often used to manipulate signals including such aspects as volume and frequency equalization. This type of amplifier generally focuses on changing the character of the signal in desired ways while introducing as little unwanted distortion as possible and may provide little to no actual power amplification.

An audio *power amplifier* ("power amp") is used to increase the signal power so as to drive a load, such as output speakers. Similar to pre-amps, power amps are often fixed gain (in terms of signal amplitude) so that designers can focus on high-power gain and the power handling challenges that typically result. In simple audio systems where high power and high fidelity are not critical factors, a single-amplifier circuit may perform all of these functions, and, in fact, specially designed operational amplifiers, such as the LM-386 Low Voltage Audio Power Amplifier, are often used this way.

Conclusion

Audio electronics can be summarized as converting sound to electrical signals, processing the electrical signals, and turning these processed signals back into sound. This is a straightforward objective; nevertheless, this particular discipline of electrical engineering covers many areas of the EE world. In fact, many practicing engineers spend their entire careers researching, developing, and designing audio electronics and related equipment

Program Outcomes (POs)

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PO12	**Life Long Learning:** Inculcate independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs)

PSO 1: Electrical drives and controls Graduates will Analyze, design and provide Engineering solutions in the field of Power Electronics and Drives

PSO 2: Embedded system: Graduates will Simulate, experiment and solve complex problems in Embedded System.

The Program gave me more confidence to the students. The atmosphere made students feel comfortable to talk. The participants were encouraged with valuable commands given by juries Mr. Mathan, AP/ English, Dr. T. Srihari, Prof/EEE and Mr. T. Arvind, AP/EEE. The juries also gave lot of inputs and pointed out common mistake by students made that and appreciate the good things

University Class Toppers

S.No	Year / Sem / Sec	Name of the Student	GPA	Position
1	I / II	Thamizselvan R	8.32	1
2	I / II	Sharmilapriya S	8.28	2
3	I / II	Kavin Muthu Kumar S	8.20	3
4	I / II	Mohan T	8.20	3
5	II / IV	Saranya P	8.75	1
6	II / IV	Nithyasri R	8.29	2
7	II / IV	Suvetha T	7.96	3
8	III / VI / A	Gokula Krishnan S	8.21	1
9	III / VI / A	Harini S	8.17	2
10	III / VI / A	Arunkumar C	8.13	3
11	III / VI / B	Srinivasan R	7.54	1
12	III / VI / B	Yogapriya S	7.21	2
13	III / VI / B	Priyadharshini S	7.13	3
14	IV / VIII / A	Diyana S	9.20	1
15	IV / VIII / A	Anitha M	9.00	2
16	IV / VIII / A	Kanaga Priya R	9.00	2
17	IV / VIII / A	Divyabharathi S	8.90	3
18	IV / VIII / B	Nagamani L	8.40	1
19	IV / VIII / B	Somasundaram R	8.40	1
20	IV / VIII / B	Praveenkumar B	8.20	2
21	IV / VIII / B	Sangavi K	8.20	2
22	IV / VIII / B	Surya E	8.20	2
23	IV / VIII / B	Thayagarajan S	8.20	2
24	IV / VIII / B	Venkateshwaran M	8.20	2
25	IV / VIII / B	Vinoth Kumar R	8.20	2
26	IV / VIII / B	Nandhini T	8.00	3
27	IV / VIII / B	Rahul M S	8.00	3
28	IV / VIII / B	Ranjith T	8.00	3
29	IV / VIII / B	Rokesh Kumar R	8.00	3

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Program Specific Outcomes (PSO)

PSO1: Embedded system design: Graduates will be able to analyze, design, construct and test electronic and embedded systems for desired specification.

PSO2 : Simulation Tools: Graduates will be able to solve emerging real world problems using suitable hardware and software tools.

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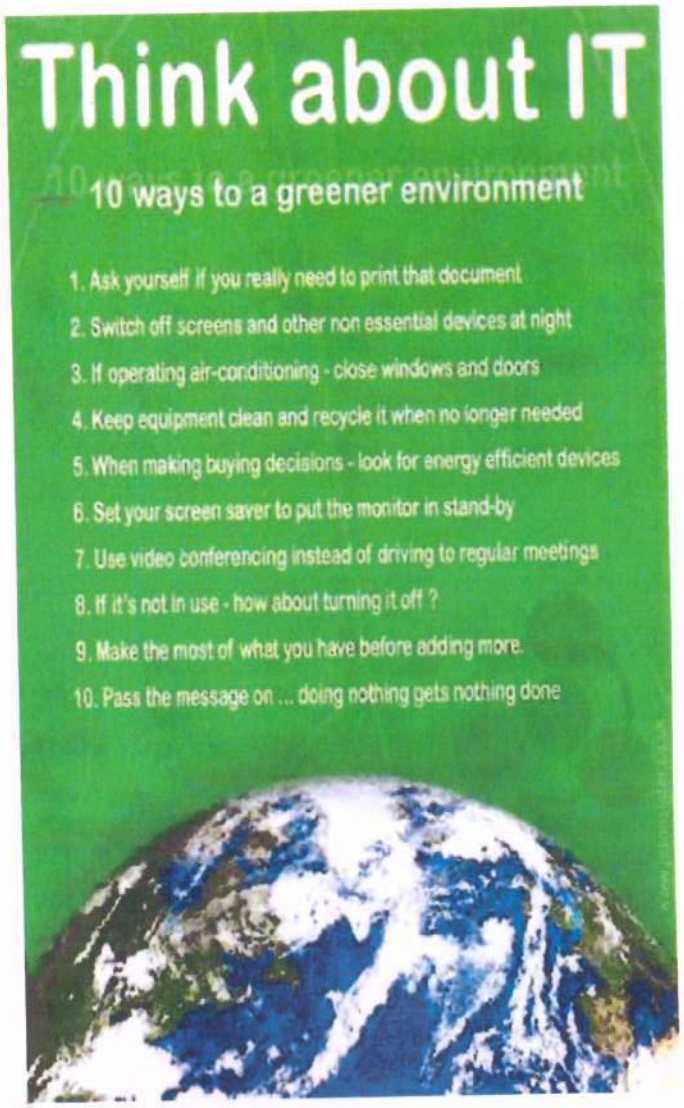

Program Outcomes (POs)

PO1	**Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the IT enabled solution of complex engineering problems.
PO2	**Problem Analysis:** Identify, analyze and provide solutions to the problems reaching substantiated IT enabled conclusions.
PO3	**Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the desired needs within realistic constraints.
PO4	**Conduct Investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern Tool Usage**: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	**The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
PO9	**Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on engineering activities with the engineering community and with society.
PO11	**Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life Long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes(PSOs)

PSO1	**Programming Skill**	Work as Software Engineers for providing solutions to real world problems using programming languages and open source software.
PSO2	**Web Designing Skill**	Ability to use the web designing skill to establish new solutions for the societal needs.

NPTEL Courses Attended by Faculty

Name of the Course: Introduction to Modern Application Development
Duration : 18 SEP 2016 to 06 OCT 2016

S. No.	Name of the Faculty	Grade Obtained
1.	P.RAJAKUMAR	Gold Medal
2.	DR.P.MEENAKSHIDEVI	Topper with Elite
3.	M.DHURGADEVI	Elite
4.	S.ARUNPRASATH	Elite
5.	R.SUBAPRIYA	Elite
6.	M.SELVAKUMAR	Elite
7.	K.G.LAVANYA	Elite
8.	R. NARESH	Elite
9.	S.RUSSIA	Successfully completed
10.	P. S. PRAKASHKUMAR	Successfully completed
11.	P.SHANMUGAPRIYA	Successfully completed

Faculty Achievements (100% Result)

S.No.	Name of the Faculty	Subject Handled	Batch/Year/Sem
1.	Dr.P.Meenakshi Devi	Total Quality Management	IT/IV/VIII
2.	Mr.S.Arunprasath	Design and Analysis of Algorithm	IT / II / IV

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Program Educational Objectives (PEOs)

PEO	Key Words	Description
PEO 1	**Core Competency**	Graduates will be successful professionals in career by applying the knowledge of mathematics, science and engineering with appropriate techniques and modern tools.
PEO 2	**Professionalism**	Graduate will exhibit soft skills, professional and ethical values and thrust for continuous learning to maintain professionalism in the IT industries.
PEO 3	**Higher Studies and Entrepreneurship**	Graduates will engage in higher studies and outshine as entrepreneurs through life-long learning which leads to societal benefits.

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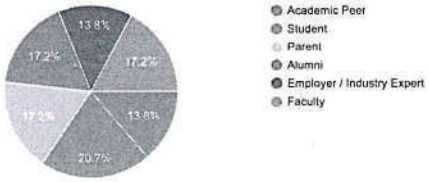
31 responses

Publish analytics

Category

29 responses



Name:

31 responses

Arun Harihara Subramanian

S.KESAVAN

Vinoth Kumar R

Silambarasan S

S.Sujith

Paramasivam.R

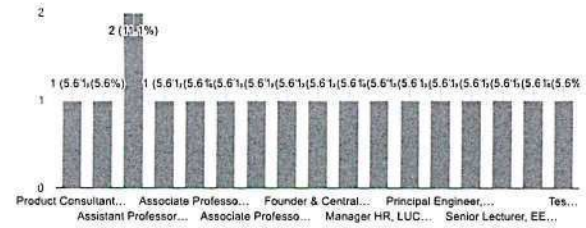
Jeevanandam T

S.Balamurugan

Nithiyasri.R

Designation & Organization:

16 responses



Mobile No:

31 responses

9962525757

9486101811

9445123340

7010535905

9080159631

8526189255

7538866308

9944316325

9514719916

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31 responses

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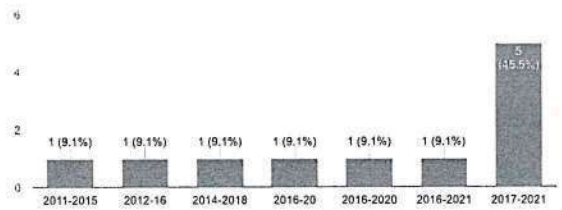
nithiyaramachandran26@gmail.com

Batch / Year (Alumni / Student)

11 responses



Name of the Ward (for Parents)

6 responses

Selvam.B

Kamali Soundarya

MUGESH M

Divyadevi V

Suvetha.T

Hemalatha S

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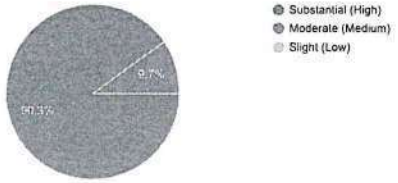
31 responses



PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex Electrical and Electronics Engineering problems enabling attainment of conclusions using first principles of mathematics, natural sciences, and engineering sciences.

31 responses

PO3: Design/development of solutions: Design solutions, components or process for complex Electrical Engineering problems to meet the specified needs considering public health, safety and environmental considerations

30 responses

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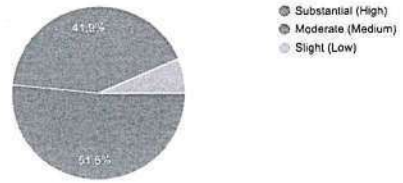
NAMAKKAL DT, TAMIL NADU.

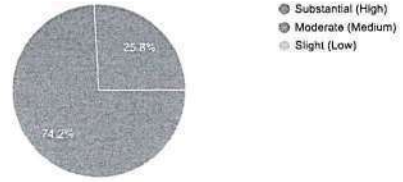
PO4: Conduct investigations of complex problems: Exercise research knowledge and technical methodology for design, analysis and interpretation of data to converge to a suitable solution.

31 responses



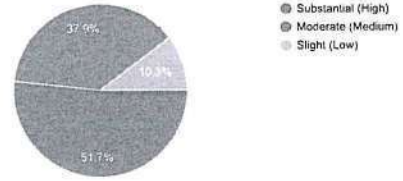
PO5: Modern tool usage: Use modern engineering tools, softwares and equipments to predict, analyze and model engineering problems.

31 responses



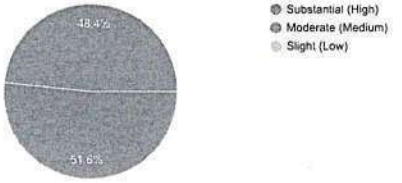
PO6: The engineer and society: Apply reasoning skills to assess societal, health, safety, legal and cultural issues relevant to the professional engineering practice and take consequent responsibilities in the society.

29 responses



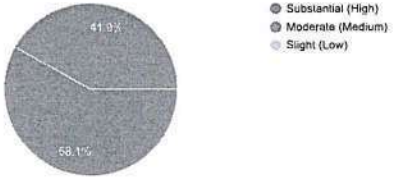
PO7: Environment and sustainability: Realize the impact of the professional engineering solutions and demonstrate the knowledge for sustainable development in environmental context.

31 responses



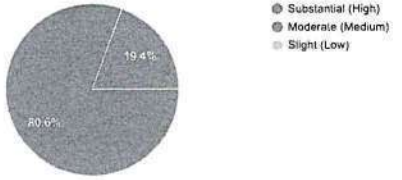
PO8: Ethics: Apply and realize the professional ethics and responsibilities in Electrical engineering practice.

31 responses



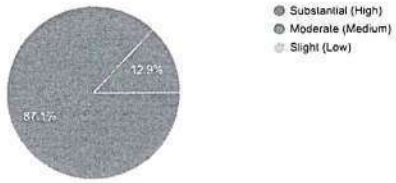
PO9: Individual and team work: Exhibit Individuality, Leadership and Team spirit in multidisciplinary settings.

31 responses



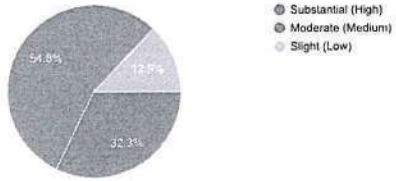
PO10: Communication: Communicate, comprehend, write reports, design documentation and presentation effectively on complex engineering activities.

31 responses



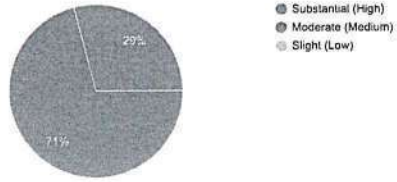
PO11: Project management and finance: Demonstrate the Electrical engineering and management principles adhering to financial strategies to manage projects as a member or leader in a team

31 responses



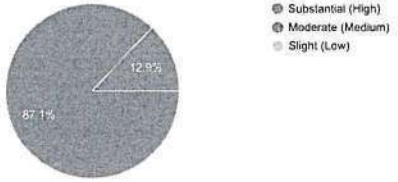
PO12: Life-long learning: Inculcate independent and life-long learning in the broadest context of technological change.

31 responses



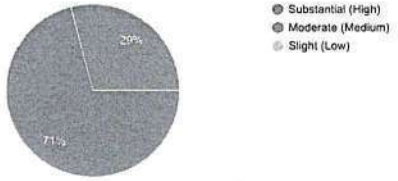
PSO1: Electrical drives and control: Graduates will Analyze, design and provide Engineering solutions in the field of Power Electronics and Drives

31 responses



PSO2: Embedded system: Graduates will Simulate, experiment and solve complex problems in Embedded System.

31 responses



Remarks / Suggestions

26 responses

Practical experience in core concepts are needed.

Some additional electrical design courses required.

Practical Hardware stimulations will help to improve our core skills

Industrial exposure to students will help to know the current technological trends in industries.

More Workshops and Seminars are Required.

Extra and Co- Curricular Activities should be improved

career counseling program may provided from various industry pesons

recent trends in IT Sector like machine learning, Data Analytics courses may be included

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NAMAKKAL Dt.

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

Department of Electrical and Electronics Engineering

Feedback / Suggestion on compliance of Anna University curriculum for attaining POs and PSOs

Category

- ( ) Academic Peer
- (•) Student
- ( ) Parent
- ( ) Alumni
- ( ) Employer / Industry Expert
- ( ) Faculty

Name:

Vinoth Kumar R

Designation & Organization:

Mobile No:

9445123340

Email Id:

vvinoth514@gmail.com

Batch / Year (Alumni / Student)

2017-2021

Name of the Ward (for Parents)

Program Outcomes (POs)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, and engineering fundamentals to solve the complex electrical engineering problems.

- (•) Substantial (High)
- ( ) Moderate (Medium)
- ( ) Slight (Low)

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex Electrical and Electronics Engineering problems enabling attainment of conclusions using first principles of mathematics, natural sciences, and engineering sciences.

- (•) Substantial (High)
- ( ) Moderate (Medium)
- ( ) Slight (Low)

PO3: Design/development of solutions: Design solutions, components or process for complex Electrical Engineering problems to meet the specified needs considering public health, safety and environmental considerations

- ( ) Substantial (High)
- (•) Moderate (Medium)
- ( ) Slight (Low)

PO4: Conduct investigations of complex problems: Exercise research knowledge and technical methodology for design, analysis and interpretation of data to converge to a suitable solution.

- (•) Substantial (High)
- ( ) Moderate (Medium)
- ( ) Slight (Low)

PO5: Modern tool usage: Use modern engineering tools, softwares and equipments to predict, analyze and model engineering problems.

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PO6: The engineer and society: Apply reasoning skills to assess societal, health, safety, legal and cultural issues relevant to the professional engineering practice and take consequent responsibilities in the society.

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PO7: Environment and sustainability: Realize the impact of the professional engineering solutions and demonstrate the knowledge for sustainable development in environmental context.

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PSO1: Electrical drives and control: Graduates will Analyze, design and provide Engineering solutions in the field of Power Electronics and Drives

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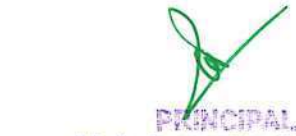
Remarks / Suggestions

A Platform to practice Programming is required.



K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

Department of Electrical and Electronics Engineering

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- ○ Student
- ○ Parent
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- ○ Employer / Industry Expert
- ○ Faculty

Name:

Shaik Muhammed J

Designation & Organization:

Founder & Central Management, KREO DIZZARTS, Bangalore

Mobile No:

9790001163

Email Id:

shaik.elentra@gmail.com

Batch / Year (Alumni / Student)

2011-2015

Name of the Ward (for Parents)

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PRINCIPAL, K.S.R. INSTITUTE FOR ENGINEERING AND TECHNOLOGY, K.S.R. KALVI NAGAR, TIRUCHENGODE - 637 215, NAMAKKAL DT, TAMIL NADU.

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Remarks / Suggestions

career counseling program may provided from various industry pesons

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K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

Department of Electrical and Electronics Engineering

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- ○ Faculty

Name:

S.KESAVAN

Designation & Organization:

JTO, Enterprises Business Unit, BSNL

Mobile No:

9486101811

Email Id:

kesavan.ice@gmail.com

Batch / Year (Alumni / Student)

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- ◉ Moderate (Medium)
- ○ Slight (Low)

PO12: Life-long learning: Inculcate independent and life-long learning in the broadest context of technological change.

- ◉ Substantial (High)
- ○ Moderate (Medium)
- ○ Slight (Low)

Program Specified Outcomes (PSOs)

PSO1: Electrical drives and control: Graduates will Analyze, design and provide Engineering solutions in the field of Power Electronics and Drives

- ◉ Substantial (High)
- ○ Moderate (Medium)
- ○ Slight (Low)

PSO2: Embedded system: Graduates will Simulate, experiment and solve complex problems in Embedded System.

- ◉ Substantial (High)
- ○ Moderate (Medium)
- ○ Slight (Low)

Remarks / Suggestions

economic awareness created among the students

PRINCIPAL,
K. S. R. INSTITUTE FOR
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TIRUCHENGODE - 637 215,
NAMAKKAL Dt, TAMIL NADU.

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

Department of Electrical and Electronics Engineering

Feedback / Suggestion on compliance of Anna University curriculum for attaining POs and PSOs

Category

- ○ Academic Peer
- ○ Student
- ○ Parent
- ◉ Alumni
- ○ Employer / Industry Expert
- ○ Faculty

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boopalakrishnan05@gmail.com

Batch / Year (Alumni / Student)

2014-2018

Name of the Ward (for Parents)

Program Outcomes (POs)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, and engineering fundamentals to solve the complex electrical engineering problems.

- ◉ Substantial (High)
- ○ Moderate (Medium)
- ○ Slight (Low)

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex Electrical and Electronics Engineering problems enabling attainment of conclusions using first principles of mathematics, natural sciences, and engineering sciences.

- ◉ Substantial (High)
- ○ Moderate (Medium)
- ○ Slight (Low)

PO3: Design/development of solutions: Design solutions, components or process for complex Electrical Engineering problems to meet the specified needs considering public health, safety and environmental considerations

- ○ Substantial (High)
- ◉ Moderate (Medium)
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PO4: Conduct investigations of complex problems: Exercise research knowledge and technical methodology for design, analysis and interpretation of data to converge to a suitable solution.

- ○ Substantial (High)
- ◉ Moderate (Medium)
- ○ Slight (Low)

PO5: Modern tool usage: Use modern engineering tools, softwares and equipments to predict, analyze and model engineering problems.

- ◉ Substantial (High)
- ○ Moderate (Medium)
- ○ Slight (Low)

PO6: The engineer and society: Apply reasoning skills to assess societal, health, safety, legal and cultural issues relevant to the professional engineering practice and take consequent responsibilities in the society.

- ○ Substantial (High)
- ○ Moderate (Medium)
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PO7: Environment and sustainability: Realize the impact of the professional engineering solutions and demonstrate the knowledge for sustainable development in environmental context.

- ◉ Substantial (High)
- ○ Moderate (Medium)
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PO8: Ethics: Apply and realize the professional ethics and responsibilities in Electrical engineering practice.

- ○ Substantial (High)
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PO9: Individual and team work: Exhibit Individuality, Leadership and Team spirit in multidisciplinary settings.

- ◉ Substantial (High)
- ○ Moderate (Medium)
- ○ Slight (Low)

PO10: Communication: Communicate, comprehend, write reports, design documentation and presentation effectively on complex engineering activities.

- ◉ Substantial (High)
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PO11: Project management and finance: Demonstrate the Electrical engineering and management principles adhering to financial strategies to manage projects as a member or leader in a team

- ○ Substantial (High)
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Remarks / Suggestions

recent trends in IT Sector like machine learning, Data Analytics courses may be included

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

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Email Id:

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Batch / Year (Alumni / Student)

Name of the Ward (for Parents)

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Remarks / Suggestions

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Category

- ○ Academic Peer
- ○ Student
- ○ Parent
- ○ Alumni
- ○ Employer / Industry Expert
- ◉ Faculty

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Batch / Year (Alumni / Student)

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Remarks / Suggestions

core related training like energy auditing coursed may be included

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Category

- ○ Academic Peer
- ◉ Student
- ○ Parent
- ○ Alumni
- ○ Employer / Industry Expert
- ○ Faculty

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Batch / Year (Alumni / Student)

2017-2021

Name of the Ward (for Parents)

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Remarks / Suggestions

Practice for core based competitive exam is required.

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Category

- ○ Academic Peer
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- ◉ Faculty

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Kalimuthu Y

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9994407293

Email Id:

ykalimuthu@gmail.com

Batch / Year (Alumni / Student)

Name of the Ward (for Parents)

Program Outcomes (POs)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, and engineering fundamentals to solve the complex electrical engineering problems.

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Remarks / Suggestions

special workshops on IoT, AI may be conducted for student and faculty

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PO1	**Engineering Knowledge:** Apply the knowledge of mathematics, science, and engineering fundamentals to solve the complex electrical engineering problems.
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Program Specific Outcomes (PSOs)

PSO 1: **Electrical drives and control:** Graduates will Analyze, design and provide Engineering solutions in the field of Power Electronics and Drives

PSO 2: **Embedded system:** Graduates will Simulate, experiment and solve complex problems in Embedded System.

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

DEPARTMENT OF EEE

EE8411 – ELECTRICAL MACHINES LABORATORY - II

CONTENTS

NAME OF THE PROGRAM: ELECTRICAL AND ELECTRONICS ENGINEERING

PROGRAM OUTCOMES (POs) and PROGRAM SPECIFIC OUTCOMES (PSOs)

Program Outcome for Electrical & Electronics Engineering

PO1	**Engineering Knowledge:** Apply the knowledge of mathematics, science, and engineering fundamentals to solve the complex electrical engineering problems.
PO2	**Problem Apalysis:** Identify, formulate, review research literature, and analyze complex Electrical and Electronics Engineering problems enabling attainment of conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design/Development of Solutions:** Design solutions, components or process for complex Electrical Engineering problems to meet the specified needs considering public health, safety and environmental considerations.
PO4	**Conduct Investigations of complex problems:** Exercise research knowledge and technical methodology for design, analysis and interpretation of data to converge to a suitable solution.
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Subject Name : AIR POLLUTION AND CONTROL ENGG. Subject Code : OCE551

Class : III Year V Semester ETE Branch ..... Section

SYLLABUS

OCE551 AIR POLLUTION AND CONTROL ENGINEERING **L T P C**
3 0 0 3

OBJECTIVE:

- To impart knowledge on the principle and design of control of Indoor/ particulate/ gaseous air pollutant and its emerging trends.

UNIT I INTRODUCTION **7**

Structure and composition of Atmosphere – Definition, Scope and Scales of Air Pollution – Sources and classification of air pollutants and their effect on human health, vegetation, nimals, property,aesthetic value and visibility- Ambient Air Quality and Emission standards.

UNIT II METEOROLOGY **6**

Effects of meteorology on Air Pollution - Fundamentals, Atmospheric stability, Inversion, Wind profiles and stack plume patterns- Atmospheric Diffusion Theories – Dispersion models, Plume rise.

UNIT III CONTROL OF PARTICULATE CONTAMINANTS **11**

Factors affecting Selection of Control Equipment – Gas Particle Interaction – Working principle -Gravity Separators, Centrifugal separators Fabric filters, Particulate Scrubbers, Electrostatic Precipitators.

UNIT IV CONTROL OF GASEOUS CONTAMINANTS **11**

Factors affecting Selection of Control Equipment – Working principle - absorption, Adsorption, Condensation, Incineration, Bio filters – Process control and Monitoring.

UNIT V INDOOR AIR QUALITY MANAGEMENT **10**

Sources, types and control of indoor air pollutants, sick building syndrome and Building related illness-Sources and Effects of Noise Pollution – Measurement – Standards –Control and Preventive measures.

TOTAL: 45 PERIODS

TEXTBOOKS:

1. Lawrence K. Wang, Norman C. Pareira, Yung Tse Hung, "Air Pollution Control Engineering",Tokyo, springer science + science media LLC,2004.
2. Noel de Nevers, "Air Pollution Control Engineering", Waveland press,Inc 2017.
3. Anjaneyulu. Y, "Air Pollution and Control Technologies", Allied Publishers (P) Ltd., India 2002.

REFERENCES:

1. David H.F. Liu, Bela G. Liptak, "Air Pollution", Lweis Publishers, 2000.
2. Arthur C. Stern, "Air Pollution (Vol.I – Vol.VIII)", Academic Press, 2006.
3. Wayne T.Davis, "Air Pollution Engineering Manual", John Wiley & Sons, Inc, 2000.
4. M.N Rao and HVN Rao, "Air Pollution",Tata Mcgraw Hill Publishing Company limited,2007.
5. C.S.Rao, "Environmental Pollution Control Engineering",New Age International(P) Limited Publishers,2006.

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Affiliated to Anna University, Chennai
TIRUCHENGODE - 637 215

COLLEGE CODE: 7316

DEPARTMENT OF ECE

CLASS RECORD

Name : P. GOVINDARAJU

Designation : ASSISTANT PROFESSOR

Academic Year : 2019-2020 **Semester** : ODD

The true teacher defends his pupils against his own personal influence.

-amons B. Aloctt

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K. S. R. KALVI NAGAR,
TIRUCHENGODE - 637 215,
NAMAKKAL Dt, TAMIL NADU.

NAME OF THE PROGRAM: ECE

PROGRAM OUTCOMES (POs) and PROGRAM SPECIFIC OUTCOMES (PSOs)

PROGRAM OUTCOMES(POs)

Graduates will be able to

PO 1: **Engineering Knowledge :** Apply the knowledge of mathematics, science and engineering principles to solve problems in the domain of Electronics and Communication Engineering.

PO 2: **Problem Analysis :** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: **Design/Development of Solutions :** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4: **Conduct Investigations of complex problems :** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: **Modern Tool Usage :** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6: **The Engineer & Society :** Apply reasoning informed by the contextual knowledge to assess Societal, Health, Safety, Legal and Cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7: **Environment and Sustainability :** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: **Ethics :** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: **Individual and Team Work :** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: **Communication :** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: **Project Management & Finance :** Demonstrate Knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12 : **Life Long Learning :** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

Graduates will be able to

PSO 1: **Embedded system design :** Analyze, design, construct and test electronic and embedded systems for desired specification.

PSO 2: **Simulation Tools :** Solve emerging real world problems using suitable hardware and software tools.

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CO DISSEMINATION AMONG STAKE HOLDERS

- **Subject Course plan**
- **Question Papers, Assignment, Tutorials**
- **COCAT**

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DEPARTMENT OF EEE

COURSE PLAN

Faculty Name	:	**Dr.R.Jeyabharath**			
Branch	:	**EEE**	Year / Semester	:	**III Yr / VI Sem EEE**
Subject code	:	**EE6601**	Subject Name	:	**SOLID STATE DRIVES**
Email	:	**jeya_psg@rediffmail.com**	Contact No	:	**9894913159**

Introduction about the Course

Electrical Drives is a subject which gives the information about different types of drive motors, control techniques and where it will be used. Nowadays industries are increasingly demanding automation process in all sectors. Automation results into better quality, increased production and reduced costs .Depending on the application, some of them are fixed speed and some of them are variable speed. When an electric motor is to be selected as a drive motor, first the speed-torque requirement of the load is determined. The invention of power semiconductors saw the advent of drives systems for most of variable speed requirements. It is seen that due to various advantages, electric motors are used as drive motors in various industrial applications. A.C drives are normally termed as constant speed drives. But with the development of GTO/transistors as high speed power switching devices along with control/ data acquisition circuits based on microprocessors/ Personal Computers, A.C drives are now being used for variable speed applications. Generally synchronous motor is expensive than induction motor drives, but the advantage is that the efficiency is higher, which tends to lower the life cycle cost. In many practical applications, it is necessary to have variable speed drive. In such a case it is necessary to control the speed of D.C motor which is used as a drive. The speed can be controlled by conventional and solid state methods. DC drives are widely used in application requiring adjustable speed, good speed regulation and frequent starting. The transfer function of a DC drive system is discussed and closed loop control of the system is derived for various speed control techniques.

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Objective:

- To understand the stable steady-state operation and transient dynamics of a motor-load system.
- To study and analyze the operation of the converter / chopper fed dc drive and to solve simple problems.
- To study and understand the operation of both classical and modern induction motor drives.
- To understand the differences between synchronous motor drive and induction motor drive and to learn the basics of permanent magnet synchronous motor drives.
- To analyze and design the current and speed controllers for a closed loop solid-state DC motor drive and simulation using a software package.

Prerequisite:

- Power Electronics, Power control / regulator devices.
- Partial differential equations, Laplace transform, Transfer function model
- Electrical Machines and speed control methodologies

Application:

- Electric motor drives used in paper mills, cement mills and steel mills.
- Automotive applications for electric and hybrid electric vehicles.
- DC series motor drive used in electric traction, high speed power tools and lifts.

Course Outcome:

After learning the course the students should be able to:

CO1: Study the dynamic and load torque characteristics of electrical motor drives

CO2: Analysis the converter and chopper fed DC motor drive.

CO3: Explain the various control techniques for induction motor drives

CO4: Describe the synchronous motor drives for various control techniques.

CO5: Design the closed loop controllers for electrical motor drives.

Mapping of COs with POs

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	2	-	1	-	-	-	-	2	2	-
CO2	2	3	3	3	2	-	1	-	-	-	-	2	3	-
CO3	1	1	1	1	1	-	1	-	-	-	-	2	3	-
CO4	1	-	-	-	-	-	1	-	-	-	-	2	3	-
CO5	2	2	2	2	2	-	1	-	-	-	-	2	3	-
CO	**2**	**2**	**2**	**2**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**2**	**3**	**-**

Program outcomes

PO1 : Engineering Knowledge

PO2 : Problem Analysis

PO3 : Design/development of solutions

PO4 : Conduct investigations of complex problems

PO5 : Modern tool usage

PO6 : The Engineer and society

PO7 : Environment and sustainability

PO8 : Ethics

PO9 : Individual and team work

PO10 : Communication

PO11 : Project management and finance

PO12 : Life long learning

Program Specific Outcomes

Graduates will

PSO 1: Electrical drives and control: Analyze, design and provide Engineering solutions in the field of Power Electronics and Drives

PSO 2: Embedded system: Simulate, experiment and solve complex problems in Embedded System

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KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY, TIRUCHENGODE- 637 215					
COURSE OUTCOME ASSESSMENT TEST (COCAT)					
Year/Semester	:	III Year/VI Semester	Max Marks	:	50
Branch	:	EEE	Duration	:	1 Hr 30 min
Subject Code & Title	:	EE 6604 Design of Electrical Machines			

Answer ALL the questions

1.	What are the properties of Conducting Materials with respect to temperature coefficient of resistance and tensile strength? a. low temperature coefficient, low tensile strength b. low temperature coefficient, high tensile strength c. high temperature coefficient, low tensile strength d. high temperature coefficient, high tensile strength	CO1	K2
2.	What is the conductivity of Copper? a) $0.6329*10^6$ mho/cm b) $0.5952*10^6$ mho/cm c) $0.4529*10^6$ mho/cm d) $0.3773*10^6$ mho/cm	CO1	K2
3.	Which property of aluminum it the most preferred element? a) good conductivity b) highly malleable, highly ductile c) most abundant element d) good corrosion resistant	CO1	K2
4.	What is the property of permeability in magnetic materials? a) how easily the magnetic flux is broken/clear b) how easily the magnetic flux is set up c) how long the magnetic flux takes to form d) how long the magnetic flux takes to clear	CO1	K2
5.	What is the property of insulating materials? a) Prevents the unwanted flow of current b) Allows the unwanted flow of current c) Increases the unwanted flow of current d) Decreases the unwanted flow of current	CO1	K1
6.	What is the dielectric strength, coefficient of thermal expansion of glass with respect to porcelain insulators? a) High, high b) High, low c) Low, low d) Low, high	CO1	K1
7.	Which class has the lowest and the highest temperature? a) Class Y, Class C b) Class Y, Class H c) Class H, Class C d) Class B, Class H	CO1	K2
8.	Which among the following is the example of Class Y? a) Varnish b) Insulation oil c) Paper d) Resins	CO1	K2
9.	What happens if the power ratings of the machine are decided liberally? a) Damage occurs to the machine b) Efficiency of the machine improves c) Long life of the machine d) Uneconomical usage of the machine	CO1	K2
10.	What is one important criteria related to the power ratings of the machine? a) Heat should be prevented from generation b) Heat should be dissipated through power ventilation, irrespective of the time c) Heat should be prevented through power ventilation within a short time period d) Heat should be converted to some useful form	CO1	K2
11.	What does the insulation and copper of the transformer depends on? a) current rating b) voltage rating c) output power d) voltage rating and output power	CO2	K2

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12.	When is square and stepped cores used? a) when circular coils are required for low voltage distribution b) when rectangular coils are required for low voltage distribution c) when circular coils are required for high voltage distribution d) when rectangular coils are required for high voltage distribution	CO2	K2
13.	What is the value of ratio of gross core area to the area of circumscribing circle in stepped cores? a) 0.71 b) 0.79 c) 0.89 d) 0.91	CO2	K2
14.	What type of heat dissipation takes place when heat flows from oil to walls of a cooler? a) conduction b) convection c) radiation d) conduction and convection	CO2	K2
15.	What is the relation of the provision of tubes with respect to dissipation of heat? a) the provision of tubes is directly proportional to the dissipation of heat b) the provision of tubes is indirectly proportional to the dissipation of heat c) the provision of tubes is directly proportional to square of the dissipation of heat d) the provision of tubes is indirectly proportional to square of the dissipation of heat	CO2	K2
16.	What is the loss dissipated by tubes by convection, given area of the tubes = 3.5? a) 12.3 W per 0^c b) 2.51 W per 0^c c) 5.3 W per 0^c d) 30.8 W per 0^c	CO2	K4 (2)
17.	What is the range of the diameter of the tubes used? a) 50-60 mm b) 60-70 mm c) 70-80 mm d) 50-70 mm	CO2	K2
18.	What type of cooling is being made use of in transformers having a capacity of less than 11MVA? a) natural cooling b) forced cooling c) air blast cooling d) forced cooling and air blast cooling	CO2	K2
19.	What is the rating of the transformer for the voltage of above 11 kV upto 33 kV? a) 1000-5000 kVA b) less than 1000 kVA c) above 1000 kVA d) 100-500 kVA	CO2	K2
20.	What is the condition for choosing the armature current/parallel path in armaturedesign? a) > 200 ampere for both lap and wave windings b) >200 ampere for lap winding, <200 ampere for wave winding c) < 200 ampere for both lap and wave windings d) <200 ampere for lap winding, >200 ampere for wave winding	CO3	K1
21.	For a DC machine, the armature slot pitch is 35mm and the diameter is 0.2m. What is the number of armature slots for the machine? a) 17 b) 18 c) 19 d) 20	CO3	K4 (2)
22.	For a DC generator, given the load current is 510 ampere, field current is 1.4 ampere. What is the value of armature current? a) 508.6 ampere b) 714 ampere c) 511.4 ampere d) 364.28 ampere	CO3	K2
23.	For a DC generator, given D = 0.35 m, L = 0.21 m, Coefficient of output= 108.5, efficiency= 0.9, speed= 1400 rpm. What is the output power of the DC generator? a) 65.12 W b) 72.35 KW c) 78.35 W d) 65.12 KW	CO3	K4 (2)
24.	What is the relation of hysteresis loss and weight of iron parts with respect to increase of number of poles? a) decrease in hysteresis loss, increase in weight b) decrease in hysteresis loss, decrease in weight c) increase in hysteresis loss, increase in weight d) increase in hysteresis loss, decrease in weight	CO3	K1
25.	What are the factors the design of poles of the DC machine depends on? a) length, breadth, height of the conductors b) area of cross section of poles c) area of cross section of poles and height of the poles d) area of cross section of poles and height of the poles and the design of field windings	CO3	K2

26.	What is the flux in the pole body, given leakage coefficient = 1.2 and the useful flux per pole is 10 weber? a) 12 weber b) 11.2 weber c) 8.2 weber d) 20 weber	CO3	K2
27.	What is the meaning of useful flux? a) the flux which is being created in the machine b) the flux which can be used c) the flux which can produce the output d) the flux that is wasted	CO3	K2
28.	What is the value of the ratio of the core length to pole pitch for good efficiency? a) 1 b) 1.5 c) 2 d) 3	CO4	K2
29.	What is the Relation between pole pitch and the core length in terms of the best power factor? a) pole pitch = (0.18 * core length)^3 b) pole pitch = (0.18 * core length)^2 c) pole pitch = (0.18 * core length)$^{1/2}$ d) pole pitch = (0.18 * core length)$^{1/3}$	CO4	K2
30.	What is the relationship between current density, conductor area and resistance? a) higher the current density, higher the conductor area, higher the resistance b) higher the current density, higher the conductor area, lower the resistance c) higher the current density, lower the conductor area, higher the resistance d) lower the current density, lower the conductor area, lower the resistance	CO4	K2
31.	What happens if the resistance of the end rings is negligible? a) resistance coming in each current path is resistance of three bars b) resistance coming in each current path is resistance of four bars c) resistance coming in each current path is resistance of two bars d) resistance coming in each current path is resistance of five bars	CO4	K2
32.	Given the bars per pole is 6 and the current per bar is 20 A, what is the value of the maximum current in the end rings? a) 60 A b) 80 A c) 90 A d) 70 A	CO4	K4 (2)
33.	What should be done to keep the rotor voltage to an acceptable level? a) rotor to stator turns must be properly adjusted b) stator to rotor turns must be properly adjusted c) stator turns must be adjusted d) rotor turns must be adjusted	CO4	K2
34.	What is the relation between the number of poles and pole pitch with power factor? a) number of poles increases, pole pitch increases, bad power factor b) number of poles increases, pole pitch decreases, good power factor c) number of poles increases, pole pitch decreases, good power factor d) number of poles increases, pole pitch increases, bad power factor	CO4	K2
35.	What factor does the additional copper losses depend upon? a) skin effect b) mmf harmonics c) machine design d) mmf harmonics and skin effect	CO4	K2
36.	How can the additional losses be decreased in the induction motor? a) chording the stator winding b) skewing the rotor c) having a proper slot combination d) chording the stator winding, skewing the rotor, having a proper slot combination.	CO4	K2
37.	How is the specific electric loading related to the synchronous reactance of the machines? a) specific electric loading is high, leakage reactance is high, giving low synchronous reactance b) specific electric loading is high, leakage reactance is low, giving low synchronous reactance	CO5	K2

	c) specific electric loading is high, leakage reactance is high, giving high synchronous reactance d) specific electric loading is low, leakage reactance is high, giving high synchronous reactance		
38.	How is the iron loss related with the choice of specific magnetic loading? a) choice of magnetic loading is directly proportional to the iron loss b) choice of magnetic loading is indirectly proportional to the iron loss c) choice of magnetic loading is directly proportional to the square of the iron loss d) choice of magnetic loading is indirectly proportional to the square of the iron loss	CO5	K2
39.	What factors does the friction and windage loss depend upon? a) construction of the machine b) speed of the machine c) rating of the machine d) construction, speed, rating of the machine	CO5	K2
40.	Given : total area = 473 mm² and Number of bars = 8 for a rotor design, what is the value of area of each damper bar? a) 59 mm² b) 455 mm² c) 475 mm² d) 3784 mm²	CO5	K4 (2)
41.	What is the minimum clearance between adjacent field coils and pole drawing? a) 14 mm b) 15 mm c) 13 mm d) 12 mm	CO5	K2
42.	What is the relation between coil span and harmonics? a) low coil span decreases harmonics to less amount b) low coil span decreases the harmonics drastically c) high coil span decreases the harmonics drastically d) high coil span decreases the harmonics by small amount	CO5	K2
43.	How is the number of armature slots associated with the armature windings? a) number of slots should be such that unbalanced winding is obtained b) number of slots should be such that balanced winding is obtained c) number of slots should be so low as possible d) number of slots should be high as possible	CO5	K2
44.	How many poles does the turbo-alternators have and what is the speed of the turbo alternators? a) 4 poles, 3000 rpm b) 3 poles, 6000 rpm c) 2 poles, 5000 rpm d) 2 poles, 3000 rpm	CO5	K2
45.	How is the turbo-alternators driven by? a) water turbines b) steam turbines c) engine driven generators d) compensators	CO5	K2

CO 1	Describe the properties of various engineering materials and categorize the machines on their thermal rating.
CO 2	Illustrate the design of transformer to meet the cooling requirement.
CO 3	Formulate the armature and field design of D.C motor.
CO 4	Model the squirrel cage and wound rotors, based on the design parameters and analyze the magnetic leakage concepts.
CO 5	Select the design parameters of synchronous motor and design the turbo alternator for the specifications.

K1: Remembering K2: Understanding K3: Applying K4: Analyzing K5: Evaluating K6: Creating

Course Instructor **Course Coordinator** **Module Coordinator** **Programme Coordinator**

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KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY, TIRUCHENGODE- 637 215

INTERNAL ASSESSMENT TEST-II

Year/Semester	:	IV Year/VIII Semester	Max Marks	:	50
Branch	:	**EEE**	Duration	:	1 Hr 30 min
Subject Code & Title	:	EE6009 Power Electronics for Renewable Energy Systems	Date & Session	:	19.01.2018& AN

Answer ALL the questions

PART-A **(5 x 2=10)**

1.	What is called matrix converter?		CO3	K2
2.	Write the functions of boost converter in solar photovoltaic system?		CO3	K1
3.	Define the term fill factor of solar cell.		CO3	K1
4.	Why an inverter not allowed to operate in over modulation region?		CO3	K2
5.	Write the significance of reference theory?		CO2	K1

PART-B **(2 x 13=26)**

6.	(a)	(i) Draw the power circuit of grid interactive inverter and explain the operation	7	CO3	K2
		(ii) Clarify the need of AC-DC-AC converters for wind energy conversion system.	6	CO3	K4
6.	(b)	Explain different modes of operation of PV fed Buck Boost converter also discuss how buck boost converter used to charge a battery.	13	CO3	K2
7.	(a)	(i) Describe using a diagram the working of matrix converter as an inverter.	9	CO3	K1
		(ii) Enumerate the limitations of three phase AC voltage controller.	4	CO3	K1
7.	(b)	Draw the schematic diagram of standalone photovoltaic system. What are the main components used in it? Explain their function.	13	CO3	K1

PART-C **(1 x 14=14)**

8.	(a)	(i) Explain the theory of operation of a doubly fed induction generator.	10	CO2	K2
		(ii) Bring out relative merits and demerits of DFIG	4	CO2	
8.	(b)	Define reference theory and also explain about the fundamentals of reference theory.	14	CO2	K5

CO2	Students are expected to be able to illustrate the reference theory fundamentals and principle operation of induction generator for wind power generation.
CO3	Students are expected to be able to interpret the application of power electronic converters for renewable energy generation and grid connection.

K1: Remembering K2: Understanding K3: Applying K4: Analyzing K5: Evaluating K6: Creating

% of Remembering	% of Understanding	% of Application and higher order Abilities (K3+K4+K5+K6)	Total
36	42	22	100

Course Instructor /Course Coordinator **Module Coordinator** **Programme Coordinator**

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KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY, TIRUCHENGODE- 637 215

Year/Semester : **IV Year / VIII Sem**

Branch : **EEE**

Subject Code & Title : **EE6009 – Power Electronics for Renewable Energy Systems**

Assignment-I

Answer ALL the questions (10 x 2=20)

1.	**Describe the following with neat schematic.** **i. Wind energy conversion system** **ii. Energy from the Ocean**	**CO1**	**K3**
2.	**Simplify the principle of operation of DFIG used for renewable energy conversion.**	**CO2**	**K4**

Assignment -II

Answer ALL the questions (10 x 3=30)

1.	**Describe the principle of operation of PWM inverter and describe how it is used for wind energy conversion.**	**CO3**	**K3**
2.	**Illuminate how the isolation and temperature affects the I-V characteristics of a solar cell.**	**CO4**	**K4**
3.	**Clarify various strategies used for the operation of an MPPT.**	**CO5**	**K6**

CO1	Explain Environmental aspects of electric energy conversion and impacts of renewable energy generation on environment.
CO2	Illustrate the reference theory fundamentals and principle operation of induction generator for wind power generation.
CO3	Interpret the application of power electronic converters for renewable energy generation and grid connection.
CO4	Analyze the grid connected variable speed wind generation using PMSG, SCIG.
CO5	Discuss the case studies of various renewable systems like wind, PV and also, explain MPPT algorithm for PV generation system.

K1: Remembering K2: Understanding K3: Applying K4: Analyzing K5: Evaluating K6: Creating

% of Remembering	% of Understanding	% of Application and higher order Abilities (K3+K4+K5+K6)	Total
-	-	100	100

Course Instructor/Coordinator **Module Coordinator** **Programme Coordinator**

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KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY, TIRUCHENGODE- 637 215

INTERNAL ASSESSMENT TEST-II

Year/Semester	:	III Year/VI Semester	Max Marks	:	50
Branch	:	**EEE**	Duration	:	1 Hr 30 min
Subject Code & Title	:	EE6604 Design of Electrical Machines	Date & Session	:	07.03.2018& FN

Answer ALL the questions

PART-A **(5 x 2=10)**

1.	Mention the Guiding factors for choice of number of poles in DC machines		CO3	K2
2.	Distinguish between real and apparent flux densities in the tooth section of the slot.		CO3	K2
3.	Why square pole is preferred?		CO3	K2
4.	Define field form factor.		CO3	K1
5.	List the different methods of cooling of transformers		CO2	K1

PART-B **(2 x 13=26)**

6.	(a)	(i) Give the expression for the torque developed by a D.C motor in terms of main dimensions of the armature.	8	CO3	K2
		(ii) State and explain the factors which govern the choice of magnetic loadings in DC machine.	5	CO3	K1
		OR			
6.	(b)	(i) Derive the expression for reluctance of air gap in machines with smooth armature and slotted armature.	4	CO3	K4
		(ii)Determine the air-gap length of a dc machine from the following particulars: gross-length of core = 0.12 m, number of ducts = one and is 10 mm wide, slot pitch = 25 mm, sloth width = 10 mm, carter's coefficient for slots and ducts = 0.32, gap density at pole centre = 0.7 Wb/m^2; field mmf/pole = 3900 AT, mmf required for iron parts of magnetic circuit = 800 AT.	9	CO3	K3
7.	(a)	Predict the main dimension and number of poles of a 37kW, 230V, and 1400 rpm shunt motor, so that square pole face is obtained. The average gap density is 0.5 wb/m^2 and ampere conductor per meter is 22000. The ratio of pole arc to pole pitch is 0.7 and full load efficiency is 0.9.	13	CO3	K2
		OR			
7.	(b)	Determine the main dimensions, number of poles and the length of air gap of a 600 kW, 500V, 900 r.p.m. generators. Assume average gap density as 0.6 Wb/m^2 and ampere conductors per metre as 35000. The ratio of pole arc to pole pitch is 0.75 and the efficiency is 91 percent. The following are the design constraints peripheral speed 40 m/s, frequency of flux reversals is 50 Hz, current per brush arm 400 A and armature mmf per pole 7500 A. The mmf required for air gap is 50 percent of armature mmf and gap contraction factor is 1.15	13	CO3	K5

PART-C **(1 x 14=14)**

8.	(a)	(i) A 3-phase, 50Hz, oil cooled core type transformer has the following dimensions: Distance between core centers = 0.2m, Height of window =0.24m. Diameter of circumscribing circle =0.14m, The flux density in the core = 1.25Wb/m^2. The current density in the conductor =2.5A/mm^2. Assume a window space factor of 0.2 and the core area factor = 0.56. The core is 2-	7	CO2	K2

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stepped. Estimate kVA rating of the transformer.

(ii) A single phase 400V, 50 Hz, transformer is built from stampings having a relative permeability of 1000. The length of the flux path is 2.5m, the maximum flux density in the core is 1 Wb/m^2, the weight of core is 43.8 kg and the primary winding has 800 turns. The iron loss at the working flux density is 2.6 W/kg. Find the no load current of the transformer. | 7 | CO2 | K1

OR

8. (b) A 250 KVA, 6600/400 V, 3-phase core type transformer has a total loss of 4800 watts on full load. The transformer tank is 1.25 m in height and 1 m x 0.5 m in plan. Design a suitable scheme for cooling tubes if the average temperature rise is to be limited to 35^0. The diameter of the tubes is 50 mm and is spaced 75 mm from each other. The average height of the tube is 1.05 m. | 14 | CO2 | K6

CO2	Illustrate the design of transformer to meet the cooling requirement.
CO3	Formulate the armature and field design of D.C motor

K1: Remembering K2: Understanding K3: Applying K4: Analyzing K5: Evaluating K6: Creating

% of Remembering	% of Understanding	% of Application and higher order Abilities (K3+K4+K5+K6)	Total
17.77	37.77	44.44	100

Course Instructor Course Coordinator Module Coordinator Programme Coordinator

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

DESIGN OF ELECTRICAL MACHINES

Tutorial III - Question Paper

Class: III Year/VI Semester **Max. Mark: 40**

Date: 05.02. 2018 **Time: 1 Hr 30 Mints**

1. Calculate the mmf required for the air gap of machine having core length =0.32 m including 4 ducts of 10 mm each, polar arc =0.19m; slot pitch=65.4 mm, slot opening = 5min; air gap length = 5mm; flux per pole = 52 mWb. Given Carter's co-efficient is 0.18 for opening/gap = 1, and is 0.28 opening/gap = 2. **(10) [CO3 K5]**

2. Determine the total commutator losses for a 1000kV, 500V, 800 rpm and 10 pole generators. Given that commutator diameter=1m, Current density=$75x10^{-3}A/mm^2$, brush pressure=$14.7kN/m^2$, Coefficient of friction=0.28, Brush contact drop=2.2V. **(10) [CO3 K4]**

3. Determine the apparent flux density in the teeth of a d.c. machine when the real flux density is 2.15 Wb/m; slot pitch 28 mm; slot width 10 mm and the gross core length 0.35 m. the number of ventilating ducts is 4, each 10 mm wide. The magnetizing force for a flux density of 2.15 Wb/m^2 is 55000 A/m. The iron stacking factor is 0.9. **(10) [CO3 K4]**

4. Determine the diameter and length of armature core for a 55kW, 110V, 1000 rpm, 4 pole shunt generator, assuming specific electric and magnetic loading of 26000 amp.cond./m and 0.5 Wb/m^2 respectively. The pole arc should be about 70% of pole pitch and lenth of core about 1.1 time's pole arc. Allow 10 ampere for the field current and assume voltage drop of 4 volts for the armature circuit. Specify the winding use and also determine suitable values for number of armature conductors and slots. **(10) [CO3 K5]**

CO 3	**Formulate the armature and field design of D.C motor.**

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

DESIGN OF ELECTRICAL MACHINES

Tutorial IV - Question Paper

Class: III Year/VI Semester **Max. Mark: 40**

Date: 22.02. 2018 **Time: 1 Hr 30 Mints**

1. Find the main dimension of a 15 Kw, 3 phase, 400 V, 50 Hz, 2810 rpm squirrel cage induction motor having an efficiency of 0.88 and a full load power factor of 0.9. Assume specific magnetic loading = 0.5 Wb/m^2, specific electric loading = 25000 ac/m. take the rotor peripheral speed as approximately 20 m/s at synchronous speed. **(10) [CO4 K3]**
2. A 15 kW, 440 V, 4 pole, 50 Hz, 3 phase induction motor is built with a stator bore 0.25 m and a core length of 0.16. The specific electric loading is 23000 ampere conductor per meter. Using the data of this machine, determine the core dimensions, number of stator slots and number of stator conductors for a 11 kW, 460 V, 6 pole, 50 Hz motor. Assume a full load efficiency of 84 per cent and power factor of 0.82 for each machine. The winding factor is 0.955. **(10) [CO4 K3]**
3. Design a cage rotor for a 40 HP, 3-phase, 400 V, 50 Hz, 6 pole, delta connected induction motor having a full load η of 87% and a full load pf of 0.85. take D = 33 cm and L = 17 cm. Stator slots = 54, conductors / slot = 14. Assume suitably missing data if any. **(10) [CO4 K6]**
4. A 15kW, 400V, 6 poles, 50Hz induction motor has a stator diameter 0.3m, length of the core 0.12m; number of stator slots is 72 with 20 conductors per slot. Calculate the value of magnetizing current per phase if the length of the air gap is 0.35mm and gap contraction factor is 1.2. Assume mmf required for a iron path is 35% of air gap. **(10) [CO4 K5]**

CO 4	**Model the squirrel cage and wound rotors, based on the design parameters and analyze th magnetic leakage concepts.**

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Reg. No.	7	3	1	6	1	6	1	0	6	0	5	2

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DEPARTMENT OF ECE

COURSE OUTCOME ASSESSMENT TEST (COCAT)

Year/Semester : IV Year/ VII Semester | Max Marks : 50

Branch : ECE | Duration : 1 Hr 30 min

Subject Code & Title : EC6016 - Optoelectronic Devices | Date & Session : 01.10.2019 & AN

Answer ALL the questions

1. Superimposition or mixing up of 2 or more waves which results in forming another new wave is called as _____ (CO1, K2)
   (a) Interference (b) Diffraction
   (c) Scattering (d) Polarization
2. Snell's law relates _____ (CO1, K2)
   (a) Light reflection (b) Light Refraction
   (c) Light Transmission (d) Light Absorption
3. The most commonly used semiconductor is _____ (CO1, K2)
   (a) Germanium (b) Silicon
   (c) Carbon (d) Sulphur
4. When a pure semiconductor is heated, its resistance_____ (CO1, K2)
   (a) Goes up (b) Can't say
   (c) Remains the same (d) Goes down
5. In a semiconductor, current conduction is due to_____ (CO1, K2)
   (a) Only holes (b) Only free electrons
   (c) Holes and free electrons (d) None of the above
6. Photoluminescence which persists for some period after excitation is known as_____ (CO2, K2)
   (a) Phosphorescence (b) Tri-luminescence
   (c) Flourescence (d) Bioluminescence
7. Consider the following statements: (CO2, K2)
   1. LED is also known as direct bandgap diode
   2. LCD generates light
   (a) 1 is correct but 2 is wrong (b) 2 is correct but 1 is wrong
   (c) both 1 & 2 are correct (d) both 1 & 2 are wrong
8. A Laser can be fabricated using _____ (CO2, K2)
   (a) Germanium (b) Silicon
   (c) Gallium Arsenide (d) Gallium Phosphide
9. A Laser diode _____ (CO2, K2)
   (a) Produces always light of single wavelength (b) Produces always light of multiple wavelength
   (c) Can be made to produce light of single and multiple wavelength (d) Produces visible spectrum light
10. To display the digit 8 in a seven segment indicator _____ (CO2, K2)
    (a) C must be lighted (b) G must be off
    (c) F must be on (d) All segments must be lighted
11. A _____ performs the linear conversion of the received optical signal into an electric current. (CO3, K2)
    (a) Receiver (b) Converter
    (c) Detector (d) Reflector
12. The gain of Avalanche Photo Diode is greater than p-i-n Photodiode_____ (CO3, K2)
    (a) True (b) False
    (c) - (d) -
13. In pyroelectric photodetectors, the consequent increase in dielectric constant due to temperature variation by the photon absorption, is generally measured as change in _____ (CO3, K2)
    (a) Resistance (b) Inductance
    (c) Admittance (d) Capacitance
14. Which noise occurs at very low frequencies? (CO3, K2)
    (a) Flicker noise (b) Generation recombination noise
    (c) Shot noise (d) Johnson noise
15. A photodiode is used in reversed bias because _____ (CO3, K2)
    (a) Majority of electron-hole pairs swept are reverse across the junction (b) Only one side is illuminated
    (c) Reverse current is small compared to photocurent (d) Reverse current is large compared to photocurent
16. The modulation techniques used to convert analog signal into digital signal are _____ (CO4, K2)
    (a) Pulse code modulation (b) Delta modulation
    (c) Adaptive delta modulation (d) All of the above
17. The frequency at which the efficiency falls by 3dB from its low frequency value is defined as _____ (CO4, K2)
    (a)Modulation bandwidth (b) Modulation depth
    (c) Isolation (d) Modulation efficiency
18. Bragg cell is the other name for _____ (CO4, K2)
    (a) Electro-optic modulators (b) Magneto-optic modulators
    (c) Acousto-optic modulators (d) Optical cross bar switch
19. Which optical devices are adopted or applicable for routing signals from one waveguide to another? (CO4, K2)
    (a) Optical Combiner (b) Optical Splitter
    (c) Optical Coupler (d) None of the above
20. Switching exists in (CO4, K2)
    (a) Point to point communication (b) Broadcast communication
    (c) Both of the mentioned (d) None of the mentioned
21. Compositional and structural differences between photonic and electronic devices _____ (CO5, K2)
    (a) Provide high efficiency (b) Provide low efficiency
    (c) Highly used (d) Create Problems
22. Monolithic integration for optical sources is confined to the use of _____ semiconductors. (CO5, K2)
    (a) III - V (b) II- III
    (c) I – II (d) VII- VIII
23. Optical interconnection between optoelectronic device is achieved in _____ (CO5, K2)
    (a) Wavelength amplifier (b) Wavelength convertor
    (c) Replication technology (d) Chip-to-chip interconnection
24. In an eye-diagram, digital signals with very bad interference resembles the shape of _____ (CO5, K2)
    (a) Circle (b) Rectangle
    (c) Triangle (d) Straight line
25. Which category of wavelength division multiplexer comprises two 3dB couplers where the splitting of an incident beam takes place into two fiber paths, followed by the recombination with second 3-dB coupler? (CO5, K2)
    (a) Interference filter based devices (b) Angular dispersion based devices
    (c) Mach-Zehnder Interferometers (d) All of the above

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COURSE OUTCOMES(COs)

CO1	Acquire knowledge about the principle of polarization, interference, diffraction and solid state physics
CO2	Obtain knowledge about luminescence and its classification & understand the principle behind laser action.
CO3	Acquire knowledge about various photo devices and photoconductors & understand the working principle of Photo detectors and thermal detectors
CO4	Understand the principle behind electro optic, magneto optic and acoustoptic devices and their uses.
CO5	Acquire fundamental knowledge about integrated transmitters and receivers.

K1: Remembering K2: Understanding K3: Applying
K4: Analyzing K5: Evaluating K6: Creating

P. Vaseekaran 26/9/19 P. Vaseekaran 26/9/19

Course Instructor/Course Coordinator Module Coordinator Programme Coordinator

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ASSIGNMENT – I

Branch: B.E- Electronics and Communication Engineering
Year/Sem: IV/VII
Course Code: EC6016
Issue Date: 08/07/2019

Max. Marks: 20
Course Name: Opto-Electronic Devices
Submission Date: 15/07/2019

Answer all the questions

1.	Show that the Fermi Dirac distribution function is symmetrical about $E = E_F$ at any temperature.	(6)	[CO1, K2]
2.	Estimate the energy required to excite electrons from donor level to conduction band in Silicon given that $m^*_c = 0.26m$ and relative permittivity is 11.8.	(4)	[CO1, K3]
3.	Elaborate the principle and typical construction of a doped insulator LASER, with relevant diagrams.	(10)	[CO2, K6]

COURSE OUTCOMES(Cos)

The students will be able to

CO1: Acquire knowledge about the principle of polarization.
CO2: Obtain knowledge about luminescence and its classification & understand the principle behind laser action.

K1:Remembering | **K2:Understanding** | **K3:Applying**

K4:Analyzing | **K5:Evaluating** | **K6:Creating**

% of Remembering	% of Understanding	% of Application and higher order abilities [K3+K4+K5+K6]	Total
	30%	70%	100%

9/7/19
Course Instructor

P. Gopal 9/7/19
Course Coordinator

9/7/19
Module Co-ordinator

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Programme Co-ordinator

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INTERNAL ASSESSMENT TEST-III

Year/Semester	:	IV Year/VII Semester	Max Marks	:	100
Branch	:	ECE	Duration	:	3 Hr
Subject Code & Title	:	EC6016 &Opto electronic devices	Date & Session	:	03.10.2019 & FN

Answer ALL the questions

PART-A (8 x 2=16)

1.	What are the limitations of acousto-optic modulators?	CO4	K1
2.	Define faraday effect.	CO4	K2
3.	Write the application of magneto optic devices.	CO4	K2
4.	What are the operational parameters of switching device?	CO4	K2
5.	What are optoelectronic integrated circuits?	CO5	K1
6.	Distinguish between hybrid and monolithic integration.	CO5	K2
7.	What are active guided wave devices? And give examples.	CO5	K1
8.	Define waveguide.	CO5	K2

PART-B (6 x 14=84)

9.	Discuss in detail about acousto-optic devices with necessary diagram	14	CO4	K1
10.	Explain the Quadratic Electro-Optic effect and BRAQWET modulator with neat diagram.	14	CO4	K2
11.	Write short notes on the following (i).Tunable threshold logic gates (7) (ii)Optical crossbar switching (7)	14	CO4	K2
12.	With neat diagram, Explain the performance of Front end photo receivers	14	CO5	K1
13.	Explain the various steps involved in the fabrication of OEIC transmitter and also draw the equivalent circuit of integrated transmitter	14	CO5	K2
14.	Explain in detail about the properties of optical guided wave and couplers	14	CO5	K2

CO4	Understand the principle behind electro optic, magneto optic and acoustoptic devices and their uses.
CO5	Acquire fundamental knowledge about integrated transmitters and receivers.

K1: Remembering K2: Understanding K3: Applying K4: Analyzing K5: Evaluating K6: Creating

% of Remembering	% of Understanding	% of Application and higher order Abilities(K3+K4+K5+K6)	Total
34%	66%	—	100%

Course Instructor/Coordinator Module Coordinator Program Coordinator

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DEPARTMENT OF ECE

COURSE PLAN

Faculty Name	:	**Ms. SARANYA.P**			
Branch	:	**ECE**	**Year / Sem./Sec**	:	III/V/ ECE /B
Course code	:	**EC8073**	**Course Name**	:	MEDICAL ELECTRONICS

INTRODUCTION:

Medical electronics deals with the instrumentation used in physiological measurement. Developments in electronics technology have offered new and enhanced applications, especially in the areas of data recording and analysis and imaging technology. These techniques help to identify the disorders in human body and to treat them on time.

In unit I, Electro-Physiology and Bio-Potential Recording discuss the basic electronic equipments used in medical applications. The origins of bio potential with its electrodes are briefly explained. The types of amplifiers used in biological field helps in processing the real time signals detected from human body. The devices used to measure the electrical signal from various part of the body are explained. The devices such as Electro cardiograph, Electro Encephalography, Electromyography and Phonocardiogram are briefly explained with its working procedures. The operation of these devices helps the students to re model the existing devices and so can be used for advanced measurement of electrical signals. The electrical signal measurement helps in understanding the working condition of various parts of the body. The above mentioned equipments help in measuring the electrical signals from heart, brain, eyes and muscles.

In unit II, Bio-Chemical and Non Electrical Parameter Measurement deals with the measurement of PH, CO2 and O2 in the blood flow. This measurement helps to maintain the chemical balance of the human body. The absence of this chemical balance causes various disorders. The designing of this equipment and the working block diagram were explained. The measurement of Protein in plasma and urine were done with the help of a technique called Electrophoresis. This technique also helps to identify the antibodies. The devices such as Colorimeter, Flame photometer and spectrometer make the analysis much easier.

In unit III , Assist device, brief out on the assisting devices with its working principle and operation in medical field. The cardiac pacemakers help the heart to pump blood in case on any block present in the valves.

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Defibrillator helps to maintain synchronization of heart. In case of kidney failure, the device called Dialyzer is used for the purification of blood. This assisting device helps for the proper functioning of human body.

In unit IV, Physical Medicine and Biotelemetry discuss with Telemetry principles and Diathermy used in medical field. Diathermy is the treatment process by which cutting, coagulation of tissues are obtained. Telemetry is a technology that allows remote measurement and reporting of information.

In the last unit, the students will learn the recent Instruments used in medical field.

OBJECTIVE:

- To initiate the student to understand the concept, structure, operation of Bio Medical Instruments.
- To gain knowledge about the various physiological parameters and recording methods of these parameters.
- To study about the various assist devices used in the hospitals.
- To gain knowledge about equipment used for physical medicine and the various recently developed diagnostic and therapeutic techniques.
- To make students, understand about the need and technique of electrical safety in hospitals.

PREREQUISITE:

- Biomedical electronics related with life sciences and health care units.
- It combines the design and problem solving skills of engineering with medical and biological sciences for advance treatments including diagnosis, monitoring, treatment and therapy.
- Biomedical Engineering is applied in the area of Biomedical Signal Processing and Modeling, Biomaterials and Prosthetic Devices, and Biomedical Image Processing.

APPLICATION:

- Students can be well-known with the function of our body
- Be exposed to the operation and applications of electronic devices used in medical field
- Student have sufficient knowledge in biochemical and various physiological information

COURSE OUTCOME:

At the end of the semester students will be able to

CO1: Explain the functioning of our body and record the Bio-potential signals to identify the problems.

CO2: Compute the bio-chemical and various physiological information.

CO3: Demonstrate the working of units which will help to restore normal functioning of human body.

CO4: Apply the electronics in diagnosis and therapeutic techniques.

CO5: Describe the telemedicine principles and recent trends in medical field.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	2	-	-	-	-	-	-	2	3	2
CO2	3	2	2	2	2	-	-	-	-	-	-	2	2	2
CO3	3	2	2	2	2	-	-	-	-	-	-	2	-	2
CO4	3	2	2	3	2	-	-	-	-	-	-	2	3	2
CO5	3	2	2	2	2	-	-	-	-	-	-	2	3	2
AVG	3	2	2	3	2	-	-	-	-	-	-	2	3	2

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DEPARTMENT OF ECE

COURSE OUTCOME ASSESSMENT TEST (COCAT)

Year/Semester	:	III Year/ V Semester	**Max Marks**	:	50
Branch	:	ECE	**Duration**	:	1 Hr 30 min
Subject Code & Title	:	EC8073&Medical electronics	**Date & Session**	:	19.10.19

Answer ALL the questions

1. The _____ provide inorganic chemicals for cellular reaction **(CO1, K**

(a) Electrolytes **(b)**Proteins

(c) Lipids **(d)Cytoplasm**

2. Recording electrical activities associated with heart is known as _____ **(CO1, K**

(a)EEG **(b)**EOG

(c)EMG **(d)ECG**

3. Which of the following is a wireless ECG acquiring system? **(CO1, K**

(a)pregelled disposable electrodes **(b)**pasteless electrodes

(c)limb electrodes **(d)smart pad**

4. Buffer amplifier converts _____ **(CO1, K**

(a)low impedance signals to high impedance signals **(b)** ac impedance signals to dc impedance signals

(c) high impedance signals to low impedance signals **(d)**dc impedance signals to ac impedance signals

5. Generally what is the material of needle electrodes? **(CO1, K**

(a)stainless steel **(b)**lead

(c)copper **(d)**iron

6. Average systole pressure is _____mm of Hg **(CO2, K**

(a)80 (b)100

(c)120 (d)180

7. The device used to determine the concentration of chemical substance_____ **(CO2, K**

(a) photometer (b) blood flowmeter

(c)PH meter **(d)Colorimeter**

8. The resistance Rt of a metallic conductor at any temperature t is given by _____ **(CO2, K**

(a)$Rt = Ro(1+\alpha t)$ **(b)**$Rt = Ro(\alpha t-1)$

(c)$Rt = Ro(1-\alpha t)$ **(d)**$Rt = Ro(10+\alpha t)$

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9. Thermister is used to measure _____ (CO2, K

(a)Temperature (b)height

(c)pressure (d)displacement

10. Leucocytes are in the shape of _____ (CO2, K

(a)sphere (b)No shape

(c)Cube (d)None of the above

11. Which of the following are not belongs to pacemaker? (CO3, K

(a)Pulse generator (b)battery

(c)electrodes **(d)Pulse detector**

12. Basic unit of kidney is_____ (CO3, K

(a)Neuron (b)Nephron

(c)Pericardium (d)Cell

13. A major advantage of MRI is: (CO3, K

(a) The ease with which equipment is updated or replaced (b) Its relatively low cost, compared to CT scans.

(c) Dose not require specialized room **(d)The ability to reposition the 'cross-section' through the body without repositioning the patient.**

14. Extra corporeal dialysis is also called as (CO3, K1

(a) Peritoneal cavity dialysis **(b) Hemodialysis**

(c) External dialysis (d)Ultrafilteration

15. Ventricular synchronous pacemaker is applied for (CO3, K1

(a)Total AV block **(b)Short period AV block**

(c) SA block (d)Bundle block

16. _____ is the process by which cutting and coagulation of tissues takes (CO4, K1

(a)Thermography (b)Bio-telemetry

(c)Diathermy (d)Dialysis

17. In microwave diathermy microwave is produced by _____ (CO4, K1

(a)Crystal (b)Piezoelectric effect

(c)Magnetron (d)Electrolyte

18. Which type of amplifier used in surgical diathermy (CO4, K1

(a)Class A (b)Class C

(c)Class B (d)Class D

19. Measurement & transmission of biological parameters over a long distance is called (CO4, K1

(a) Bio-telemetry (b) Diathermy

(c) Telecasting (d) Thermography

20. Frequency range of microwave diathermy_____ (CO4, I

(a)2450MHz (b)2450KHz

(c)27.12MHz (d)27.12Khz

21. In a thermograph, heat is identified by (CO5, I

(a)different sizes of lines on a photograph (b)different shapes on a photograph

(c)different colors on a photograph (d)different images on a photograph

22. Endoscope use to examine throat is called (CO5, I

(a)cystoscope (b)gastroscope

(c)microscope **(d)bronchoscope**

The light from a laser source is monochromatic because all the photons (CO5, I

23. (a)are in phase **(b)have same energy**

(c)have same amplitude (d)are in the same direction

24. The material which is not used to make a LOC device (CO5, I

(a)Silicon **(b)Copper**

(c)Glass (d)Paper

25. Which of the following situations is not considered part of telemedicine? (CO5, I

(a)word processing (b)videoconferencing

(c)word processing (d)transmission of still images

COURSE OUTCOMES(COs)

The students will be able to

CO1 Explain the functioning of our body and record the Bio-potential signals to identify the problems.

CO2 Compute the bio-chemical and various physiological information.

CO3 Demonstrate the working of units which will help to restore normal functioning of human body.

CO4 Apply the electronics in diagnosis and therapeutic techniques.

CO5 Describe the telemetry principles and recent trends in medical field.

K1:Remembering **K2:Understanding** **K3:Applying**

K4:Analyzing **K5:Evaluating** **K6:Creating**

18/10/19

Course Instructor/Course Coordinator **Module Coordinator** **Programme Coordinator**

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KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY, TIRUCHENGODE- 637 215

INTERNAL ASSESSMENT TEST – I

SET - II

Year/Semester: III /V

Branch : B.E. & ECE A & B

Course Code&Title: EC8073 &Medical Electronics

Max Marks: 50

Duration : 1 Hr 30 min

Date &Session: 15.07.19&FN

Answer ALL the questions

PART-A (4 x 2=8)

1. State all or nothing law. [CO1, K1]
2. What are the characteristics of bio amplifiers? [CO1, K1]
3. Name the electrodes used for recording EMG, EEG & ECG. [CO1, K1]
4. What is meant by conduction velocity? [CO1, K1]

PART-B (3 x 14=42)

5. (i) Explain in detail about EMG measurement. (7) [CO1, K2]

   (ii) Describe the working of PCG recording system. (7) [CO1, K1]

6. Illustrate the genesis of 12 lead systems and explain the working and recording system with suitable block diagram along with its various lead configurations. (14) [CO1, K4]
7. Describe the working of EEG recording system and also give its typical waveforms, Signal frequency bands. (14) [CO1, K2]

COURSE OUTCOMES(COs)

The students will be able to

CO1: Explain the functioning of our body and record the Bio-potential signals to identify the problems.

K1: Remembering **K2: Understanding** **K3: Applying**

K4: Analyzing **K5: Evaluating** **K6: Creating**

% of Remembering	% of Understanding	% of Application and higher order Abilities (K3+K4+K5+K6)	Total
30	42	28	100

9.7.19 9/7/19

Course Instructor

9/7/19

Module Coordinator

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9.7.19 9/7/19

Course Coordinator

9/7/19

Programme Coordinator

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

TIRUCHENGODE – 637215

ASSIGNMENT – I

Branch: B.E- Electronics and Communication Engineering

Year/Sem: III/V / A & B | **Max. Marks:** 20

Course Code: EC8073 | **Course Name:** Medical Electronics

Issue Date: 8/7/2019 | **Submission Date:** 23/7/2019

Answer all the questions

1. Discuss on any 10 electronic instruments used in medical field with their applications. (10) [CO1, K2]
2. Discuss in detail about the working of Auto analyzer (10) [CO2, K2]

COURSE OUTCOMES(Cos)

The students will be able to

CO1: Explain the functioning of our body and record the Bio-potential signals to identify the problems.

CO2: Compute the bio-chemical and various physiological information.

K1:Remembering **K2:Understanding** **K3:Applying**

K4:Analyzing **K5:Evaluating** **K6:Creating**

% of Remembering	% of Understanding	% of Application and higher order abilities [K3+K4+K5+K6]	Total
-	100%	-	100%

Course Instructor

Course Coordinator

Module Coordinator

Programme Coordinator

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KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY, TIRUCHENGODE – 637 215

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE PLAN

Course code & Name	ME 8391-Engineering Thermodynamics	**Regulations**	2017
Academic Year & Semester	2019-20 (ODD)	**Year/Sem.**	II / III
Name of the Faculty	Mr. R.VASANTHAKUMAR	**Degree/ Branch**	B.E / Mechanical

INTRODUCTION:

The term thermodynamics stems from the Greek words. Therme means heat and dynamics m power. Today, conversion of heat energy into power plays important role in power generation, refrigeration One of the important fundamental laws is conservation of energy principle. It states that energy can ch from one form to another form without losses during energy interaction. So, the first law of thermodynami simply an expression of conservation of energy.

In any systems, the rate of flow of working fluid is constant with respect to time, then the sy is known as steady flow system. In this system, the mass of working fluid enters the system and leaves system after doing work. Therefore this system is known as open system. From first law of thermodynamics total energy entering the system is equal to total energy leaving the system. This law is applicable to the st flow systems. The second law of thermodynamics states that the entropy of an isolated system never decre because isolated systems spontaneously evolve towards thermodynamic equilibrium the state of maxir entropy. Equivalently, perpetual motion machines of the second kind are impossible.

A pure substance is a substance of constant chemical composition throughout its mass. It is a o component system. It may exist in one or more phases. Let us take water as the representative of a substance to study the behavior of water in all the three phases in thermodynamic plots on p-v, p-T, T-s and coordinates. A power cycle continuously converts heat into work in which a working fluid repeatedly perfc a succession of processes. The Rankine cycle is a mathematical model that is used to predict the performanc steam engines. The Rankine cycle is an idealized thermodynamic cycle of a heat engine that converts heat nechanical work.

In many important thermodynamics applications it requires homogeneous mixture of several substances rather than a single pure substance. A non reacting gas mixture can be treated as a pure subst since it is usually a homogeneous mixture of different gases. The thermodynamic behavior of a mixture of g depends upon the individual properties of its constituent gases. Therefore, wide variation is possible in properties of gaseous mixtures. Real gases as opposed to a perfect or ideal gas exhibit properties that canno explained entirely using the ideal gas law.

The studies of properties of air-water vapour mixtures. Atmospheric air is considered to be a mixtur dry air and water vapour. The control of moisture content in the atmosphere is essential for the satisfac operation of many processes involving hygroscopic materials like paper and textiles and it important in com air conditioning. A Psychrometric Chart is an important tool for HVAC engineers to carry out heat loa cooling load calculations and find solutions to various air condition related problems.

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OBJECTIVE:

- ✓ To understand the fundamentals of thermodynamics and to perform thermal analysis on their behavic and performance.
- ✓ To evaluate entropy changes in a wide range of processes and determine the reversibility c irreversibility of a process from such calculations.
- ✓ To relate the characteristics and relative energies of different liquid and solid solutions to the phas diagram of the system.
- ✓ To provide in-depth study of thermodynamic principles, thermodynamics of state, basic thermodynam relations, Principle of Psychrometry & Properties of pure substances.

PREREQUISITE:

- ✓ Selected thermodynamic cycles applied to real machines and systems, chemical reaction, dissociauc phenomena, selected topics in classical thermodynamics.

APPLICATION:

- ✓ I.C Engines
- ✓ Refrigeration and air conditioning
- ✓ Compressors.
- ✓ Jet Propulsion.
- ✓ Power plants
- ✓ Steam Engines
- ✓ Gas turbines

COURSE OUTCOMES:

At the end of the semester students can be able to	
C202.1	Apply the first law of thermodynamics for simple open and closed systems under steady a unsteady conditions.
C202.2	Apply second law of thermodynamics to open and closed systems and calculate entropy a availability.
C202.3	Apply Rankine cycle to steam power plant and compare few cycle improvement methods
C202.4	Derive simple thermodynamic relations of ideal and real gases
C202.5	Calculate the properties of gas mixtures and moist air and its use in psychometric processes

PROGRAM OUTCOMES:

PO1	Engineering Knowledge	PO 8	Ethics
PO 2	Problem analysis	PO 9	Team and Individual work
PO 3	Design and Development of Solutions	PO 10	Communication skill
PO 4	Conduct Investigation of Complex Problems	PO 11	Project Management and finance
PO 5	Modern Tool Usage	PO 12	Lifelong learning
PO 6	The Engineer and Society	PSO1	Thermal Science
PO 7	Environment and Sustainability	PSO2	Computer Aided Tools

COURSE OUTCOME AND PROGRAMME OUTCOMES MAPPING:

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	P
C202.1	3	3	3	2	-	1	-	-	-	2	-	-	3	
C202.2	3	3	3	2	-	1	-	-	-	2	-	-	3	
C202.3	3	3	3	2	-	1	-	-	-	2	-	-	3	
C202.4	3	3	3	1	-	1	-	-	-	2	-	-	3	
C202.5	3	3	3	2	-	1	-	-	-	2	-	-	3	
C202	**3**	**3**	**3**	**1.67**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**3**	

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KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

Year / Sem: II / III **Sub: ME8391 & Engineering Thermodynamics** Date:

Name of the Student: Register Number: Time: 30Minutes

COURSE OUTCOME ACHEIVEMENT TEST

1. **A joule can be converted to which of the following?** CO1 K1
   (a)$Pa \cdot m^2$ (b)$N \cdot kg$ (c)Pa/m^2 (d)$Pa \cdot m^3$
2. **Which of the following is not a control volume?** CO1 K1
   (a)Insulated tank (b) Car radiator (c) Compressor (d) Turbine
3. **A nozzle accelerates steam at 4MPa and 500°C to 1MPa and 300°C. If inlet Velocity is 20 m/s, the exiting velocity is nearest** CO1 K2
   (a) 575 m/s (b)750 m/s (c) 825 m/s (d)890 m/s
4. **Which of the following is an intensive property of a thermodynamic system?** CO1 K1
   (a)Volume (b) Temperature (c)Mass (d) Energy.
5. **Which of the following first-law statements is wrong?** CO1 K2
   (a) The internal energy change equals the work of a system for an adiabatic process.
   (b) The heat transfer equals the enthalpy change for an adiabatic process.
   (c) The heat transfer equals the quasi equilibrium work of a system for a constant-volume process in which the internal energy remains constant.
   (d) The net heat transfer equals the work output for an engine operating on a cycle.
6. **For any reversible process, the change in entropy of the system and surroundings is.** CO2 K2
   (a) Zero (b) Unity (c) Negative (d) Positive e) Infinite
7. **Select the Kelvin-Planck statement of the second law.** CO2 K1
   (a) An engine cannot produce more heat than the heat it receives.
   (b) A refrigerator cannot transfer heat from a low-temperature reservoir to a high-temperature reservoir without work.
   (c) An engine cannot produce work without discharging heat.
   (d) An engine discharges heat if the work is less than the heat it receives.
8. **A Carnot refrigerator requires 10 kW to remove 20 kJ/s from a 20°C reservoir. What is TH?** CO2 K2
   a) 440 K b) 400 K c) 360 K d) 340 K
9. **Which of the following second law statements is incorrect?** CO2 K2
   a) Heat must be rejected from a heat engine.
   b) The entropy of an isolated process must remain constant or rise.
   c) The entropy of a hot block decreases as it cools.
   d) Work must be input if energy is transferred from a cold body to a hot body
10. **In an irreversible process there is a** CO2 K1
    (a) Loss of heat (b) no loss of work (c) gain of heat (d) no gain of heat.
11. **The latent heat of vapourisation at critical point is** CO3 K1
    (a) less than zero (b) greater than zero (c) equal to zero (d) none of the above.
12. **With the increase in pressure** CO3 K2
    (*a*) boiling point of water increases and enthalpy of evaporation increases (b) boiling point of water increases and enthalpy of evaporation decreases (c) boiling point of water decreases and enthalpy of evaporation increases
13. **Rankine cycle comprises of** CO3 K1
    (a) Two isentropic processes and two constant volume processes
    (b) Two isentropic processes and two constant pressure processes
    (c) Two isothermal processes and two constant pressure processes
    (d) None of the above
14. **In a regenerative feed heating cycle, the optimum value of the fraction of steam extracted for feed heating** CO3 K1
    (a) Decreases with increase in Rankine cycle efficiency
    (b) Increases with increase in Rankine cycle efficiency
    (c) Is unaffected by increase in Rankine cycle efficiency (d) none of the above.

15. **The maximum percentage gain in Regenerative feed heating cycle thermal efficiency** CO3 K2
    (a) Increases with number of feed heaters increasing
    (b) Decreases with number of feed heaters increasing
    (c) Remains same unaffected by number of feed heaters
    (d) None of the above.
16. **Boyle's law states that, when temperature is constant, the volume of a given mass of a perfect gas** CO4 K1
    (a)Varies directly as the absolute pressure (b) Varies inversely as the absolute pressure
    (c)Varies as square of the absolute pressure (d) Does not vary with the absolute pressure
17. **Van der Waals' equation may be written as** CO4 K1

    (a) $\left(p+\frac{a}{v}\right)(v-b)=RT$ (b) $\left(p+\frac{a}{v^2}\right)(v-b)=RT$

    (c) $\left(p+\frac{a}{v^2}\right)(v^2-b)=RT$ (d) $\left(p+\frac{a}{v^2}\right)(v^2-b)=RT^2$.

18. **Charle's law states that if any gas is heated at constant pressure, its volume** CO4 K2
    (a) Changes directly as it absolute temperature (b) Changes inversely as its absolute temperature
    (c) Changes as square of the absolute temperature (d) Does not change with absolute temperature.
19. **The specific heat at constant pressure (cp) is given by** CO4 K1

    (a) $c_p = T\left(\frac{\partial s}{\partial T}\right)_p$ (b) $c_p = T\left(\frac{\partial T}{\partial s}\right)_p$

    (c) $c_p = T\left(\frac{\partial v}{\partial T}\right)_p$ (d) $c_p = T\left(\frac{\partial v}{\partial T}\right)_p$

20. **Tds equation is** CO4 K1

    (a) $Tds = c_v dT + \frac{T\beta}{K} dv$ (b) $Tds = c_p dT - \frac{T\beta}{K} dv$

    (c) $Tds = c_v dT + \frac{TK}{\beta} dv$ (d) $Tds = c_v dT + \frac{T\beta}{K} dp$.

21. **In an ideal gas the partial pressure of a component is** CO5 K1
    (a) Inversely proportional to the square of the mole fraction
    (b) Directly proportional to the mole fraction
    (c) Inversely proportional to the mole fraction
    (d) Equal to the mole fraction.
22. **The value of the universal gas constant is** CO5 K1
    (a) 8.314 J/kg K (b) 83.14 kJ/kg K (c)848 kJ/kg K (d) 8.314 kJ/kg K.
23. **In an unsaturated air the state of a vapour is** CO5 K1
    (a) Wet (b) Superheated c) Saturated (d) unsaturated.
24. **For saturated air** CO5 K1
    (a) Wet bulb depression is zero (b)Wet bulb depression is positive
    (c) Wet bulb depression is negative (d) Wet bulb depression can be either positive or negative.
25. **Which one of the following statements is correct?** CO5 K2
    (a) Dew point temperature can be measured with the help of thermometer
    (b) Dew point temperature is the saturation temperature corresponding to the partial pressure of the water vapour in moist air.
    (c) Dew point temperature is the same as the thermodynamic wet bulb temperature.
    (d) For saturated air, dew point temperature is less than the wet bulb temperature.

	CO1	CO2	CO3	CO4	CO5
MARKS ALLOTED	10	10	10	10	10
MARKS OBTAINED					

50

Course Instructor Course Coordinator Module Coordinator Program Coordinator

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

TUTORIAL - I

II YEAR / III SEMESTER

DATE: 11.07.2019 **COURSE CODE/NAME:** ME 8391& ENGINEERING THERMODYNAMICS **Max. Marks**: 20

1. A certain quantity of air initially at a pressure of 8 bar and 280°C has a volume of $0.035m^3$. It undergoes the following processes in the following sequence in a cycle : **(CO1, K3) 10**
   (a) Expands at constant pressure to 0.1 m^3,
   (b) Follows polytropic process with n = 1.4, and
   (c) A constant temperature process (which completes the cycle).
   Evaluate the following :
   (i) The heat received in the cycle ; (ii) The heat rejected in the cycle ;
   (iii) Efficiency of the cycle.

2. A room for four persons has two fans, each consuming 0.18kW power and three 100W lamps. Ventilation air at the rate of 80 kg/hr enters with an enthalpy of 84 kJ/kg and leaves with an enthalpy of 59 kJ/kg. If each person puts out heat at the rate of 630 kJ/hr, determine the rate at which heat is to be removed by a room cooler so that a steady state is maintained in the room. **(CO1, K4) 10**

10/7/19
COURSE COORDINATOR/ INSTRUCTOR

10/7/19
MODULE COORDINATOR

10/7/19
PROGRAMME COORDINATOR

	Course Outcome
CO1	Apply the first law of thermodynamics for simple open and closed systems under steady and unsteady conditions.

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Reg. No. | | | | | | | | | | | | |

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INTERNAL ASSESSMENT TEST-II

Year/Semester	:	II/ III	Max Marks	:	100
Branch	:	Mechanical	Duration	:	3 Hrs
Subject Code & Title	:	ME 8391& Engineering Thermodynamics	Date &Session	:	29.08.2019

Answer ALL the questions

PART-A (08x02=16)

1.	State Carnot theorem.	CO2	K1
2.	What is the principle of increase of entropy?	CO2	K2
3.	Define absolute entropy.	CO2	K1
4.	Define irreversibility.	CO2	K1
5.	Define dryness fraction of steam.	CO3	K1
6.	State phase rule of pure substance.	CO3	K1
7.	The steam is at 2.5 bar and 120°C. Find the condition of steam.	CO3	K3
8.	What is the purpose of reheating?	CO3	K2

PART-B (06 x14 =84)

9.	Two Carnot engines A and B are operated in series. The first one(A) receives heat at 870K rejects to reservoir at temperature T. The second engine(B) receives the heat rejected by the first engine and it turn rejected to a heat reservoir at 300K. Calculate the intermediate temperature T in °C between two heat engines for the following cases (i) The work output of the two engines is equal (ii) The efficiencies of the two engines are equal	CO2	K4
10.	One kg of ice at-5°C is exposed to the atmosphere which is at 20°C. The ice melts and comes into thermal equilibrium with the atmosphere (i) Determine the entropy increase of the universe. (ii) What is the minimum amount of work necessary to convert the water back to ice at -5°C? assume Cp for ice as 2.093 kJ/kg K and the latest heat of fusion of ice as 333.3kJ/kg	CO2	K3
11.	2.5 kg of air at 6 bar, 90°C expands adiabatically is a closed system until its volume is doubled and its temperature becomes equal to that of the surroundings which is at 1 bar, 5°C. For this process determine : (i) The maximum work (ii) The change in availability (iii) The irreversibility. For air take : C_v = 0.718 kJ/kg K, R = 0.287 kJ/kg K.	CO2	K3
12.	(i) Explain the steam formation with the help of T-h diagram. (8) (ii) Explain the p-v-T surfaces of water and CO_2 (6)	CO3	K2
13.	Steam power plant operates on a theoretical reheat cycle. Steam at boiler at 150 bar, 550°C expands through the high pressure turbine. It is reheated at a constant pressure of 40 bar and 550°C and expands through the low pressure turbine to a condenser at 0.1 bar. Draw T-s and h-s diagram. Find (i) Quality of steam at turbine exhaust, (ii) Cycle efficiency (iii) Steam rate in kg/kW hr.	CO3	K3
14.	Explain the regenerative Rankine cycle with help of T-s and schematic diagram.	CO3	K2

COURSE OUTCOMES(COs)	
CO2	Apply second law of thermodynamics to open and closed systems and calculate entropy and availability.
CO3	Apply Rankine cycle to steam power plant and compare few cycle improvement methods

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K1: Remembering K2: Understanding K3: Applying K4: Analyzing K5:EvaluatingK6:Creating

% of Remembering	% of Understanding	% of Application and higher order Abilities (K3+K4+K5+K6)	Total
10	32	58	100

23/8/19
Course Instructor

23/8/19
Module Coordinator

23/8/19
Programme Coordinator

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Name of the Student :
Reg. No. :

10

K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING
QUIZ
ME6501 COMPUTER AIDED DESIGN

YEAR/SEM:III/V **TIME:20Min**
DATE: **MAX.MARKS:10**

1.	The ISO standard for computer Graphics is ? a) Computer graphics standard b) Graphics Standard System c) Graphics Kernel System d) None of above	CO1	K1
2.	A translation is applied to an object by a) Repositioning it along with straight line path b) Repositioning it along with circular path c) Both a and b d) None of the above	CO1	K2
3.	In 2D-translation, a point (x, y) can move to the new position (x', y') by using the equation a) x'=x+dx and y'=y+dx b) x'=x+dx and y'=y+dy c) X'=x+dy and Y'=y+dx d) X'=x-dx and y'=y-dy	CO1	K3
4.	Orthographic projection represents three dimensional objects in a) One dimension b) Two dimension c) Three dimension d) All of the above	CO1	K2
5.	The most basic transformation that are applied in three-dimensional planes are a) Translation b) Scaling c) Rotation d) All of these	CO1	K2
6.	The process which divides each element of the picture into its visible and invisible portions, allowing the invisible portion to be discarded is called__? a) Windowing b) Clipping c) Both (a) and (b) d) Projecting	CO1	K1
7.	A two dimensional rotation is applied to an object by repositioning it along a? a) Upward in the x-y plane b) Diagonals path in the x-y plane c) Circular path in the x-y plane d) Straight path in the x-y plane	CO1	K2
8.	A scaling transformation changes the _____ of an object? a) Location b) Size c) Shape d) None of these	CO1	K2
9.	The transformation that produces a mirror image of an object relative to an axis is called_____ a) Reflection b) Translation c) Rotation d) None of these	CO1	K1
10.	A transformation that slants the shape of objects is called the_____ a) Reflection b) Shear transformation c) Translation d) None of these	CO1	K1

Course Instructor/Coordinator **Module Coordinator** **Programme Coordinator**

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DEPARTMENT OF MECHANICAL ENGINEERING

Assignment-I

Year/Semester	:	III Year/V Semester	Total Marks	:	20
Branch	:	MECHANICAL ENGINEERING	Issue Date	:	31.08.18
Course Code & Name	:	ME6501-COMPUTER AIDED DESIGN	Submission Date	:	04.09.18

Answer ALL the questions **(2 x 10=20)**

1. i)	Write short notes on bicubic surface patch.	(5)	CO2	K
ii)	Discuss in detail about B-rep solid modeling approach.	(5)	CO2	K
2.	Explain the different types of color models used in computer graphics.	(10)	CO3	K

CO2	Identify the different types of curvature and techniques for the surface modeling.
CO3	Select the suitable visual realism parameters.

% of Remembering	% of Understanding	% of Application and higher order Abilities (K3+K4+K5+K6)	Total
25%	25%	50%	100%

A. R 31/8/18

Course Instructor/Coordinator **Module Coordinator** **Programme Coordinator**

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CONTENT

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CONTENT BEYOND SYLLABUS						
1.	3	13.8.18	Comparison of actual and theoretical overall heat transfer coefficient in heat exchanger	95	90	
ADDITIONAL EXPERIMENT						
1.			Critical heat flux apparatus	107		

CO	CO1	CO2	CO3	CO4	CO5
Total Marks	700	200	300	100	300
Marks Scored	658	189	273	93	276
% of CO attainment	94	94.5	91	93	92

Total - 92.9 %

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K S R INSTITUTE FOR ENGINEERING AND TECHNOLOGY

COURSE PLAN

Subject Code & Subject Name	CS8591 - COMPUTER NETWORKS	Regulation	R2017
Academic Year & Semester	2019- 2020 (ODD)	Year / Sem.	III / V
Name of the Faculty	Ms. K. G. Lavanya, AP/IT	Degree / Branch	B.Tech. / IT

INTRODUCTION:

Modern world scenario is ever changing. Data Communication and network have changed the way business and other daily affair works. Now, they highly rely on computer networks and internetwork.

A set of devices often mentioned as nodes connected by media link is called a Network. A node can be a device which is capable of sending or receiving data generated by other nodes on the network like a computer, printer etc. These links connecting the devices are called Communication channels.

Computer network is a telecommunication channel using which we can share data with other computers or devices, connected to the same network. It is also called Data Network. The best example of computer network is Internet. Computer network does not mean a system with one Control Unit connected to multiple other systems as its slave. That is Distributed system, not Computer Network

The entire course is divided into five units:

Unit-1:

Gives an overview of network, protocol layering, TCP/IP protocol suite and OSI model. It also covers transmission media and switching in physical layer.

Unit-2:

Deals with data link layer services and protocols. Also includes MAC, Ethernet (802.3), Wireless LANs, Bluetooth and connecting devices.

Unit-3:

Deals with functionalities of network layer, IPV4 addresses, protocols, unicast routing algorithms and protocols, multicasting and IPV6.

Unit-4

Deals with transport layer protocols like TCP and UDP, services and SCTP.

Unit-5

Gives an idea on various application layer protocols to develop applications.

COURSE OBJECTIVES:

- To understand the protocol layering and physical level communication.
- To analyze the performance of a network.
- To understand the various components required to build different networks.
- To learn the functions of network layer and the various routing protocols.
- To familiarize the functions and protocols of the Transport layer.

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APPLICATIONS:

- Railway reservation system and Access to Information
- Supermarkets, e-tendering documents
- Signing web forms, , filing income tax returns

PREREQUISITE:

- Basics of computer science
- Knowledge about hardware components
- computer configuration

OUTCOMES:

At the end of the course, the student should be able to:

C302.1: Recognize the basic layers and its functions in computer networks and evaluate the performance of a network.
C302.2: Demonstrate the basics of how data flows from one node to another.
C302.3: Analyze and design routing algorithms.
C302.4: Design protocols for various functions in the network.
C302.5: Analyze the working of various application layer protocols.

PROGRAM OUTCOMES (POs)			
PO1	Engineering Knowledge	PO7	Environment and sustainability
PO2	Problem Analysis	PO8	Ethics
PO3	Design/development of solutions	PO9	Individual and team work
PO4	Conduct investigations of complex problems	PO10	Communication
PO5	Modern tool usage	PO11	Project management and finance
PO6	The Engineer and society	PO12	Life-long learning
PROGRAM SPECIFIC OUTCOMES (PSOs)			
Programming Skill: Work as Software Engineers for providing solutions to real world problems using programming languages and open source software.			
Web Designing Skill: Ability to use the web designing skill to establish new solutions for the societal needs.			

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C302.1	2	1	2	-	-	-	-	-	-	-	-	-	-	-
C302.2	2	1	2	-	-	-	-	-	-	-	-	-	-	-
C302.3	3	1	2	-	-	-	-	-	-	-	-	-	-	-
C302.4	3	1	2	-	-	-	-	-	-	-	-	-	-	-
C302.5	3	1	2	-	-	-	-	-	-	-	-	-	-	1
C302	2.6	1	2	-	-	-	-	-	-	-	-	-	2	1
													2	1

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LESSON PLAN

S.No	Date & Hour	Topics	Time Duration (in min.)	Teaching Aids	Resources	Page No.
UNIT 1:INTRODUCTION AND PHYSICAL LAYER						
1.	24.06.19 (1)	Introduction	5	Chalk & Talk	T1	7-18
		Networks	20			
		Just a minute	5			
		Network Types	15			
		Summary	5			
2.	25.06.19 (2)	Recap	5	Chalk & Talk	T1	32-43
		Protocol Layering	15			
		Random pick	15			
		TCP / IP Protocol Suite	10			
		Summary	5			
3.	27.06.19 (3)	Recap	5	Chalk & Talk with PPT	T1	44-45 84-88
		OSI Model	20			
		Just a minute	5			
		Performance	15			
		Summary	5			
4	29.06.19 (1)	Mind map	5	Chalk & Talk with PPT	T1	186-192
		Transmission Media	20			
		Just a Minute	05			
		Guide Media	15			
		Summary	5			
5.	01.07.19 (1)	Recap	5	Chalk & Talk	T1	197-201
		Unguided Media	15			
		Just a Minute	5			
		Comparison of performance	20			
		Summary	5			
6	02.07.19 (2)	Recap	5	Chalk & Talk	T1	208-209
		Switching	20			
		Random pick	5			
		Methods of Switching	15			
		Summary	5			
7.	04.07.19 (3)	Mind map	5	Lecture with PPT	T1	209-211
		Switching basics	15			
		Just a Minute	5			
		Circuit Switched Networks - Phases	15			
		Summary	5			
8.	06.07.19 (1)	Recap	5	Chalk & Talk	T1 W1	212-213
		Efficiency, Delay	15			
		Random pick	5			
		Packet Switching - Introduction	15			
		Summary	5			
9.	08.07.19 (1)	Mind map	5	Chalk & Talk	T1	214-222
		Datagram Networks	20			
		Just a Minute	5			
		Virtual Circuit Networks	15			
		Summary	5			

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S.No	Date & Hour	Topics	Time Duration (in min.)	Teaching Aids	Resources	Page No.
UNIT II: DATA LINK LAYER AND MEDIA ACCESS						
10.	09.07.19 (2)	Mind map	5	Chalk & Talk with PPT	T1	238-251
		Data Link Layer - Introduction	20			
		Just a Minute	5			
		Link Layer Addressing	15			
		Summary	5			
11	11.07.19 (3)	Mind map	5	Chalk & Talk	T1	294-304
		DLC Services	20			
		Random pick	5			
		Data Link Layer Protocols	15			
		Summary	5			
12	13.07.19 (3)	Recap	5	Chalk & Talk	T1	304-312
		HDLC	30			
		Just a Minute	5			
		Point - to - Point Protocol (PPP)				
		Summary	5			
13	13.07.19 (4)	Mind map	5	Chalk & Talk with PPT	T1	326-343
		Random Access	15			
		Random pick	5			
		Controlled Access	15			
		Summary	5			
14	16.07.19 (1)	Recap	5	Chalk & Talk	T1 R5	344-347 362-363
		Channelization	15			
		Just a Minute	5			
		Ethernet Protocol	15			
		Summary	5			
15	16.07.19 (2)	Mind map	5	PPT	T1	364-377
		Standard Ethernet	30			
		Just a Minute	5			
		Fast Ethernet				
		Summary	5			
16	22.07.19 (1)	Recap	5	Chalk & Talk	T1	379-381 436-438
		Gigabit Ethernet	15			
		Random pick	5			
		Wireless LAN - Introduction	15			
		Summary	5			
17	23.07.19 (2)	Recap	5	Chalk & Talk with PPT	T1	439-448
		IEEE802.11 - Architecture	15			
		Random pick	5			
		IEEE802.11 – Addressing, Physical Layer	15			
		Summary	5			
18	25.07.19 (3)	Recap	5	Chalk & Talk	T1	451-452 494-501
		Bluetooth	15			
		Random pick	5			
		Connecting Devices	20			
		Summary	5			

S.No	Date & Hour	Topics	Time Duration (in min.)	Teaching Aids	Resources	Page No.
UNIT III: NETWORK LAYER						
19	27.07.19 (5)	Introduction	5	Chalk & Talk	T1	512-517
		Network Layer Services	20			
		Random pick	5			
		Packet Switching	15			
		Summary	5			
20	27.07.19 (6)	Mind map	5	Chalk & Talk/ Lecture with PPT	T1 W1	522-532
		Performance	20			
		Random pick	05			
		IPV4 Addresses	15			
		Summary	5			
21	29.07.19 (1)	Recap	5	Chalk & Talk/ Lecture with PPT	T1	539-555
		DHCP, NAT	20			
		Random pick	05			
		Forwarding of IP Packets	15			
		Summary	5			
22	30.07.19 (2)	Mind map	5	Chalk & Talk/ Lecture with PPT	T1	562-580
		Internet Protocol (IP)	15			
		Just a Minute	05			
		ICMPV4	15			
		Summary	05			
23	01.08.19 (3)	Mind map	5	Chalk & Talk	T1 W2	596-598
		Routing Algorithms - Introduction	20			
		Random pick	05			
		Distance-Vector Routing	15			
		Summary	5			
24	05.08.19 (1)	Mind map	5	Chalk & Talk	T1	604-613
		Link State Routing, Path Vector Routing	20			
		Random pick	05			
		Routing Protocols - RIP	15			
		Summary	5			
25	06.08.19 (2)	Show& Tell	5	Chalk & Talk/ Lecture with PPT	T1 R2	618-623
		Routing Protocols – OSPF	20			
		Just a Minute	05			
		Routing Protocols – BGP4	15			
		Summary	05			
26	08.08.19 (3)	Recap	5	Chalk & Talk/ Lecture with PPT	T1	643-649
		Comparison of Routing Protocols	20			
		Random pick	5			
		Multicasting Basics	5			
		Summary	5			
27	10.08.19 (1)	Mind map	5	Lecture with PPT	T1	666-677
		IPV6 Addressing	15			
		Just a Minute	05			
		IPV6 Protocol	15			
		Summary	5			

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S.No	Date & Hour	Topics	Time Duration (in min.)	Teaching Aids	Resources	Page No.
UNIT IV: TRANSPORT LAYER						
28	10.08.19 (2)	Introduction	5	Chalk & Talk	T1	692-703
		Transport Layer Services	15			
		Just a Minute	05			
		Connectionless and Connection Oriented Protocols	15			
		Summary	5			
29	13.08.19 (2)	Mind map	5	Chalk & Talk	T1 R4	707-708
		Transport Layer Protocols – Simple Protocol	20			
		Just a Minute	5			
		Stop and Wait Protocol	15			
		Summary	5			
30	17.08.19 (1)	Recap	5	Chalk & Talk with PPT	T1	713-720
		Go-Back-N Protocol	15			
		Just a Minute	5			
		Selective Repeat Protocol	15			
		Summary	5			
31	19.08.19 (1)	Mind map	5	Chalk & Talk	T1	726 736
		Piggybacking	15			
		Random pick	5			
		Services, Port Numbers	15			
		Summary	5			
32	20.08.19 (2)	Mind map	5	Lecture with PPT	T1 W2	737-741
		User Datagram Protocol (UDP)	15			
		Just a Minute	05			
		UDP – Services, Applications	15			
		Summary	5			
33	22.08.19 (3)	Recap	5	Chalk & Talk	T1	743-760
		Transmission Control Protocol (TCP) – Services, Features	20			
		Just a Minute	5			
		TCP – Connection, State Transition	20			
		Summary	5			
34	27.08.19 (1)	Recap	5	PPT	T1 R3	762-786 791-793
		TCP – Flow Control, Error Control, Congestion Control	20			
		Random pick	5			
		SCTP – Services, Features	15			
		Summary	5			
35	27.08.19 (2)	Recap	5	Chalk & Talk	T1	794-796
		SCTP – Packet Format	20			
		Just a Minute	5			
		SCTP Association	15			
		Summary	5			
36	27.08.19 (3)	Recap	5	PPT	T1 W	799-801
		SCTP – Flow Control	20			
		Just a Minute	5			

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S.No	Date & Hour	Topics	Time Duration (in min.)	Teaching Aids	Resources	Page No.
		Just a Minute	5			
		Management Information Base (MIB)	15			
		Summary	5			

CONTENT BEYOND SYLLABUS

S. No.	Date & Hour	Topics	Conduction Mode	Resource Person Details	Resources
1	19.09.19 (3)	Quality of Service	PPT & Discussion	K.G.Lavanya	PO2, PO3, PO5 PSO1,PSO2

TEXT BOOKS:

T1: Behrouz A. Forouzan, Data Communications and Networking, Fifth Edition TMH, 2013.

REFERENCE BOOKS:

R1: Larry L. Peterson, Bruce S. Davie, Computer Networks: A Systems Approach, Fifth Edition, Morgan Kaufmann Publishers Inc., 2012.

R2: William Stallings, Data and Computer Communications, Tenth Edition, Pearson Education, 2013.

R3: Nader F. Mir, Computer and Communication Networks, Second Edition, Prentice Hall, 2014.

R4: Ying-Dar Lin, Ren-Hung Hwang and Fred Baker, Computer Networks: An Open Source Approach, McGraw Hill Publisher, 2011.

R5: James F. Kurose, Keith W. Ross, Computer Networking, A Top-Down Approach Featuring the Internet, Sixth Edition, Pearson Education, 2013.

WEB REFERENCES

W1: http://nptel.ac.in/courses/106105081/

W2: https://epgp.inflibnet.ac.in/ahl.php?csrno=7

	Course Instructor	Module Coordinator	HOD	Principal
Signature				
Name	K.G. Lavanya	M.Selvakumar	Dr.P.Meenakshi Devi	
Designation	AP / IT	AP / IT	Professor & Head / IT	

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COURSE PLAN

Subject Code & Subject Name	CS8581 – Networks Laboratory	Regulation	R2017
Academic Year & Semester	2019 - 2020 (ODD)	Year / Sem.	III / V
Name of the Faculty	K.G. Lavanya, AP / IT	Degree / Branch	B.Tech. / IT

OBJECTIVES:

The student should be made to:

- To learn and use network commands.
- To learn socket programming.
- To implement and analyze various network protocols.
- To learn and use simulation tools.
- To use simulation tools to analyze the performance of various network protocols.

APPLICATIONS:

- Online Banking Applications
- Railways, Airports

PREREQUISITE:

Computer basic concepts

OUTCOMES:

After completing this course, the student will be able to:

C308.1: Implement various protocols using TCP and UDP.
C308.2: Compare the performance of different transport layer protocols.
C308.3: Use simulation tools to analyze the performance of various network protocols.
C308.4: Analyze various routing algorithms.
C308.5: Implement error correction codes.

PROGRAM OUTCOMES (POs)			
PO1	Engineering Knowledge	PO7	Environment and sustainability
PO2	Problem Analysis	PO8	Ethics
PO3	Design/development of solutions	PO9	Individual and team work
PO4	Conduct investigations of complex problems	PO10	Communication
PO5	Modern tool usage	PO11	Project management and finance
PO6	The Engineer and society	PO12	Life-long learning

PROGRAM SPECIFIC OUTCOMES (PSOs)
Programming Skill: Work as Software Engineers for providing solutions to real world problems using programming languages and open source software.
Web Designing Skill: Ability to use the web designing skill to establish new solutions for the societal needs.

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C308.1	3	1	1	-	-	-	-	-	-	-	-	-	-	1
C308.2	3	1	2	-	-	-	-	-	-	-	-	-	-	1
C308.3	3	1	2	-	-	-	-	-	-	-	-	-	-	1
C308.4	3	1	2	-	2	-	-	-	-	-	-	-	2	1
C308.5	3	1	2	-	2	-	-	-	-	-	-	-	2	1
C308	3	1	1.8	-	2	-	-	-	-	-	-	-	2	1

S. No.	Date	Name of the Exercise	Hours
1	28.06.19	Simulation of PING And TRACEROUTE Commands	4
2	05.07.19	Socket Creation for HTTP for Web Page Upload and Download	4
3	12.07.19 19.07.19	Applications using TCP Sockets like A. Echo Client and Echo Server B. Chat C. File Transfer	8
4	26.07.19	Simulation of DNS using UDP Sockets	4
5	28.07.19	Simulation of ARP /RARP Protocols	4
6	02.08.19	Study of Network Simulator	4
7	09.08.19	Simulation of Congestion Control Algorithms using NS	4
8	16.08.19	Study of TCP/UDP Performance using Simulation Tool	4
9	24.08.19	Simulation of Distance Vector Routing Algorithm	4
10	01.09.19	Simulation of Link State Routing Algorithm	4
11	06.09.19	Performance Evaluation of Routing Protocols using Simulation Tool	4
12	14.09.19	Simulation of Error Correction Code	4
		CONTENT BEYOND SYLLABUS	
13	13.09.19	Implementation of Stop and Wait Protocol	4
14.	20.09.19	Model Exam	4

	Course Instructor	Module Coordinator	HOD	Principal
Signature				
Name	K.G. Lavanya	M.Selvakumar	Dr.P.Meenakshi Devi	
Designation	AP / IT	AP / IT	Professor & Head / IT	

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Course Outcome Achievement Test (COCAT)

KSRIET

Academic Year & Semester	2017- 2018 (ODD)	Degree / Branch	B.Tech. / IT
Subject Code & Subject Name	CS6502 – Object Oriented Analysis and Design	Year / Sem.	III / V
Duration:	1 Hour	Maximum Marks	50

1. Identify the boundary notation used in use case diagram. CO1, K4

(A) 

(B) 

(C)

(D)

2. CO1, K6

Plane
Tail Number
Get Flight history

Choose the correct code for the above class:

(A) Public class plane
```
{
Private string plane number;
Public list get flight history(){….}
};
```
(B) Public class plane
```
{
Private string tail number;
Public get flight history () {….}
};
```
(C) Class plane
```
{
Int tail number ();
Public flight history ()
};
```
(D) Class plane
```
{
Int tail;
Public flight history ();
};
```

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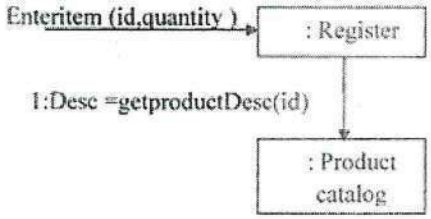
21. Source code will be written for class, for which of the following implementation in an object oriented language requires writing source code for — CO5, K4

(A) Class and interface definition
(B) Class & function interface definition
(C) Methods definition attribute implementation
(D) Only classes & attributes

22. CO5, K6



What message will be created from this sequence diagram?

(A) Public void get item(id, quantity)
(B) Desc = catalog.get product desc(item)
(C) Getitem (id, quantity), desc = product desc(id)
(D) Public void enteritem(Item id.item ID, Int quantity)
Product description desc = catalog.gt product description(item ID)

23. In application development which of the following should be applied when we have large scale architecture impact during implementation. — CO5, K4

(A) Low level exceptions
(B) Exceptions & error handling
(C) Exception in low level & error handling strategies.
(D) Large scale exception & error handling strategies.

24. Analyze the need of exception & select its indicating property — CO5, K4

(A) Integer instance
(B) Double value attributes
(C) Strings of messages
(D) Strings of messages & operation declarations

25. Read the following rhythm : — CO5, K4
Write a little test code, then write a little production code, make it pass the test, and then write some more test code.

(A) Test Driven on test first development
(B) Code Driven development
(C) Test code & test development
(D) Usual process of development

Course Instructor | Module Coordinator | Programme Coordinator

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Course Out Come Achievement Test

Year/Sem: II / III | **Max Marks: 25**

Branch : CSE | **Duration: 1.30min**

Name of the Subject: CS8392 – Object Oriented Programming | **Date: 21.10.2019**

1.	**Which of the following personality is called as father of Java Programming language -** Larry Page None of these Bjarne Stroustrup James Gosling	[CO1,K1]
2.	**Which kind of language java is ?** Event Driven Procedural Object Oriented None of these	[CO1,K2]
3.	**Which of the following is smallest integer data type?** Long Int Short byte	[CO1,K1]
4.	**What will be the result if you try to compile and execute the following code without passing any command line argument?** **class Sample {** **public static void main(String [ ] args) {** **int len = args.length;** **System.out.println(len);** **}** **}** Compilation Error Runtime Error The program compiles and executes successfully but prints nothing. The program compiles and executes successfully & prints 0.	[CO1,K4]
5.	**Which of the following is a valid declaration of an object of class Box?** Box obj = new Box(); Box obj = new Box; obj = new Box(); new Box obj;	[CO1,K2]
6.	**Which of the following statements is correct?** Public method is accessible to all other classes in the hierarchy Public method is accessible only to subclasses of its parent class Public method can only be called by object of its class Public method can be accessed by calling object of the public class	[CO2,K1]

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7.	**Which of these keyword must be used to inherit a class?** Super This Extent extends	[CO2,K1]
8.	**Which is true?** "X extends Y" is correct if and only if X is a class and Y is an interface "X extends Y" is correct if and only if X is an interface and Y is a class "X extends Y" is correct if X and Y are either both classes or both interfaces "X extends Y" is correct for all combinations of X and Y being classes and/or interfaces	[CO2,K4]
9.	**What will be the output?** **String str1 = "abcde";** **System.out.println(str1.substring(1, 3));** abc bc bcd abcd	[CO2,K4]
10.	**Can an abstract class define both abstract methods and non-abstract methods?** No--it must have all one or the other. No--it must have all abstract methods. Yes--but the child classes do not inherit the abstract methods. Yes--the child classes inherit both.	[CO2,K2]
11.	**Which class is base class for all exceptions?** String Error Throwable RuntimeException	[CO3,K1]
12.	**The exception class is in _____ package** java.file java.io java.lang java.util	[CO3,K1]
13.	**Which of these is a type of stream in Java?** Integer stream Short stream Byte stream Long stream	[CO3,K1]
14.	**Which of these classes are used by character streams for input and output operations?** InputStream Writer ReadStream InputOutputStream	[CO3,K2]

15.	**Which of these is used to read a string from the input stream?** get() getLine() read() readLine()	**[CO5,K1]**
16.	**In java multi-threading, a thread can be created by** Extending Thread class Implementing Runnable interface Using both None	**[CO4,K1]**
17.	**What is maximum thread priority in Java ?** 10 12 5 8	**[CO4,K1]**
18.	**Which class or interface defines the wait(), notify(),and notifyAll() methods?** Object Thread Runnable Class	**[CO4,K2]**
19.	**What is the name of the thread in output of this program?** **class multithreaded_programing** **{** **public static void main(String args[])** **{** **Thread t = Thread.currentThread();** **System.out.println(t.isAlive());** **} }** 0 1 True false	**[CO4,K4]**
20.	**Which of these type parameters is used for a generic methods to return and accept any type of object?** K N T V	**[CO4,K2]**
21.	**Which of these functions is called to display the output of an applet?** display() paint() displayApplet() PrintApplet()	**[CO5,K1]**

22.	**What does AWT stands for?** All Window Tools All Writing Tools Abstract Window Toolkit Abstract Writing Toolkit	[CO5,K1]
23.	**The ActionListener interface is used for handling action events,For example,it's used by a** JButton JCheckbox JMenuItem All of these	[CO5,K2]
24.	**Which of these methods is used to get x coordinate of the mouse?** getX() getXCoordinate() getCoordinateX() getPointX()	[CO5,K1]
25.	**Which object can be constructed to show any number of choices in the visible window?** Labels Choice List Checkbox	[CO5,K4]

Answer Key

1. D	2. C	3. D	4. D	5. A	6. A	7. D	8. C	9. B	10. D
11. C	12. C	13. C	14. B	15. D	16. C	17. A	18. A	19. C	20. C
21. B	22. C	23. D	24. A	25. C					

COURSE OUTCOMES:

At the end of the course, the student should be able to:

CO 1:	Develop Java programs using OOP principles.
CO 2:	Develop Java programs with the concepts inheritance and interfaces.
CO 3:	Build Java applications using exceptions and I/O streams.
CO 4:	Develop Java applications with threads and generics classes.
CO 5:	Develop interactive Java programs using swings.

K1: Remembering K2: Understanding K3: Applying K4: Analyzing K5: Evaluating K6: Creating

% of Remembering	% of Understanding	% of Application and higher order Abilities (K3+K4+K5+K6)	Total
52 %	28%	20%	100%

Course Instructor/Coordinator **Module Coordinator** **Programme Coordinator**

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ASSIGNMENT-III

Year/Semester	:	II Year/III Semester	**Max Marks**	:	20
Branch	:	CSE	**Issue Date**	:	13/9/2019
Subject Code & Title	:	CS8392 & Object Oriented Programming	**Submission Date**	:	18/9/2019

(Answer ALL the questions)

1.	Create a Bank database application program to illustrate the use of multithreads	**CO4**	**K6**
2.	Create a java program to implement the following: Create four checkboxes. The initial state of the first box should be in the checked state. The status of each check box should be displayed. When we change the state of a check box, status should be display is updated.	**CO5**	**K6**

CO4	Develop Java applications with threads and generics classes.
CO5	Develop interactive Java programs using swings.

K1: Remembering K2: Understanding K3: Applying K4: Analyzing K5: Evaluating K6: Creating

% of Remembering	% of Understanding	% of Application and higher order Abilities (K3+K4+K5+K6)	Total
-	-	100%	100%

13/9/19
Course Instructor/Coordinator

13/9/19
Module Coordinator

13/9/19
Programme Coordinator

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Reg. No. | | | | | | | | | | | | | |

KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY

INTERNAL ASSESSMENT TEST-III

Year/Semester	:	II Year/III Semester	Max Marks	:	100
Branch	:	CSE	Duration	:	3 Hrs
Subject Code & Title	:	CS8392 – OBJECT ORIENTED PROGRAMMING	Date & Session	:	03.10.2019 FN

Answer ALL the questions

PART-A (8 x 2=16)

1.	Create a simple generic class with an example.		CO4	K1
2.	List the advantages of generic programming		CO4	K1
3.	Differentiate between yielding and sleeping.		CO4	K2
4.	State the methods used for inter thread communication.		CO4	K1
5.	List out some system colors available in Java and their purpose.		CO5	K1
6.	Name any four event of a button component.		CO5	K1
7.	Recommend what method can be used for changing case of characters.		CO5	K1
8.	What is the purpose of the enableEvents() method?		CO5	K2

PART – B (6 x 14=84)

9.	i. Differentiate multithreading and multitasking.	(5)	CO4	K2
	ii. Describe the properties of thread in detail.	(9)	CO4	K1
10.	Deduce a Java program to perform the following tasks using three different threads. Each thread will be responsible for its own task only. Among these three threads one will find the average number of the input numbers, one will be responsible for finding the Maximum number from the input array of numbers, and one will be responsible for finding the Minimum number from the input array of numbers.	(14)	CO4	K6
11.	Develop a simple generic class example with two type parameters. so that we can define two types of parameters called U & V, separated by ",".	(14)	CO4	K6
12.	i. Describe in detail about working with 2D shapes in Java.	(7)	CO5	K1
	ii. Identify a Java program to illustrate Mouse Events	(7)	CO5	K2
13.	i) Explain in detail about Handling a TextField.	(7)	CO5	K1
	ii) Explain briefly about Using a TextArea	(7)	CO5	K1
14.	Develop a Java program to implement the following Create four check boxes. The initial state of the first box should be in checked state. The status of each check box should be displayed. When we change the state of a check box, the status should be displayed and updated	(14)	CO5	K6

COURSE OUTCOMES(COs)	
CO4	Develop Java applications with threads and generics classes
CO5	Develop interactive Java programs using swings

K1: Remembering K2: Understanding K3: Applying K4: Analyzing K5: Evaluating K6: Creating

% of Remembering	% of Understanding	% of Application and higher order Abilities (K3+K4+K5+K6)	Total
42 %	16 %	42 %	100 %

3/10/19
Course Instructor/Coordinator

3/10/19
Module Coordinator

Programme Coordinator

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TIRUCHENGODE – 637 215
Department of Computer Science and Engineering
COURSE PLAN

NAME OF THE STAFF	Dr.M.VIMALADEVI, Associate Professor / CSE
SUBJECT CODE/ NAME/ REGULATION	**CS8392/OBJECT ORIENTED PROGRAMMING/ (R-2017)**
DEGREE / BRANCH / YEAR / SEM/ACADEMIC YEAR	B.E./ CSE / II / III/ 2019-2020

INTRODUCTION TO OBJECT ORIENTED PROGRAMMING

Programming knowledge is not only useful for programming today's devices such as computers and smart phones, it also opens doors to the valuable skill of computational thinking, i.e. the application of computing techniques to every-day processes.

In this introductory Java programming course, student will be introduced to powerful concepts such as functional abstraction, the object oriented programming (OOP) paradigm and Application Programming Interfaces (APIs). Examples and case studies will be provided so that you can implement simple programs on your own or collaborate with peers. The program will begin with introducing fundamental programming concepts, such as, functional abstraction, OOP paradigm and APIs. Then, we will focus on how to write "good" programs, where "good" is to be understood from several perspectives: correctness, efficiency, software engineering techniques, and ethics.

In this professional programming subject, student will learn how to write code in Java, understand the basics of OOP and how to use software engineering techniques to develop various kinds of applications.

OBJECTIVES:

The student should be made to:

- To understand Object Oriented Programming concepts and basic characteristics of Java.
- To know the principles of packages, inheritance and interfaces.
- To define exceptions and use I/O streams.
- To develop a java application with threads and generics classes.
- To design and build simple Graphical User Interfaces.

PREREQUISITE:

Basic knowledge of,

- Requires basic understanding of C and C++ programming language.
- To had prior exposure to compile and run the program using any kind of editor.
- To have knowledge in operating system and software Engineering concepts.

APPLICATIONS:

- To be able to develop desktop GUI applications and Mobile applications.
- To be able to develop dynamic web applications and web servers.
- To know Java Enterprise Edition (Java EE) is a popular platform that provides API and runtime environment for scripting and running enterprise software, including network applications and web-services.
- To know the java technologies behind embedded system development.

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COURSE OUTCOMES:

At the end of the course, the student should be able to:

CO1: Develop Java programs using OOP principles.

CO2: Develop Java programs with the concepts inheritance and interfaces.

CO3: Build Java applications using exceptions and I/O streams.

CO4: Develop Java applications with threads and generics classes.

CO5: Develop interactive Java programs using swings.

PROGRAM OUTCOMES			
PO1	Engineering Knowledge	PO7	Environment and sustainability
PO2	Problem Analysis	PO8	Ethics
PO3	Design/development of solutions	PO9	Individual and team work
PO4	Conduct investigations of complex problems	PO10	Communication
PO5	Modern tool usage	PO11	Project management and finance
PO6	The Engineer and society	PO12	Life-long learning

Mapping of Course Outcomes (COs) to Program Outcomes(PSOs)

CO\PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C204.1	2	3	3	-	-	-	-	-	-	-	-	-
C204.2	2	3	3	-	-	-	-	-	-	-	-	-
C204.3	3	3	3	-	-	-	-	-	-	-	-	-
C204.4	3	3	3	-	-	-	-	-	-	-	-	-
C204.5	3	3	3	-	-	-	-	-	-	-	-	-
AVG	3	3	3	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes (COs) to Program Specific Outcomes(PSOs)

CO\PSO	PSO1	PSO2
C204.1	1	1
C204.2	1	3
C204.3	2	3
C204.4	2	2
C204.5	3	2
AVG	2	2

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TITLE OF UNIT 1: INTRODUCTION TO OOP AND JAVA FUNDAMENTALS

Object Oriented Programming - Abstraction – objects and classes - Encapsulation- Inheritance - Polymorphism- OOP in Java – Characteristics of Java – The Java Environment - Java Source File - Structure – Compilation. Fundamental Programming Structures in Java – Defining classes in Java – constructors, methods -access specifiers - static members -Comments, Data Types, Variables, Operators, Control Flow, Arrays , Packages - JavaDoc comments.

S. No	Date	Period	Topic	Duration (min)	Teaching aid	Referred Book	Page No
1	26.06.2019	6	**Introduction** **Object Oriented Programming** **Minute Lecture**	5	BS	T1	17-23
			Abstraction	5	C&T		
			Objects and Classes	10	Mind Map		
			Encapsulation	5	C&T		
			Inheritance	10	C&T		
			Polymorphism	5	C&T		
			Activity	5	Summary		
2	27.06.2019	1	**Recap - OOP in Java** **Minute Lecture**	5	BS	T1	10-13
			Characteristics of Java	15	C&T		
			The Java Environment	10	C&T PPT		
			Java Source File –Structure	10	Demo		
			Compilation	5	Demo		
			Activity	5	Quiz		
3	28.06.2019	1	**Recap** **Minute Lecture**	5	BS	T1	23,109 -110
			Fundamental Programming Structures in Java	20	C&T Demo		
			Defining classes in Java	20	C&T		
			Activity	5	Quiz		
4	29.06.2019	3	**Recap** **Minute Lecture** **Constructors**	5	Discussion	T1	121-124
			Default Constructor	20	C&T		
			Parameterized Constructor	20	C&T		
			Activity	5	Quiz		
5	03.07.2019	6	**Recap** **Minute Lecture - Methods**	5	BS	T1	115-119
			Defining method	10	C&T Demo		
			Calling a method	10	Demo		
			Method overloading and overriding	10	Demo		
			Finalize method	5	Demo		
			Activity	5	JAM		

6	04.07.2019	1	**Recap** **Minute Lecture** **Access Specifiers**	5	Summary	T1	141
			Private	5	C&T		
			Public	5	C&T		
			Protected	5	C&T		
			Default	5	C&T		
			Static Members	15	C&T		
			Comments	5	C&T, Demo		
			Activity	5	JAM		
7	05.07.2019	1	**Recap** **Minute Lecture**	5	Discussion	T1	35-40 61-77
			Data Types, Variable	15	C&T		
			Operators • Arithmetic Operators • Relational Operators • Bitwise Operators • Logical Operators • Assignment Operators • Misc Operators	25	C&T		
			Activity	5	JAM		
8	06.07.2019	3	**Recap** **Minute Lecture** **Control Flow**	10	BS	T1	81-106
			Conditional and Branching Statements	20	Demo		
			Looping Statements	15	Demo		
			Activity	5	Quiz		
9	10.07.2019	6	**Recap** **Minute Lecture**	5	Discussion	T1	51-58 ,187-189
			Arrays • Defining Array • Types of Arrays	15	C&T Demo		
			Packages • Creating Packages • Importing Packages	20	C&T Demo		
			Activity	5	Quiz		
10	11.07.2019	1	**Recap** **Minute Lecture**	5	Summary	T1	1079-1083
			JavaDoc comments	20	C&T		
			Revision of Unit I	20	C&T		
			Activity	5	Summary		

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TITLE OF UNIT II: INHERITANCE AND INTERFACES

Inheritance – Super classes- sub classes –Protected members – constructors in sub classes the Object class – abstract classes and methods- final methods and classes – Interfaces – defining an interface, implementing interface, differences between classes and interfaces and extending interfaces - Object cloning -inner classes, ArrayLists – Strings

S. No	Date	Period	Topic	Duration (min)	Teaching aid	Referred Book	Page No
1	12.07.2019	1	**Unit 1 - Recap** **Minute Lecture** **Inheritance**	5	Summary	T1	161-170 185
			Super classes, Sub classes, Protected members	15	C&T		
			Constructors in sub classes	20	C&T Demo		
			The Object class	5	C&T		
			Activity	5	Summary		
2	13.07.2019	5	**Recap** **Minute Lecture** **Inheritance**	5	BS	T1	161-170
			Types of Inheritance • Single, Multi level, Hierarchical	35	C&T Demo		
			Activity	5	Quiz		
3	13.07.2019	6	**Recap** **Minute Lecture**	5	Discussion	T1	181
			Abstract Classes and Methods	35	C&T Demo		
			Activity	5	Quiz		
4	13.07.2019	7	**Recap** **Minute Lecture**	5	BS	T1	184-185
			Final Method and Classes	35	C&T		
			Activity	5	Quiz		
5	17.07.2019	6	**Recap** **Minute Lecture** **Interfaces**	5	BS	T1	196-205
			Defining an interface	20	C&T		
			Implementing interface	15	C&T Demo		
			Activity	5	Quiz		
6	18.07.2019	1	**Recap** **Minute Lecture** **Interfaces**	5	Discussion	T1	196
			Differences between classes and Interfaces and Extending Interfaces	40	C&T		
			Activity	5	Quiz		

7	18.07.2019	5	**Recap** **Minute Lecture**	5	Discussion	T1	427, 731-732
			Object cloning Inner classes	35	C&T		
			Activity	5	Quiz		
8	19.07.2019	1	**Recap** **Minute Lecture** **ArrayLists**	5	Discussion	T1	466
			Constructors of Java ArrayList	15	C&T Demo		
			Methods of Java ArrayList	25	C&T Demo		
			Activity	5	JAM		
9	20.07.2019	3	**Recap** **Minute Lecture** **Strings**	5	JAM	T1	152, 371-385
			Creating Strings, String Methods	40	C&T Demo		
			Activity	5	Summary		

TITLE OF UNIT III: EXCEPTION HANDLING AND I/O

Exceptions - exception hierarchy - throwing and catching exceptions – built-in exceptions, creating own exceptions, Stack Trace Elements. Input / Output Basics – Streams – Byte streams and Character streams – Reading and Writing Console – Reading and Writing Files

S. No	Date	Period	Topic	Duration (min)	Teaching aid	Referred Book	Page No
1	24.07.2019	6	**Unit 2 - Recap** **Minute Lecture** **Exceptions**	5	Summary	T1, W4	207-208
			Definition	5	C&T		
			Exception Hierarchy	15	C&T		
			Throwing and catching exceptions	15	C&T Video		
			Activity	5	Summary		
2	25.07.2019	1	**Recap** **Minute Lecture** **Exceptions**	5	BS	T1	210-215
			Exception Methods	15	C&T		
			Built-in exceptions	15	C&T		
			User defined exceptions	10	C&T Demo		
			Activity	5	Quiz		

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3	26.07.2019	1	**Recap** **Minute Lecture** **Exceptions**	5	BS	T1	216-221
			Multiple Catch blocks	15	C&T		
			Catching multiple type of exception	15	C&T Demo		
			Finally block	10	C&T		
			Activity	5	Quiz		
4	31.07.2019	6	**Recap** **Minute Lecture** **Stack Trace Elements**	5	Discussion	T1	446
			Introduction	10	C&T		
			Class Declaration	10	C&T		
			Class Constructors	5	C&T		
			Class Methods	10	C&T		
			Activity	5	JAM		
5	01.08.2019	1	**Recap** **Minute Lecture** **Input / Output Basics**	5	BS	T1	581-588
			Stream Definition	10	C&T		
			Input Stream, Output Stream	15	C&T		
			Byte Stream	10	C&T		
			Character Streams	5	C&T		
			Activity	5	JAM		
6	02.08.2019	1	**Recap** **Minute Lecture** **Reading and Writing Console**	5	BS	T1	293
			Java Console Class	15	C&T		
			Java Console class declaration	25	C&T		
			Activity	5	Quiz		
7	07.08.2019	6	**Recap** **Minute Lecture** **Reading and Writing Console**	5	Discussion	T1	294
			Console class methods	15	C&T		
			Java Console Example	20	C&T		
			Activity	5	Quiz		
8	08.08.2019	1	**Recap** **Minute Lecture** **Reading and Writing Files**	5	Discussion	T1	296-300
			FileInputStream, FileOutputStream	40	C&T		
			Activity	5	Summary		

9	09.08.2019	1	**Recap** **Minute Lecture** **Reading and Writing Files**	5	Discussion	T1	301-303
			Java Methods to Handle Files	15	C&T		
			Example Program	25	C&T		
			Activity	5	Quiz		

TITLE OF UNIT IV: MULTITHREADING AND GENERIC PROGRAMMING

Differences between multi-threading and multitasking, thread life cycle, creating threads, synchronizing threads, Inter-thread communication, daemon threads, thread groups. Generic Programming – Generic classes – generic methods – Bounded Types – Restrictions and Limitations.

S. No	Date	Period	Topic	Duration (min)	Teaching aid	Referred Book	Page No
1	14.08.2019	6	**Unit 3 - Recap** **Minute Lecture** **Multithreading and Generic Programming**	5	Summary	T1	227
			Difference between multi-threading and multitasking	35	C&T		
			Activity	5	Summary		
2	16.08.2019	1	**Recap** **Minute Lecture** **Threads**	5	Discussion	T1	227-230
			Thread life cycle	15	C&T		
			Creating Threads	5	C&T		
			Thread methods	10	C&T		
			Example	10	C&T		
			Activity	5	JAM		
3	17.08.2019	3	**Recap** **Minute Lecture**	5	Summary	T1	241-245
			Thread Synchronization • Definition • Example	25	C&T		
			Inter Thread Communication • Definition • Example	15	C&T		
			Activity	5	Quiz		
4	21.08.2019	6	**Recap** **Minute Lecture**	5	Discussion	T1	545, 232
			Daemon Threads	15	C&T		
			Thread Groups	20	C&T		
			Activity	5	JAM		
5	22.08.2019	1	**Recap** **Minute Lecture** **Generic Programming**	5	Summary	T1	325-326
			Generic classes	35	C&T		
			Activity	10	JAM		

6	28.08.2019	6	**Recap** **Minute Lecture** **Generic Programming**	5	Discussion	T1	327-330
			Generic Methods	20	C&T		
			Example	15	C&T		
			Activity	5	Quiz		
7	29.08.2019	1	**Recap** **Minute Lecture** **Generic Programming**	5	Discussion	T1	334-338
			Bounded Types	25	C&T		
			Example	15	Demo		
			Activity	5	Summary		
8	30.08.2019	1	**Recap** **Minute Lecture** **Generic Programming**	5	Discussion	T1	339-346
			Restrictions and Limitations.	35	C&T		
			Activity	10	Summary		

TITLE OF UNIT V: EVENT DRIVEN PROGRAMMING

Graphics programming - Frame – Components - working with 2D shapes - Using color, fonts, and images - Basics of event handling - event handlers - adapter classes - actions - mouse events - AWT event hierarchy - Introduction to Swing – layout management - Swing Components – Text Fields , Text Areas – Buttons- Check Boxes – Radio Buttons – Listschoices- Scrollbars – Windows –Menus – Dialog Boxes.

S. No	Date	Period	Topic	Duration (min)	Teaching aid	Referred Book	Page No
1	31.08.2019	3	**Unit 4 - Recap** **Minute Lecture** **Graphics Programming**	5	Summary	T1	735,
			Introduction	15	C&T		
			Frame	25	C&T Demo		
			Activity	5	Discussion		
2	04.09.20-19	6	**Recap** **Minute Lecture** **Graphics Programming**	5	Summary	T1	738-739
			Components	35	C&T Demo		
			Activity	5	Summary, Discussion		
3	05.09.2019	1	**Recap** **Minute Lecture** **Graphics Programming**	5	BS	T1	749-754, 755-756
			Working with 2D shapes	20	C&T Demo		
			Using Colors, Fonts and Images	20	C&T Demo		

			Activity	5	Quiz		
4	06.09.2019	1	**Recap** **Minute Lecture** **Basic of Event Handling**	5	BS	T1	707-709
			Event Handler	20	C&T		
			Adapter Classes	20	C&T		
			Activity	5	Quiz		
5	07.09.2019	3	**Recap** **Minute Lecture** **Basic of Event Handling**	5	BS	T1	723-726
			Actions	25	C&T		
			Mouse Events	15	Demo		
			Activity	5	Quiz		
6	11.09.2019	6	**Recap** **Minute Lecture** **AWT Event Hierarchy**	5	Discussion	T1	773-794
			Object	15	C&T		
			Components	10	Demo		
			Methods of Component class	10	Demo		
			Activity	5	Quiz		
7	12.09.2019	1	**Recap** **Minute Lecture** **Swing concepts in Java**	5	Summary	T1,W2	945
			Introduction to Swing	5	C&T		
			Layout Management	15	Demo		
			Text Field	10	Demo		
			Text Area	5	Demo		
			Buttons and Check Boxes	5	Demo		
			Activity	5	Quiz		
8	13.09.2019	1	**Recap** **Minute Lecture** **Swing concepts in Java**	5	Discussion	T1,W2	976-985
			Radio Buttons	5	Demo		
			List Choices	5	Demo		
			Methods of Component	10	Demo		
			Example Program	15	Demo		
			Activity	5	Quiz		
9	18.09.2019	6	**Recap** **Minute Lecture** **Swing Components**	5	Discussion	T1, W2	986-990
			• Scroll Bars	5	Demo		
			• Windows	5	Demo		
			• Creating Menus	5	Demo		
			• Dialog Boxes	5	Demo		
			• Example Program	15	Demo		
			Activity	5	Summary		

CONTENT BEYOND THE SYLLABUS

S.No	Date	Period	Topic	Conduction Mode	Resource Person	Relevance to PO and PSO
1	19.09.2019	1	**Utility Classes in Java** String Tokenizer BitSet Date Calendar TimeZone	C&T Demo	Mr.R.Venkatesan AP - CSE	PO3,PO5, PO12
2	21.09.2019	3	**The Applet Class** Two Types of Applets Applet Basics Applet Architecture	C&T Demo	Mr.R.Venkatesan AP - CSE	PO3, PO5,PO9, PO12
3	21.09.2019	3	**Servlets**	C&T Demo	Mr.R.Gopal AP - CSE	PO1,PO2, PO3, PO4, PO5, PO8,PO12

TEACHING AID

C&T – Chalk and Talk, **PPT** – Power Point Presentation, **GD** – General Discussion and **SS** – Short Seminar, **MM** - Mind Map, **Practice, ST** – Show and Tell, **JAM** - Just A Min, Summary, Quiz, Demo, **BS** – Brain Storming, **Summary**

TEXT BOOKS:

T1. Herbert Schildt, "Java The complete reference", 8th Edition, McGraw Hill Education, 2011.

T2. Cay S. Horstmann, Gary cornell, "Core Java Volume –I Fundamentals", 9 th Edition, Prentice Hall, 2013.

REFERENCE BOOKS:

R1. Paul Deitel, Harvey Deitel, "Java SE 8 for programmers", 3rd Edition, Pearson, 2015.

R2. Steven Holzner, "Java 2 Black book", Dreamtech press, 2011.

R3. Timothy Budd, "Understanding Object-oriented programming with Java", Updated Edition, Pearson Education, 2000.

R3. Timothy Budd, "Understanding Object-oriented programming with Java", Updated Edition, Pearson Education, 2000.

WEB REFERENCES:

W1: www.tutorialspoint.com › Java ›

W2: javabeginnerstutorial.com/core-java-tutorial/

W3: www.javatpoint.com/servlet-tutorial

W4: https://youtu.be/HJeLW7kWHtQ

Course Instructor **Module Coordinator** **Program Coordinator** **Principal**

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