



## **IDHAYA ENGINEERING COLLEGE FOR WOMEN**

CHINNASALEM-606 201, KALLAKURICHI DISTRICT, TAMIL NADU, INDIA.

Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai.

2(f) Status of UGC, An ISO 9001: 2015 Certified Institution

A Christian Minority Institution run by the Franciscan Sisters of the Immaculate Heart of Mary Society, Puducherry.

Phone: 04151-258325, 258326

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**2.6.1 Programme and course outcomes for all  
Programmes offered by the institution are stated and  
displayed on website and communicated to teachers  
and students.**



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## **COURSE OUTCOMES FOR B.E. COMPUTER SCIENCE AND ENGINEERING**



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<b>HS8151 – COMMUNICATIVE ENGLISH</b>	
C101.1	<b>Enable</b> students to frame sentences, enrich vocabulary and develop basic LSRW Skills
C101.2	<b>Relate</b> synthesis of sentences and enhance LSRW skills for general purposes
C101.3	<b>Apply</b> coherence and sequence expressions and substitutes for advanced task
C101.4	<b>Refine</b> tense sense and word enrichment techniques for more complex and demanding social activities
C101.5	<b>Develop</b> usage of language to ensure development in the LSRW Skills
<b>MA 8151 - ENGINEERING MATHEMATICS I</b>	
C102.1	Able to <b>understand</b> the various techniques in differentiation
C102.2	Able to <b>solve</b> the maxima, minima of functions of two variables and applications of Lagrange's method
C102.3	<b>Acquire</b> skills in analyzing and solving the Integral problems
C102.4	Able to <b>solve</b> the problems based on multiple integration
C102.5	<b>Acquire</b> skills in analyzing and solving the ordinary differential equations.
<b>PH8151/ ENGINEERING PHYSICS</b>	
C103.1	<b>Retrieve</b> the basics of properties of matter
C103.2	<b>Summarize</b> the concepts of waves, optical devices and analyze their applications in fiber optics.
C103.3	<b>Understand</b> the concepts of thermal properties of materials and assess their applications in expansion joints and heat exchangers
C103.4	<b>Extend</b> the physics concepts of quantum theory and apply in tunneling microscopes
C103.5	<b>Retrieve</b> the basics of crystals, their structures and experimenting the preparation of different growth techniques.
<b>CY8151 - ENGINEERING CHEMISTRY</b>	
C104.1	<b>Understand</b> the concept of hard water, its problems and water treatment techniques.
C104.2	<b>Categorize</b> the concepts of adsorption, its isotherms and catalytic reaction
C104.3	<b>Apply</b> the phase rule to the one and two component system and to understand the significance of alloys.
C104.4	<b>Summarize</b> the different types of fuels and its manufacturing process and able to calculate the calorific value of the fuel
C104.5	<b>Apply</b> the principles of generation of energies in batteries, nuclear reactors and solar cells.
<b>GE8151 PROBLEM SOLVING AND PYTHON PROGRAMMING</b>	
C105.1	<b>Explain</b> algorithmic solutions to simple computational problems
C105.2	<b>Read, write, execute</b> by simple Python programs.
C105.3	<b>Describe</b> simple Python programs for solving problems. Decompose a Python program into

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	functions.
C105.4	<b>Use</b> compound data with Python lists, tuples and dictionaries.
C105.5	<b>Describe</b> read and write data from/to files in Python.
	<b>GE8152 - ENGINEERING GRAPHICS</b>
C106.1	<b>Understand</b> the fundamentals and standards of Engineering graphics
C106.2	<b>Perform</b> freehand sketching of basic geometrical constructions and multiple views of objects
C106.3	<b>Understand</b> the concept of orthographic projections of lines and plane surfaces
C106.4	<b>Draw</b> the projections of section of solids and development of surfaces
C106.5	<b>Visualize</b> and to project isometric and perspective sections of simple solids
	<b>GE8161 - PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY</b>
C107.1	<b>Understand</b> how to write, test, and debug simple Python programs.
C107.2	<b>Describe</b> Python programs with conditionals and loops.
C107.3	<b>Implement</b> Python programs step-wise by defining functions and calling them.
C107.4	<b>Use</b> Python lists, tuples, dictionaries for representing compound data.
C107.5	<b>Implement</b> read and write data from/to files in Python.
	<b>BS8161 - PHYSICS CHEMISTRY LABORATORY</b>
C108.1	<b>Acquire</b> the skills in the determination hardness of the water by EDTA method
C108.2	<b>Analyze</b> the alkalinity present in water by titrimetric method
C108.3	<b>Determine</b> the molecular weight of a polymer.
C108.4	<b>Deduce</b> the amount substance present by pH metry and Potentiometry method.
C108.5	<b>Calculate</b> the amount of acid and base present in the solution and inthe mixture Conductometric method.
	<b>HS8251 TECHNICAL ENGLISH</b>
C109.1	<b>Enables</b> students to acquire competence in LSRW for basic general and technology-based professional requirements.
C109.2	<b>Develop</b> ability in LSRW to achieve more demanding tasks in technical fields
C109.3	<b>Apply</b> more strategies and skills to enhance LSRW to produce quick, effective and coherent responses in the professional fields
C109.4	<b>Build</b> communication employment-based communication competence by making students self reliant and analytical
C109.5	<b>Foster</b> LSRW ability to respond effectively and competently for job-based demands

  
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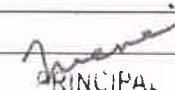
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<b>MA8251 ENGINEERING MATHEMATICS II</b>	
C110.1	<b>Understand</b> the concepts in diagonalisation of matrices
C110.2	<b>Understands</b> the concept of vector calculus
C110.3	<b>Understand</b> the uses of analytic functions. and conformal mapping
C110.4	<b>Understand</b> the techniques of complex integratin and contour integrals
C110.5	<b>Understand</b> the applications of laplace transforms
<b>PH8252 - PHYSICS FOR INFORMATION SCIENCE</b>	
C111.1	<b>Retrieve</b> the electrical properties of solid state materials and explain the theoretical aspects of mobility of electrons
C111.2	<b>Determine</b> the doping properties of semiconductors and determining the carrier concentration of materials
C111.3	<b>Understand</b> the magnetic properties of materials and to analyze their applications in data storage.
C111.4	<b>Understand</b> on the functioning of optical properties for opto electronics.
C111.5	<b>Analyze</b> the concept of electrical properties in bulk material and design novel materials
<b>BE8255 BASIC ELECTRICAL, ELECTRONICS AND MEASUREMENT ENGINEERING</b>	
C112.1	<b>Discuss</b> the essentials of electric circuits and analysis.
C112.2	<b>Discuss</b> the basic operation of electric machines and transformers
C112.3	<b>State</b> the renewable sources and common domestic loads.
C1124	<b>Understand</b> the fundamentals of electronic circuit constructions
C112.5	<b>Describe</b> the measurement and metering for electric circuits.
<b>GE8291- ENVIRONMENTAL SCIENCE AND ENGINEERING</b>	
C113.1	<b>Apply</b> Knowledge gained on types of biodiversity, conservation of biodiversity, structure, function and types of ecosystem
C113.2	<b>Understand</b> the sources, causes, consequences and control method of air, water, soil, noise, thermal and nuclear pollution
C113.3	<b>Apply</b> Knowledge gained on existence of natural resources, over utilization, problems of these resources and control techniques.
C113.4	<b>Apply</b> Knowledge gained on the environment and its social issues, Air Act, Water Act, Wild life protection act, Forest conservation act and public awareness.
C113.5	<b>Apply</b> Knowledge gained on population growth, population explosion, family welfare Program, human rights, value education, AIDS, women and child welfare, role of information technology in environment and human health.

  
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CS8251- PROGRAMMING IN C	
C114.1	<b>Develop</b> simple applications in C using basic constructs
C114.2	<b>Design</b> and implement applications using arrays and strings
C114.3	<b>Develop</b> and implement applications in C using functions and pointers
C114.4	<b>Develop</b> applications in C using structures.
C114.5	<b>Design</b> applications using sequential and random access file processing
GE8261 - ENGINEERING PRACTICES LABORATORY	
C115.1	<b>Fabricate</b> carpentry components and pipe connections including plumbing works, use welding equipments to join the structures and carry out the basic machining operations
C115.2	<b>Build</b> the models using sheet metal works
C115.3	<b>Illustrate</b> on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings
C115.4	<b>Build</b> basic home electrical works and appliances and measure the electrical quantities
C115.5	<b>Elaborate</b> on the components, gates, soldering practices
CS8261 - C PROGRAMMING LABORATORY	
C116.1	<b>Develop</b> C programs for simple applications making use of basic constructs, arrays and strings.
C116.2	<b>Develop</b> C programs involving functions, recursion
C116.3	<b>Develop</b> C programs involving pointers, and structures.
C116.4	<b>Design</b> applications using sequential and random access file processing.
C116.5	<b>Design</b> applications like railway reservation system.
IT8211 - INFORMATION TECHNOLOGY ESSENTIALS LABORATORY	
C117.1	<b>Design</b> interactive websites using basic HTML tags, different styles, links and with all Basic control elements
C117.2	<b>Implement</b> client side and server side programs using scripts using PHP.
C117.3	<b>Implement</b> dynamic web sites and handle multimedia components
C117.4	<b>Implement</b> applications with PHP connected to database and Implement the technologies behind computer networks and mobile communication.
C117.5	<b>Implement</b> Personal Information System
CS8351 - DIGITAL PRINCIPLES AND SYSTEM DESIGN	
C202.1	<b>Design</b> digital circuits using simplified Boolean functions
C202.2	<b>Analyze</b> and design combinational circuits
C202.3	<b>Analyze</b> and design synchronous and asynchronous sequential circuits
C202.4	<b>Understand</b> Programmable Logic Devices
C202.5	<b>Explain</b> HDL code for combinational and sequential circuits

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CS8391- DATA STRUCTURES	
C203.1	Understand & Implement abstract data types for linear data structures - Lists
C203.2	Understand & Apply the different linear(Stack & Queue) data structures to problem solutions
C203.3	Understand & Apply the different Non-Linear(Tree) data structures to problem solutions
C203.4	Understand & Apply the different Non-Linear(Graph) data structures to problem solutions
C203.5	Critically analyze the various sorting algorithms and Hashing Techniques
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 generic classes.
C204.5	Develop interactive Java program 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	Design Spread spectrum and multiple access
CS8381 – DATA STRUCTURES LABORATORY	
C206.1	Gain knowledge about fundamental concepts of Linear Data Structures.
C206.2	Gain knowledge about nonlinear data structures (Tree).
C206.3	Gain knowledge about nonlinear data structures (Graphs)
C206.4	Gain knowledge about nonlinear data structures for Sorting and Searching Algorithms
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 for packages and interfaces.
C207.3	Develop and implement Java programs with arraylist.
C207.4	Develop and implement Java programs exception handling and multithreading.
C207.5	Design applications using file processing, generic programming and event handling.

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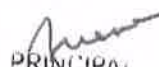
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<b>CS8382 DIGITAL SYSTEMS LABORATORY</b>	
<b>C208.1</b>	Implement simplified combinational circuits using basic logic gates
<b>C208.2</b>	Implement combinational circuits using MSI devices
<b>C208.3</b>	Implement sequential circuits like registers and counters
<b>C208.4</b>	Simulate combinational and sequential circuits using HDL
<b>C208.5</b>	Design and implementation of a simple digital system
<b>HS8381 - Interpersonal Skills/Listening &amp; Speaking</b>	
<b>C209.1</b>	Listen and respond appropriately especially in academic contexts
<b>C209.2</b>	Participate in group discussions with special emphasis on stress and intonation
<b>C209.3</b>	Develop lexical accuracy and fluency in articulation
<b>C209.4</b>	Assess conversations and offer Verbal and Non-Verbal feedbacks
<b>C209.5</b>	Plan and devise effective presentations
<b>MA8402- PROBABILITY &amp; QUEUEING THEORY</b>	
<b>C210.1</b>	Gain knowledge on Probability and various distributions
<b>C210.2</b>	Solve the Joint distributions, Covariance, Correlation and Linear regression Problems.
<b>C210.3</b>	Gain knowledge on Stationary process, Markov process, Poisson process and its Applications.
<b>C210.4</b>	Acquire skills in analyzing and Solving the Various types of Morkovian Queue Problems.
<b>C210.5</b>	Gain knowledge on General Queueing Models (Non Morkovian)
<b>CS8491 – COMPUTER ARCHITECTURE</b>	
<b>C211.1</b>	Understand the basics structure of computers, operations and instructions.
<b>C211.2</b>	Design arithmetic and logic unit.
<b>C211.3</b>	Understand pipelined execution and design control unit.
<b>C211.4</b>	Understand parallel processing architectures. I
<b>C211.5</b>	Understand the various memory systems and I/O communication
<b>CS8492- DATABASE MANAGEMENT SYSTEMS</b>	
<b>C212.1</b>	Learn the fundamentals of Data Models and to represent a database system using ER diagrams.
<b>C212.2</b>	Study SQL and Relational Database design.

  
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C212.3	Understand the internal storage structures using different File and Indexing techniques which will help in physical DB design.
C212.4	Understand the fundamental concept of transaction processing-concurrency control techniques and recovery procedures.
C212.5	Understand an introductory knowledge about the storage and Query processing technique.
<b>CS8451 - DESIGN AND ANALYSIS OF ALGORITHMS</b>	
C213.1	Design algorithms for various computing problems.
C213.2	Analyze the search and sorting complexity of algorithms.
C213.3	Analyze the time and space complexity of algorithms.
C213.4	Critically analyze the different algorithm design techniques for a given problem.
C213.5	Modify existing algorithms to improve efficiency.
<b>CS8493-OPERATING SYSTEM</b>	
C214.1	Understand the basic concepts and functions of operating systems.
C214.2	Understand and analyze Processes, Threads and Scheduling algorithms.
C214.3	Understand the concept of Deadlocks.
C214.4	Analyze various memory management schemes and understand I/O management and File systems.
C214.5	Understand Linux basic concepts and Mobile OS like iOS and Android.
<b>CS8494 SOFTWARE ENGINEERING</b>	
C215.1	Identify the key activities in managing a software project. Compare different process models.
C215.2	Compare different process models.
C215.3	Concepts of requirements engineering and Analysis Modeling.
C215.4	Apply systematic procedure for software design and deployment.
C215.5	Compare and contrast the various testing and maintenance and Manage project schedule, estimate project cost and effort required
<b>CS8481- DBMS LABORATORY</b>	
C216.1	Use typical data definitions and manipulation commands.
C216.2	Design applications to test Nested, Join Queries and views
C216.3	Implement applications that require a Front-end Tool.
C216.4	Critically analyze the use of Tables, Views, Functions and Procedures
C216.5	Design and implement real time applications.
<b>CS8461 - OPERATING SYSTEMS LABORATORY</b>	
C217.1	Compare the performance of various CPU Scheduling Algorithms

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C217.2	Implement page replacement algorithms, file organization and allocation techniques
C217.3	Implement Deadlock avoidance and Detection Algorithms
C217.4	Implement Semaphores and to Create processes and implement IPC
C217.5	Analyze the performance of the various Page Replacement Algorithms and Implement File Organization and File Allocation Strategies
<b>HS8461 ADVANCED READING AND WRITING</b>	
C218.1	Strengthen the reading and writing skills of the students
C218.2	Comprehend and interpret data into coherent paragraphs
C218.3	Evaluate texts critically
C218.4	Draft winning Job applications
C218.5	Write impressive project proposals with critical acumen
<b>MA8551 ALGEBRA AND NUMBER THEORY</b>	
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.
<b>CS8591 - COMPUTER NETWORKS</b>	
C302.1	Understand the basic layers and its functions in computer networks.
C302.2	Evaluate the performance of a network.
C302.3	Understand the basics of how data flows from one node to another.
C302.4	Analyze and design routing algorithms.
C302.5	Design protocols for various functions in the network and Understand the working of various application layer protocols
<b>EC8691 MICROPROCESSORS AND MICROCONTROLLERS</b>	
C303.1	Understand and execute programs based on 8086 microprocessor.
C303.2	Design Memory Interfacing circuits.
C303.3	Design and interface I/O circuits.
C303.4	Design and implement 8051 microcontroller based systems.
C303.5	Design and develop Traffic Light control, LED display, LCD display and Alarm Controller.

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CS8501 - THEORY OF COMPUTATION	
C304.1	Build automata for any pattern.
C304.2	Construct regular expression for any pattern.
C304.3	Write Context free grammar for any construct and Develop PDA for any CFL.
C304.4	Design Turing machines for any language and Propose computation solutions using it.
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
OCE552 GEOGRAPHIC INFORMATION SYSTEM	
C306.1	Have basic idea about the fundamentals of GIS.
C306.2	Understand the types of data models
C306.3	Get knowledge about data input and topology
C306.4	Gain knowledge on data quality and standards
C306.5	Understand data management functions and data output
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
CS8582 OBJECT ORIENTED ANALYSIS AND DESIGN LAB	
C308.1	Perform OO analysis and design for a given problem specification.
C308.2	Identify and map basic software requirements in UML mapping.
C308.3	Improve the software quality using design patterns and to explain the rationale behind applying specific design patterns
C308.4	Test the compliance of the software with the SRS.
C308.5	Implement the forward and reverse engineering
CS8581 NETWORKS LABORATORY	
C309.1	Implement various protocols using TCP and UDP.

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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.
<b>CS 8651 INTERNET PROGRAMMING</b>	
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 applying different 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
<b>CS8691 ARTIFICIAL INTELLIGENCE</b>	
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
<b>CS8601 – MOBILE COMPUTING</b>	
C312.1	Understand the basic concepts of mobile computing
C312.2	Learn the basics of mobile telecommunication system
C312.3	Familiar with the network layer protocols and Ad-Hoc networks
C312.4	Understand the basis of transport and application layer protocols
C312.5	Gain knowledge about different mobile platforms and application development
<b>CS 8602 COMPILER DESIGN</b>	
C313.1	Understand the different phases of compiler and Design a lexical analyzer for a sample language.
C313.2	Apply different parsing algorithms to develop the parsers for a given grammar.
C313.3	Understand syntax-directed translation and run-time environment.
C313.4	Learn to implement code optimization techniques and a simple code generator.
C313.5	Design and implement a scanner and a parser using LEX and YACC tools.
<b>CS8603– DISTRIBUTED SYSTEM</b>	
C314.1	Elucidate the foundations and issues of distributed systems Understand the various synchronization issues and global state for distributed systems
C314.2	Understand the various synchronization issues and global state for distributed systems

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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
<b>IT8076 SOFTWARE TESTING</b>	
C315.1	Design the test cases suitable for a software development for different domains
C315.2	Prepare test planning based on the document. Identify suitable tests to be carried out
C315.3	Explain the various level of testing
C315.4	Design test plans and test cases.
C315.5	Develop and validate a test plan. Make use of automatic testing tools.
<b>CS8661 Internet Programming Laboratory</b>	
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 applying different 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
<b>CS8662 Mobile Application Development Laboratory</b>	
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.
<b>HS8581 Professional Communication</b>	
C318.1	Make effective presentations
C318.2	Participate confidently in Group Discussions.
C318.3	Attend job interviews and be successful in them.
C318.4	Develop adequate Soft Skills required for the workplace
C318.5	Implement the protocols for career management
<b>MG8591- PRINCIPLES OF MANAGEMENT</b>	
C401.1	Able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management
C401.2	Enable the students to study the evolution of Management
C401.3	To study the functions and principles of management

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C401.4	<b>To learn</b> the application of the principles in the organization
C401.5	<b>To learn</b> and understand the effective administration
<b>CS8792 - CRYPTOGRAPHY AND NETWORK SECURITY</b>	
C402.1	<b>Understand</b> the fundamentals of networks security, security architecture, threats and vulnerabilities
C402.2	<b>Apply</b> the different cryptographic operations of symmetric cryptographic algorithms
C402.3	<b>Apply</b> the different cryptographic operations of public key cryptography
C402.4	<b>Apply</b> the various Authentication schemes to simulate different applications
C402.5	<b>Understand</b> various Security practices and System security standards
<b>CS8791- CLOUD COMPUTING</b>	
C403.1	<b>Articulate</b> the main concepts, key technologies, strengths and limitations of cloud computing
C403.2	<b>Learn</b> the key and enabling technologies that help in the development of cloud
C403.3	<b>Develop</b> the ability to understand and use the architecture of compute and storage cloud, service and delivery models
C403.4	<b>Explain</b> the core issues of cloud computing such as resource management and security
C403.5	<b>Be able</b> to install and use current cloud technologies
C403.6	<b>Evaluate</b> and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud
<b>OEC754 - MEDICAL ELECTRONICS</b>	
C404.1	<b>Know</b> the human body electro-physiological parameters and recording of bio-potentials
C404.2	<b>Comprehend</b> the non-electrical physiological parameters and their measurement - body temperature, blood pressure, pulse, blood cell count, blood flow meter etc.,
C404.3	<b>Interpret</b> the various assist devices used in the hospitals viz.,pacemakers, defibrillators, dialyzers and ventilators
C404.4	<b>Comprehend</b> physical medicine methods eg.ultrasonic, shortwave, microwave surgical diathermies & bio-telemetry principles and methods
C404.5	<b>Know</b> about recent trends in medical instrumentation

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IT8075 - SOFTWARE PROJECT MANAGEMENT	
C405.1	<b>Understand</b> Project Management principles while developing software
C405.2	<b>Gain</b> extensive knowledge about the basic project management concepts, framework and the process models
C405.3	<b>Obtain</b> adequate knowledge about software process models and software effort estimation techniques
C405.4	<b>Estimate</b> the risks involved in various project activities
C405.5	<b>Define</b> the checkpoints, project reporting structure, project progress and tracking mechanisms using project management principles
C405.6	<b>Learn</b> staff selection process and the issues related to people management
CS8079 - HUMAN COMPUTER INTERACTION	
C406.1	<b>Design</b> effective dialog for HCI
C406.2	<b>Design</b> effective HCI for individuals and persons with disabilities
C406.3	<b>Assess</b> the importance of user feedback
C406.4	<b>Explain</b> the HCI implications for designing multimedia/ ecommerce/ e-learning Web sites
C406.5	<b>Develop</b> meaningful user interface
CS8711 - CLOUD COMPUTING LABORATORY	
C407.1	<b>Configure</b> various virtualization tools such as Virtual Box, VMware workstation
C407.2	<b>Design</b> and deploy a web application in a PaaS environment.
C407.3	<b>Learn</b> how to simulate a cloud environment to implement new schedulers
C407.4	<b>Install</b> and use a generic cloud environment that can be used as a private cloud
C407.5	<b>Manipulate</b> large data sets in a parallel environment
IT8761 - SECURITY LABORATORY	
C408.1	<b>Develop</b> code for classical Encryption Techniques to solve the problems
C408.2	<b>Build</b> cryptosystems by applying symmetric and public key encryption algorithms
C408.3	<b>Construct</b> code for authentication algorithms
C408.4	<b>Develop</b> a signature scheme using Digital signature standard
C408.5	<b>Demonstrate</b> the network security system using open source tools
CS8811 - PROJECT WORK	
C409.1	<b>Identify</b> the problem by applying acquired knowledge.
C409.2	<b>Analyze</b> and categorize executable project modules after considering risks.
C409.3	<b>Choose</b> efficient tools for designing project modules.
C409.4	<b>Combine</b> all the modules through effective team work after efficient testing
C409.5	<b>Elaborate</b> the completed task and compile the project report.

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## **COURSE OUTCOMES FOR B.E. ELECTRONICS AND COMMUNICATION ENGINEERING**



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HS8151 - COMMUNICATIVE ENGLISH	
C101.1	<b>Enable</b> students to frame sentences, enrich vocabulary and develop basic LSRW Skills
C101.2	<b>Relate</b> synthesis of sentences and enhance LSRW skills for general purposes
C101.3	<b>Apply</b> coherence and sequence expressions and substitutes for advanced task
C101.4	<b>Refine</b> tense sense and word enrichment techniques for more complex and demanding social activities
C101.5	<b>Develop</b> usage of language to ensure development in the LSRW Skills
MA8151 - ENGINEERING MATHEMATICS I	
C102.1	The students are able to <b>understand</b> the various techniques in differentiation
C102.2	The students are able to <b>solve</b> the maxima, minima of functions of two variables and applications of Lagrange's method
C102.3	The Students <b>Acquire</b> skills in analyzing and solving the Integral problems
C102.4	The students are able to <b>solve</b> the problems based on multiple integration
C102.5	The Students <b>Acquire</b> skills in analyzing and solving the ordinary differential equations.
PH8151 - ENGINEERING PHYSICS	
C103.1	<b>Retrieve</b> the basics of properties of matter and
C103.2	<b>Summarize</b> the concepts of waves, optical devices and analyze their applications in fiber optics.
C103.3	<b>Understand</b> the concepts of thermal properties of materials and asses their applications in expansion joints and heat exchangers
C103.4	<b>Extend</b> the physics concepts of quantum theory and apply in tunneling microscopes
C103.5	<b>Retrieve</b> the basics of crystals, their structures and experimenting the preparation of different growth techniques.
CY8151 - ENGINEERING CHEMISTRY	
C104.1	<b>Understand</b> the concept of hard water, its problems and water treatment techniques.
C104.2	<b>Categorize</b> the concepts of adsorption, its isotherms and catalytic reaction
C104.3	<b>Apply</b> the phase rule to the one and two component system and to understand the significance of alloys.
C104.4	<b>Summarize</b> the different types of fuels and its manufacturing process and able to calculate the calorific value of the fuel
C104.5	<b>Apply</b> the principles of generation of energies in batteries, nuclear reactors and solar cells.
GE8151 - PROBLEM SOLVING AND PYTHON PROGRAMMING	
C105.1	<b>Develop</b> algorithmic solutions to simple computational problems
C105.2	<b>Read</b> , write, execute by simple Python programs.
C105.3	<b>Structure</b> simple Python programs for solving problems. Decompose a Python program

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	into functions.
C105.4	<b>Represent</b> compound data using Python lists, tuples and dictionaries.
C105.5	<b>Read</b> and write data from/to files in Python Programs.
	<b>GE8152 - ENGINEERING GRAPHICS</b>
C106.1	<b>To understand</b> the fundamentals and standards of Engineering graphics
C106.2	<b>To perform</b> freehand sketching of basic geometrical constructions and multiple views of objects
C106.3	<b>To understand</b> the concept of orthographic projections of lines and plane surfaces
C106.4	<b>To draw</b> the projections of section of solids and development of surfaces
C106.5	<b>To visualize</b> and to project isometric and perspective sections of simple solids
	<b>GE8161-PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY</b>
C107.1	<b>Write</b> , test, and debug simple Python programs.
C107.2	<b>Implement</b> Python programs with conditionals and loops.
C107.3	<b>Develop</b> Python programs step-wise by defining functions and calling them.
C107.4	<b>Use</b> Python lists, tuples, dictionaries for representing compound data.
C107.5	<b>Read</b> and write data from/to files in Python.
	<b>BS8161 - PHYSICS CHEMISTRY LABORATORY</b>
C108.1	<b>Acquire</b> the skills in the determination hardness of the water by EDTA method
C108.2	<b>Analyze</b> the alkalinity present in water by titrimetric method
C108.3	<b>Determine</b> the molecular weight of a polymer.
C108.4	<b>Deduce</b> the amount substance present by pH metry and Potentiometry method.
C108.5	<b>Calculate</b> the amount of acid and base present in the solution and in the mixture Conductometric method.
	<b>HS8251 - TECHNICAL ENGLISH</b>
C109.1	<b>Enables</b> students to acquire competence in LSRW for basic general and technology-based professional requirements.
C109.2	<b>Develop</b> ability in LSRW to achieve more demanding tasks in technical fields
C109.3	<b>Apply</b> more strategies and skills to enhance LSRW to produce quick, effective and coherent responses in the professional fields
C109.4	<b>Build</b> communication employment-based communication competence by making students self reliant and analytical
C109.5	<b>Foster</b> LSRW ability to respond effectively and competently for job-based demands

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<b>MA8251 - ENGINEERING MATHEMATICS II</b>	
C110.1	This Course helps the students to <b>understand</b> the concepts in diagonalisation of matrices
C110.2	Students <b>understands</b> the concept of vector calculus
C110.3	This Course helps the students to <b>understand</b> the uses of analytic functions. and conformal mapping
C110.4	The Students are able to <b>understand</b> the techniques of complex integration and contour integrals
C110.5	The Students are able to <b>understand</b> the applications of laplace transforms
<b>PH8253 - PHYSICS FOR ELECTRONICS ENGINEERING</b>	
C111.1	<b>Understand</b> the classical and quantum electronic theories and explaining the energy band structures,
C111.2	<b>Retrieve</b> the basis of semiconductor physics and its application in various devices.
C111.3	<b>Analyze</b> the magnetic and electrical properties of materials.
C111.4	<b>Understand</b> on the functioning of optical properties for opto electronics.
C111.5	<b>Highlight</b> the basics of quantum structures and analyzing their applications in spintronics and carbon electronics
<b>BE8254 - BASIC ELECTRICAL AND INSTRUMENTATION ENGINEERING</b>	
C112.1	<b>Discuss</b> the essentials of electric circuits and analysis.
C112.2	<b>Discuss</b> the basic operation of electric machines and transformers
C112.3	<b>Introduction</b> of renewable sources and common domestic loads.
C112.4	<b>To understand</b> the fundamentals of electronic circuit constructions
C112.5	<b>Introduction</b> to measurement and metering for electric circuits.
<b>EC8251 - CIRCUIT ANALYSIS</b>	
C113.1	<b>Develop</b> the capacity to analyze electrical circuits,
C113.2	<b>Apply</b> the circuit theorems in real time
C113.3	<b>Design</b> and understand and evaluate the AC circuits.
C113.4	<b>Design</b> and understand and evaluate the DC circuits.
C113.5	<b>Apply</b> the circuit theorems in two port network
<b>EC8252 - ELECTRONIC DEVICES</b>	
C114.1	<b>Explain</b> the V-I characteristic of diode, UJT and SCR
C114.2	<b>Describe</b> the equivalence circuits of transistors
C114.3	<b>Operate</b> the basic electronic devices such as PN junction diode, Bipolar and Field effect Transistors
C114.4	<b>Power</b> control devices, LED, LCD
C114.5	<b>Operate</b> the Opto-electronic devices

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<b>EC8261 - CIRCUITS AND DEVICES LAB</b>	
C115.1	<b>Analyze</b> the characteristics of basic electronic devices
C115.2	<b>Design</b> RL and RC circuits
C115.3	<b>Verify</b> Thevinin & Norton theorem KVL & KCL, and Super Position Theorems
<b>GE8261 - ENGINEERING PRACTICES LAB</b>	
C116.1	<b>Fabricate</b> carpentry components and pipe connections including plumbing works.
C116.2	<b>Use</b> welding equipments to join the structures.
C116.3	<b>Carry out</b> the basic machining operations. Make the models using sheet metal works.
C116.4	<b>Illustrate</b> on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings
C116.5	<b>Measure</b> the electrical quantities
<b>MA8352 - LINEAR ALGEBRA AND PARTIAL DIFFERENTIAL EQUATIONS</b>	
C201.1	The students have the ability to form and <b>solve</b> the problems in vector spaces
C201.2	This Course helps the Students to <b>understand</b> and <b>solve</b> various problems in linear transformation and diagonalization
C201.3	The students have the ability to <b>solve</b> the problems on inner product spaces
C201.4	The students have the ability to form and <b>solve</b> the PDE by using various techniques.
C201.5	Students are able to <b>solve</b> the One Dimensional Wave and Heat Flow equations.
<b>EC8393 - FUNDAMENTAL OF DATA STRUCTURES IN C</b>	
C202.1	<b>Implement</b> linear and non-linear data structure operations using C
C202.2	<b>Suggest</b> appropriate linear / non-linear data structure for any given data set.
C202.3	<b>Apply</b> hashing concepts for a given problem
C202.4	<b>Modify</b> or suggest new data structure for an application
C202.5	<b>Appropriately</b> choose the sorting algorithm for an application
<b>EC8351 - ELECTRONICS CIRCUITS I</b>	
C203.1	<b>Acquire</b> knowledge of Working principles, characteristics of BJT and FET
C203.2	<b>Acquire</b> knowledge of applications BJT and FET
C203.3	<b>Frequency</b> response characteristics of BJT and FET amplifiers
C203.4	<b>Analyze</b> the performance of small signal BJT and FET amplifiers -single stage and multi stage amplifiers
C203.5	<b>Apply</b> the knowledge gained in the design of Electronic circuits
<b>EC8352 - SIGNALS AND SYSYTEM</b>	
C204.1	<b>To be able</b> to determine if a given system is linear/causal/stable

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C204.2	<b>Capable</b> of determining the frequency components present in a deterministic signal
C204.3	<b>Capable</b> of characterizing LTI systems in the time domain.
C204.4	<b>Capable</b> of characterizing LTI systems in the frequency domain
C204.5	To be <b>able</b> to compute the output of an LTI system in the time and frequency domains
<b>EC8392 - DIGITAL ELECTRONICS</b>	
C205.1	<b>Analyze</b> various methods used for simplification of Boolean expression.
C205.2	<b>Design</b> and implementation of combinational circuits.
C205.3	<b>Design</b> and implementation of Synchronous sequential circuits.
C205.4	<b>Design</b> and implementation of Asynchronous sequential circuits.
C205.5	<b>Program</b> the memory devices.
<b>EC8391 - CONTROL SYSTEM ENGINEERING</b>	
C206.1	<b>Identify</b> the various control system components and their representations.
C206.2	<b>Analyze</b> the various time domain parameters.
C206.3	<b>Analysis</b> the various frequency response plots and its system.
C206.4	<b>Apply</b> the concepts of various system stability criterions.
C206.5	<b>Design</b> various transfer functions of digital control system using state variable models.
<b>EC8381 - FUNDAMENTALS OF DATA STRUCTURES IN C LAB</b>	
C207.1	<b>Write</b> basic and advanced programs in C
C207.2	<b>Implement</b> functions and recursive functions in C
C207.3	<b>Implement</b> data structures using C
C207.4	<b>Choose</b> appropriate sorting algorithm for an application and implement it in a modularized way
C207.5	<b>Choose</b> appropriate sorting algorithm for an implement it in a modularized way
<b>EC8361 - ANALOG AND DIGITAL CIRCUIT LAB</b>	
C208.1	<b>Design</b> and Test rectifiers, filters and regulated power supplies.
C208.2	<b>Design</b> and Test BJT/JFET amplifiers.
C208.3	<b>Differentiate</b> cascode and cascade amplifiers.
C208.4	<b>Analyze</b> the limitation in bandwidth of single stage and multi stage amplifier
C208.5	<b>Measure</b> CMRR in differential amplifier
<b>HS8381 - INTERPERSONAL SKILLS /LISTENING &amp; SPEAKING</b>	
C209.1	<b>Listen</b> and respond appropriately especially in academic contexts
C209.2	<b>Participate</b> in group discussions with special emphasis on stress and intonation

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C209.3	<b>Develop</b> lexical accuracy and fluency in articulation
C209.4	<b>Assess</b> conversations and offer Verbal and Non-Verbal feedbacks
C209.5	<b>Plan</b> and devise effective presentations
<b>MA8451 - PROBABILITY AND RANDOM PROCESSES</b>	
C210.1	Students have thorough <b>understand</b> on Probability and various distributions
C210.2	This Course helps the Students to <b>Solve</b> the Joint distributions, Covariance, Correlation and Linear regression Problems.
C210.3	Students <b>understand</b> Stationary process, Markov process, Poisson process and its Applications.
C210.4	Students <b>Acquire</b> skills in analyzing and Solving the Various types of Markovian Queue Problems.
C210.5	The students <b>solve</b> problems on General Queueing Models (Non Markovian)
<b>EC8452 - ELECTRONICS CIRCUITS II(EC8452)</b>	
C211.1	<b>Analyze</b> different types of amplifier, oscillator and multivibrator circuits
C211.2	<b>Design</b> BJT amplifier and oscillator circuits
C211.3	<b>Analyze</b> transistorized amplifier and oscillator circuits
C211.4	<b>Design</b> and analyze feedback amplifiers
C211.5	<b>Design</b> LC and RC oscillators, tuned amplifiers, wave shaping circuits, multivibrators, power amplifier and DC convertors
<b>EC8491 - COMMUNICATION THEORY</b>	
C212.1	<b>Design</b> AM communication systems
C212.2	<b>Design</b> Angle modulated communication systems
C212.3	<b>Apply</b> the concepts of Random Process to the design of Communication systems
C212.4	<b>Analyze</b> the noise performance of AM and FM systems
C212.5	<b>Gain</b> knowledge in sampling and quantization
<b>EC8451 - ELECTROMAGNETIC FIELDS</b>	
C213.1	<b>Display</b> an understanding of fundamental electromagnetic laws and concepts
C213.2	<b>Write</b> Maxwell's equations in integral, differential and phasor forms and explain their physical meaning
C213.3	<b>Explain</b> electromagnetic wave propagation in lossy and in lossless media
C213.4	<b>Solve</b> simple problems requiring estimation of electric field quantities based on these concepts and laws
C213.5	<b>Solve</b> simple problems, requiring estimation of magnetic field quantities based on these concepts and laws

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<b>EC8453 - LINEAR INTEGRATED CIRCUITS</b>	
C214.1	<b>Design</b> linear and nonlinear applications of OP –AMPS
C214.2	<b>Design</b> applications using analog multiplier and PLL
C214.3	<b>Design</b> ADC and DAC using OP –AMPS
C214.4	<b>Generate</b> waveforms using OP –AMP Circuits
C214.5	<b>Analyze</b> special function Ics
<b>GE8291 - ENVIRONMENTAL SCIENCE AND ENGINEERING</b>	
C215.1	<b>Understand</b> the different ecosystem and the importance of biodiversity
C215.2	<b>Categorize</b> the sources, causes, consequences and control methods the different types of pollution
C215.3	<b>Understand</b> the existence of natural resources and problems of over utilization of these resources.
C215.4	<b>Analyze</b> social issues related to environment.
C215.5	<b>Relate</b> the human population growth and issues related to human health with the role of Information technology
<b>EC8461 - CIRCUITS DESIGN AND SIMULATION LABORATORY</b>	
C216.1	<b>Analyze</b> various types of feedback amplifiers
C216.2	<b>Design</b> oscillators, tuned amplifiers
C216.3	<b>Design</b> wave-shaping circuits and multivibrators
C216.4	<b>Design</b> and simulate feedback amplifiers, oscillators, tuned amplifiers, using SPICE Tool.
C216.5	<b>Design</b> and simulate wave-shaping circuits and multivibrators using SPICE Tool.
<b>EC8462 - LINEAR INTEGRATED CIRCUITS LABORATORY</b>	
C217.1	<b>Design</b> amplifiers, oscillators, D-A converters using operational amplifiers.
C217.2	<b>Design</b> filters using op-amp and performs an experiment on frequency response.
C217.3	<b>Analyze</b> the working of PLL and describe its application as a frequency multiplier.
C217.4	<b>Design</b> DC power supply using ICs.
C217.5	<b>Analyze</b> the performance of filters, multivibrators, A/D converter and analog multiplier using SPICE.

  
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EC8501 - DIGITAL COMMUNICATION	
C201.1	<b>Analysis</b> various Source coding theorem.
C201.2	<b>Design</b> and implement base band transmission schemes
C201.3	<b>Design</b> and implement band pass signaling schemes
C201.4	<b>Analyze</b> the spectral characteristics of band pass signaling schemes and their noise performance
C201.5	<b>Design</b> error control coding schemes
EC8553 - DISCRETE-TIME SIGNAL PROCESSING	
C202.1	<b>Apply</b> DFT for the analysis of digital signals and systems
C202.2	<b>Design</b> IIR and FIR filters
C202.3	<b>Characterize</b> the effects of finite precision representation on digital filters
C202.4	<b>Design</b> multirate filters
C202.5	<b>Apply</b> adaptive filters appropriately in communication systems
EC8551 - COMPUTER ARCHITECTURE AND ORGANIZATION	
C203.1	<b>Describe</b> data representation, instruction formats and the operation of a digital computer
C203.2	<b>Illustrate</b> the fixed point and floating-point arithmetic for ALU operation
C203.3	<b>Discuss</b> about implementation schemes of control unit and pipeline performance
C203.4	<b>Explain</b> the concept of various memories, interfacing and organization of multiple processors
C203.5	<b>Discuss</b> parallel processing technique and unconventional architectures
GE8077 - TOTAL QUALITY MANAGEMENT	
C204.1	<b>Learn</b> the need for quality in an organization
C204.2	<b>Demonstrate</b> various TQM principles
C204.3	<b>Analyze</b> and interpret various TQM tools.
C204.4	<b>Understand</b> the concepts of six sigma and QFB
C204.5	<b>Audit</b> and organization using ISO quality system
OR0551 RENEWABLE ENERGY SOURCE	
C205.1	<b>Understanding</b> the physics of solar radiation.
C205.2	<b>Ability</b> to classify the solar energy collectors and methodologies of storing solar energy.
C205.3	<b>Knowledge</b> in applying solar energy in a useful way.
C205.4	<b>Knowledge</b> in wind energy and biomass with its economic aspects.
C205.5	<b>Knowledge</b> in capturing and applying other forms of energy sources like wind, biogas and geothermal energies

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<b>EC8562 - DIGITAL SIGNAL PROCESSING LAB</b>	
C206.1	<b>Carryout</b> basic signal processing operations
C206.2	<b>Demonstrate</b> their abilities towards MATLAB based implementation of various DSP systems
C206.3	<b>Analyze</b> the architecture of a DSP Processor
C206.4	<b>Design</b> and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals
C206.5	<b>Design</b> a DSP system for various applications of DSP
<b>EC8561 - COMMUNICATION SYSTEM LAB</b>	
C207.1	<b>Simulate</b> the various functional modules of a communication system
C207.2	<b>Validate</b> the various functional modules of a communication system
C207.3	<b>Demonstrate</b> their knowledge in base band signaling schemes through implementation of digital modulation schemes
C207.4	<b>Apply</b> various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of communication system
C207.5	<b>Simulate</b> end-to-end communication Link
<b>EC8563 - COMMUNICATION NETWORKS LAB</b>	
C208.1	<b>Identify</b> the components required to build different types of networks
C208.2	<b>Choose</b> the required functionality at each layer for given application
C208.3	<b>Identify</b> solution for each functionality at each layer
C208.4	<b>Trace</b> the flow of information from one node to another node in the network
C208.5	<b>study</b> about network software
<b>EC8691 - MICROPROCESSOR AND MICROCONTROLLER</b>	
C310.1	<b>Summarize</b> the architecture of 8086 and write the assembly language programs on 8086.
C310.2	<b>Analyze</b> the various configurations of 8086 microprocessor and system bus structure.
C310.3	<b>Design</b> the I/O and memory interfacing in 8086 processor.
C310.4	<b>Illustrate</b> the 8051 microcontroller architecture and write the ALP.
C310.5	<b>Develop</b> simple applications using 8051 microcontroller based system.
<b>EC8095 - VLSI DESIGN</b>	
C311.1	<b>Summarize</b> the architecture of 8086 and write the assembly language programs on 8086.
C311.2	<b>Analyze</b> the various configurations of 8086 microprocessor and system bus structure.
C311.3	<b>Design</b> the I/O and memory interfacing in 8086 processor.
C311.4	<b>Illustrate</b> the 8051 microcontroller architecture and write the ALP.
C311.5	<b>Develop</b> simple applications using 8051 microcontroller based system.

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<b>EC8652 - WIRELESS COMMUNICATION (EC8652)</b>	
C312.1	<b>Characterize</b> wireless channels and evolve the system design specifications
C312.2	<b>Design</b> a cellular system based on resource availability and traffic demands
C312.3	<b>Design and implement</b> various signaling schemes for fading channels
C312.4	<b>Compare</b> multipath mitigation techniques and analyze their performance
C312.5	<b>Develop and Demonstrate</b> MIMO system and also <b>Evaluate</b> capacity of fading and non fading channels
<b>MG8591-PRINCIPLES OF MANAGEMENT</b>	
C313.1	<b>Summarizing</b> of management evolution and different types of business organization.
C313.2	<b>Explain</b> on planning and decision making process of management
C313.3	<b>Summarizing</b> of Organization structure , HR planning and control
C313.4	<b>Acquaintance</b> of the various process and elements of directing function of management like motivation, leadership and communication.
C313.5	<b>Designing</b> of performance controlling process, techniques of control and reporting to the management.
<b>EC8651 - TRANSMISSION LINES AND RF SYSTEMS</b>	
C314.1	<b>Able</b> to apply network theory concepts to derive the line parameters, line equations and to analyze the characteristics of the transmission line.
C314.2	<b>Analyze</b> the characteristics of a dissipation less transmission line
C314.3	<b>Design</b> impedance matching networks for unmatched lines and learn the importance of Smith chart in the above application.
C314.4	<b>Analyze</b> transmission of electromagnetic waves in unguided and guided media.
C314.5	<b>Able</b> to design RF system transceiver employing active RF components.
<b>EC8004 - WIRELESS NETWORKS</b>	
C315.1	<b>Illustrate</b> about the different type of wireless LAN and its layer structure.
C315.2.	<b>Summarize</b> the various Mobile networks and routing protocols
C315.3	<b>Summarize</b> various Mobile wide area network and 3G.
C315.4	<b>Examine</b> the internetworking between WLANS and WWANS .
C315.5	<b>Analyze</b> Mobile 4G network and applications
<b>EC8002 - MULTIMEDIA COMPRESSION AND COMMUNICATION</b>	
C315.1	<b>Design</b> audio compression techniques
C315.2	<b>Configure</b> Text, image and video compression techniques
C315.3	<b>Select</b> suitable service model for specific application
C315.4	<b>Select</b> suitable service model for specific application

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C315.5	<b>Configure</b> multimedia communication network
<b>EC8681 - MICROPROCESSOR AND MICROCONTROLLER LAB</b>	
C316.1	<b>Summarize</b> the basic concepts and features of ALP using 8086 and 8051.
C316.2	<b>Analyze</b> the arithmetic and logical operations using 8086 and 8051 kit.
C316.3	<b>Design</b> of code converters and waveform generation using 8086 and 8051.
C316.4	<b>Interface</b> various I/O devices with 8086 processor.
C316.5	<b>Simulate</b> arithmetic operation using MASM and Simulate logical and BCD operation using MASM
<b>EC8661- VLSI DESIGN LABORATORY</b>	
C317.1	<b>Create</b> HDL code for advanced digital integrated circuits
C317.2	<b>Demonstrate</b> the logic modules in to FPGA boards
C317.3	<b>Analyze</b> sequential logic circuits and synthesis, place and route digital IPS
C317.4	<b>Simulate</b> and extract the layouts of analog IC blocks using EDA tools
C317.5	<b>Determine</b> layout diagram in all the digital expressions
<b>EC8701- ANTENNAS AND MICROWAVE ENGINEERING</b>	
C401.1	<b>Understand</b> the basic principles in antenna and microwave system design
C401.2	<b>Acquire</b> the basic knowledge of various antenna designs such as Wire and loop antennas, Aperture antennas, Reflector antennas, Microstrip antennas & Frequency independent antennas
C401.3	<b>Understand</b> and analyze the radiation characteristics of antenna arrays
C401.4	<b>Understand</b> and analyze the microwave components such as Power dividers and hybrid junctions and the operational concepts of microwave vacuum tubes-based oscillators and amplifiers
C401.5	<b>Design</b> a microwave system comprising of filter, LNA, power amplifier, oscillator and mixer for the given application specifications.
<b>EC8751- OPTICAL COMMUNICATION</b>	
C402.1	<b>Realize</b> basic elements in optical fibers, different modes and configurations
C402.2	<b>Analyze</b> the transmission characteristics associated with dispersion and polarization techniques
C402.3	<b>Design</b> optical sources and detectors with their use in optical communication system
C402.4	<b>Construct</b> fiber optic receiver systems, measurements and coupling techniques
C402.5	<b>Design</b> optical communication systems and its networks
<b>EC8791 - EMBEDDED AND REAL TIME SYSTEMS</b>	
C403.1	<b>Understand</b> the concepts of embedded system design and analysis
C403.2	<b>Learn</b> the architecture and programming of ARM processor

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C403.3	<b>Be</b> exposed to the basic concepts of embedded programming
C403.4	<b>Learn</b> the real time operating systems
C403.5	<b>Differentiate</b> between the general purpose operating system and the real time Operating system. Model real-time applications using embedded-system concepts
<b>EC8702 - ADHOC AND WIRELESS SENSOR NETWORKS</b>	
C404.1	<b>Know</b> the basics of Ad hoc networks and Wireless Sensor Networks
C404.2	<b>Apply</b> this knowledge to identify the suitable routing algorithm based on the network and user requirement
C404.3	<b>Apply</b> the knowledge to identify appropriate physical and MAC layer protocols
C404.4	<b>Understand</b> the transport layer and security issues possible in Ad hoc and sensor networks
C404.5	<b>Be</b> familiar with the OS used in Wireless Sensor Networks and build basic modules
<b>EC8705 - COURCOGNITIVE RADIO</b>	
C405.1	<b>To understand</b> the evolving software defined radio and cognitive radio techniques and their essential functionalities
C405.2	<b>To study</b> the basic architecture and standard for cognitive radio
C405.3	<b>To design</b> and implement algorithms for cognitive radio spectrum sensing and dynamic spectrum access
C405.4	<b>To understand</b> the physical, MAC and Network layer design of cognitive radio
C405.5	<b>To expose</b> the student to evolving applications and advanced features of cognitive radio
<b>OTL751- TELECOMMUNICATION SYSTEM MODELING AND SIMULATION</b>	
C406.1	<b>Apply</b> the constituents of a telecommunication systems
C406.2	<b>Analyze</b> various modeling methodologies and simulation techniques
C406.3	<b>Estimate</b> the performance measures of telecommunication systems
C406.4	<b>Apply</b> system modeling in telecommunication
C406.5	<b>Demonstrate</b> light wave communication and satellite communication systems
<b>EC8711- EMBEDDED LABORATORY</b>	
C407.1	<b>Able to</b> write programs in ARM for a specific application
C407.2	<b>Able to</b> interface memory, A/D and D/A convertors with ARM system
C407.3	<b>Able to</b> analyze the performance of interrupt
C407.4	<b>Able to</b> write program for interfacing keyboard, display, motor and sensor.
C407.5	<b>Able to</b> formulate a mini project using embedded system
<b>EC8761 - ADVANCED COMMUNICATION LAB</b>	
C408.1	<b>Understand</b> the working principle of optical sources, detector, fibers and microwave

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	components
C408.2	<b>Develop</b> understanding of simple optical communication link.
C408.3	<b>Understand</b> the measurement of BER and Pulse broadening in optical fiber.
C408.4	<b>Understand</b> and capture an experimental approach to digital wireless communication
C408.5	<b>Understand</b> actual communication waveforms that will be sent and received across wireless channel
	<b>EC8072 – ELECTROMAGNETIC INTERFERENCE AND COMPATIBILITY</b>
C409.1	<b>To understand</b> the basic concepts of interference and compatibility and its sources.
C409.2	<b>To study</b> the different methods by which interference can occur
C409.3	<b>To design</b> and study the different methods used to prevent interference
C409.4	<b>To learn</b> the importance of Electromagnetic Compatible designs
C409.5	<b>To study</b> the different test methods and instruments used to measure electromagnetic interference
	<b>EC8094 - SATELLITE COMMUNICATION</b>
C410.1	<b>Understand</b> the basics of satellite orbits.
C410.2	<b>Understand</b> the satellite segment and earth segment
C410.3	<b>Analyze</b> the various methods of satellite access.
C410.4	<b>Understand</b> the applications of satellite
C410.5	<b>Under</b> the basics of satellite networks.
	<b>EC8811 - PROJECT WORK</b>
C411.1	<b>To develop</b> the ability to solve a specific problem right from its identification
C411.2	<b>Review</b> on literatures and learn more about the problem and its solutions
C411.3	<b>To develop</b> the analytical skills, requirement analysis, design skills.
C411.4	<b>Learn</b> the various system modules for implementing the project useful for the society and testing with the experimental data.
C411.5	<b>To train</b> the students in preparing project reports and to face reviews and viva voce examination

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## **COURSE OUTCOMES FOR B.E. ELECTRICAL AND ELECTRONICS ENGINEERING**



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<b>HS8151: COMMUNICATIVE ENGLISH</b>	
C101.1	<b>Understand</b> framing of sentences, enrich vocabulary and develop basic LSRW Skills
C101.2	<b>Implement</b> the formation of sentences and enhance LSRW skills for general purposes
C101.3	<b>Apply</b> coherence and sequence expressions and substitutes for advanced task
C101.4	<b>Understand</b> tense sense and word enrichment techniques for more complex and demanding social activities
C101.5	<b>Develop</b> usage of language to ensure development in the LSRW Skills
<b>MA8151 – ENGINEERING MATHEMATICS I</b>	
C102.1	<b>Understand</b> the various techniques in differentiation
C102.2	<b>Solve</b> the maxima, minima of functions of two variables and applications of Lagrange's method
C102.3	<b>Analyze</b> the integral problems by using boundary conditions.
C102.4	<b>Solve</b> the problems based on multiple integration
C102.5	Acquire skills in <b>analyzing</b> and solving the ordinary differential equations.
<b>PH8151 – ENGINEERING PHYSICS</b>	
C103.1	<b>Remember</b> the basics of properties of matter and
C103.2	<b>Understand</b> the concepts of waves, optical devices and analyze their applications in fiber optics.
C103.3	<b>Describe</b> the concepts of thermal properties of materials and assess their applications in expansion joints and heat exchangers
C103.4	<b>Apply</b> the physics concepts of quantum theory and apply in tunneling microscopes
C103.5	<b>Define</b> the basics of crystals, their structures and experimenting the preparation of different growth techniques.
<b>CY8151 – ENGINEERING CHEMISTRY</b>	
C104.1	<b>Understand</b> the concept of hard water, its problems and water treatment techniques.
C104.2	<b>Classify</b> the concepts of adsorption, its isotherms and catalytic reaction
C104.3	<b>Apply</b> the phase rule to the one and two component system and to understand the significance of alloys.
C104.4	<b>Describe</b> the different types of fuels and its manufacturing process and able to calculate the calorific value of the fuel
C104.5	<b>Apply</b> the principles of generation of energies in batteries, nuclear reactors and solar cells.

  
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<b>GE8151- PROBLEM SOLVING AND PYTHON PROGRAMMING</b>	
C105.1	<b>Understand</b> the basics of algorithmic problem solving skills
C105.2	<b>Analyse</b> skills required for reading and writing simple Python programs.
C105.3	<b>Discuss</b> about developing Python programs with conditionals and loops.
C105.4	<b>Understand</b> about Python functions and calling them.
C105.5	<b>Explain</b> about Python data structures, lists, tuples, dictionaries, input/output .
<b>GE8152 – ENGINEERING GRAPHICS</b>	
C106.1	<b>Understand</b> the fundamentals and standards of Engineering graphics
C106.2	<b>Explain</b> freehand sketching of basic geometrical constructions and multiple views of objects
C106.3	<b>Understand</b> the concept of orthographic projections of lines and plane surfaces
C106.4	<b>Describe</b> the projections of section of solids and development of surfaces
C106.5	<b>Explain</b> project isometric and perspective sections of simple solids
<b>GE8161- PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY</b>	
C107.1	<b>Understand</b> about writing, testing, and debugging simple Python programs.
C107.2	<b>Describe</b> about Python programs with conditionals and loops.
C107.3	<b>Understand</b> about functions for structuring Python programs.
C107.4	<b>Explain</b> the Representation of compound data using Python lists, tuples, dictionaries
C107.5	<b>Implement</b> Read and write data from/to files in Python.
<b>BS8161 – PHYSICS AND CHEMISTRY LABORATORY</b>	
C108.1	<b>Acquire</b> the skills in the determination hardness of the water by EDTA method
C108.2	<b>Analyze</b> the alkalinity present in water by titrimetric method
C108.3	<b>Determine</b> the molecular weight of a polymer.
C108.4	<b>Deduce</b> the amount substance present by pH metry and Potentiometry method.
C108.5	<b>Solve</b> the amount of acid and base present in the solution and in the mixture Conductometric method.
<b>HS8251 – TECHNICAL ENGLISH</b>	
C109.1	<b>Understand</b> the competence in LSRW for basic general and technology-based professional requirements.
C109.2	<b>Develop</b> ability in LSRW to achieve more demanding tasks in technical fields
C109.3	<b>Apply</b> more strategies and skills to enhance LSRW to produce quick, effective and coherent responses in the professional fields
C109.4	<b>Build</b> communication employment-based communication competence by making students

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	self reliant and analytical
C109.5	<b>Explain</b> LSRW ability to respond effectively and competently for job-based demands
<b>MA8251 – ENGINEERING MATHEMATICS II</b>	
C110.1	<b>Understand</b> the concepts in diagonalisation of matrices
C110.2	<b>Describe</b> the concept of vector calculus
C110.3	<b>Explain</b> the uses of analytic functions. and conformal mapping
C110.4	<b>Understand</b> the techniques of complex integration and contour integrals
C110.5	<b>Understand</b> the applications of laplace transforms
<b>PH8253 – PHYSICS FOR ELECTRONICS ENGINEERING</b>	
C111.1	<b>Understand</b> the classical and quantum electronic theories and explaining the energy band structures,
C111.2	<b>Describe</b> the basis of semiconductor physics and its application in various devices.
C111.3	<b>Analyze</b> the magnetic and electrical properties of materials.
C111.4	<b>Describe</b> the functioning of optical properties for opto electronics.
C111.5	<b>Remember</b> the basics of quantum structures and analyzing their applications in spintronics and carbon electronics
<b>BE8252 – BASIC CIVIL AND MECHANICAL ENGINEERING</b>	
C112.1	<b>Understand</b> the Mechatronics and Concepts of Mechatronics approach and Classification of Mechatronics Sensors and Transducers.
C112.2	<b>Describe</b> the architecture and its Pin configuration .Addressing modes Instruction set and timing diagram.
C112.3	<b>Understand</b> the architecture of 8255 and keyboard interfacing .Led display Interfacing, ADC and DAC interface. Temperature control, Stepper Motor control and Traffic control interface.
C112.4	<b>Explain</b> the Basic structure and programming of Mnemonics, Timers, counters and internal relays. Data handling and selection of PLC
C112.5	<b>Analyse</b> the Types of Stepper Motors and servo motors and its construction working principle, advantages and disadvantages. Design process of Traditional and mechatronics design concepts and its stages. Case studies of Mechatronics system and Pick and place robot.
<b>EE8251 – CIRCUIT THEORY</b>	
C113.1	<b>Apply</b> Kirchoff's current & voltage law to simple circuits and solve Complex circuits using Mesh & Nodal Methods.
C113.2	<b>Apply</b> Network theorems to solve simple and complex linear circuits.

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C113.3	<b>Solve</b> the Series and Parallel resonant circuit, analyze the performance of single & double tuned circuits.
C113.4	<b>Understand</b> the Transient response of RLC circuits using Laplace Transform, explain the characteristics of two port networks.
C113.5	<b>Explain</b> three phase balanced and unbalanced star, delta network.
<b>GE8291 – ENVIRONMENTAL SCIENCE AND ENGINEERING</b>	
C214.1	<b>Categorize</b> the sources, causes, consequences and control methods the different types of pollution
C214.2	<b>Understand</b> the existence of natural resources and problems of over utilization of these resources.
C214.3	<b>Analyze</b> social issues related to environment.
C214.4	<b>Use</b> the human population growth and issues related to human health with the role of Information technology
C214.5	<b>Classify</b> various sources, causes, consequences and control methods the different types of pollution
<b>GE8261 – ENGINEERING PRACTISE LABORATORY</b>	
C115.1	<b>Demonstrate</b> the carpentry components like switches, lamps and energy meter.
C115.2	<b>Understand</b> the measurements of voltage, current power & power factors in RLC.
C115.3	<b>Explain</b> the measurement of energy and resistance using electrical equipment.
C115.4	<b>Analyse</b> the verification of logic gates and generation logic gates.
C115.5	<b>Demonstrate</b> the experiment to measure ripples in HWR and FWR.
<b>EE8261 – ELECTRIC CIRCUITS LAB</b>	
C116.1	<b>Demonstrate</b> practical experience with verification of Kirchoff's voltage and current laws.
C116.2	<b>Understand</b> and apply circuit theorems and concepts in engineering applications.
C116.3	<b>Explain</b> the time constant and frequency response of series RLC circuits.
C116.4	<b>Implement</b> and Simulate the series and parallel resonant circuits
C116.5	<b>Understand</b> the parameters of two port network and Simulate the low pass and high pass passive filters.
<b>MA8353 – TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATION</b>	
C201.1	<b>Understand</b> the formation and solving of PDE by using various techniques
C201.2	<b>Explain</b> the Methods to solve various problems in Fourier Series
C201.3	<b>Solve</b> the One Dimensional Wave and Heat Flow equations using boundary condition.
C201.4	<b>Understand</b> about the Fourier Transforms in Engineering Fields.

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C201.5	Solve Z-Transform and finding its solution using initial and final value condition.
<b>EE8351 – DIGITAL LOGIC CIRCUITS</b>	
C202.1	<b>Remember</b> the various number systems and simplifications using mathematical expression and understand the concepts of digital logic families
C202.2	<b>Explain</b> features of combinational logic circuits and its implementation.
C202.3	<b>Understand</b> sequential logic circuits and its implementation.
C202.4	<b>Analyse</b> asynchronous sequential circuits and describe the operation of Programmable Logic Devices
C202.5	<b>Understand</b> the digital simulation techniques for application oriented logic circuits using VHDL coding.
<b>EE8391 – ELECTROMAGNETIC THEORY</b>	
C203.1	<b>Understand</b> the concepts of electromagnetic vector fields and various transformation techniques
C203.2	<b>Interpret</b> the concepts of electrostatics, electrical potential, energy density and their applications.
C203.3	<b>Apply</b> the concepts of magneto statics, magnetic flux density, scalar and vector potential and its applications.
C203.4	<b>Understand</b> the concepts of Faraday's law, induced emf and Maxwell's equations to analyze the electrodynamic fields.
C203.5	<b>Interpret</b> the concepts of electromagnetic waves and Pointing vector.
<b>EE8301 – ELECTRICAL MACHINES I</b>	
C204.1	<b>Understand</b> the techniques of magnetic-circuit analysis and introduce magnetic materials
C204.2	<b>Analyse</b> the constructional details, the principle of operation, prediction of performance, the methods of testing
C204.3	<b>Describe</b> the working principles of electrical machines using the concepts of electromechanical energy conversion principals
C204.4	<b>Explain</b> the working principles of dc machines as generator determination of their no load and full load characteristics.
C204.5	<b>Understand</b> the working principles of dc motor types, characteristics, braking and testing.
<b>EC8353 – ELECTRON DEVICES AND CIRCUITS</b>	
C205.1	<b>Understand</b> the basic structure of electronic devices such as diodes, Rectifiers and display devices
C205.2	<b>Analyse</b> the operation of various types of transistors and thyristor families
C205.3	<b>Analyse</b> various amplifiers hybrid parameters and study their frequency and gain response
C205.4	<b>Describe</b> about multistage amplifiers and differential amplifiers

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C205.5	<b>Apply</b> the advantages of feedback amplifiers, various oscillators and their applications
	<b>ME8792 – POWER PLANT ENGINEERING</b>
C206.1	<b>Understand</b> the concepts of coal based thermal power plant
C206.2	<b>Explain</b> the concepts of diesel, gas turbine, and combined cycle power plant
C206.3	<b>Analyse</b> the concepts of Nuclear power plant
C206.4	<b>Describe</b> the concepts of Power generation from renewable energy
C206.5	<b>Analyze</b> and solve energy and economic related issues in power sectors
	<b>EC8311 – ELECTRONICS LABORATORY</b>
C207.1	<b>Analyse</b> the characteristics of Diodes and transistors in different configurations.
C207.2	<b>Understand</b> the characteristics of JFET, UJT and the generation of sawtooth waveforms.
C207.3	<b>Execute</b> a common emitter amplifier and analyse the characteristics of common emitter amplifier , photo diode and photo transistor.
C207.4	<b>Understand</b> about oscillators, Filter circuits and test the characteristics.
C207.5	<b>Examine</b> the differential amplifier, Multivibrators and filters and analyse the characteristics.
	<b>EE8311 – ELECTRICAL MACHINES I LABORATORY</b>
C208.1	<b>Understand</b> the calculation of the critical speed and critical resistance Open circuit and load characteristics of DC shunt generator with differential and cumulative connections.
C208.2	<b>Experiment</b> the characteristics and efficiency of DC shunt and compound motors u
C208.3	<b>Demonstrate</b> the efficiency of DC shunt motor Swinburne's test and speed control of DC shunt motor.
C208.4	<b>Examine</b> the regulation and efficiency of a single phase transformer as well as transformation ratio
C208.5	<b>Understand</b> various losses like hysteresis loss and eddy current loss and its calculation
	<b>MA8491 – NUMERICAL METHODS</b>
C209.1	<b>Solve</b> the algebraic and transcendental equations, Inversion, Eigen values of a matrix.
C209.2	<b>Analyze</b> and solve the interpolation problems.
C209.3	<b>Describe</b> the concept of Numerical Differentiations and Integrations
C209.4	<b>Exposure</b> on various methods to solve the Differential Equations numerically.
C209.5	<b>To Solve</b> Boundary value Problems
	<b>EE8401 –ELECTRICAL MACHINES II</b>
C210.1	<b>Understand</b> the constructional details and the performance of salient and non - salient type synchronous generators.

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**IDHAYA ENGS. COLLEGE FOR WOMEN  
CHINNASALEM-606 201, KALLAKURICHI DT.**

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C210.2	<b>Discuss</b> the Principle of operation and analyse the performance of synchronous motor
C210.3	<b>Understand</b> the construction, principle of operation and performance analysis of induction machines
C210.4	<b>Explain</b> the starting, Braking and speed control of three-phase induction motors.
C210.5	<b>Discuss</b> the construction, principle of operation and performance of single phase induction motors and special
<b>EE8402 – TRANSMISSION AND DISTRIBUTION</b>	
C211.1	<b>Understand</b> the structure of power system, mechanical design, HVDC systems and FACTS Controller
C211.2	<b>Apply</b> a expression for computation of transmission line parameters.
C211.3	<b>Discuss</b> the equivalent circuit for transmission line based on distance and operating voltage for determining the voltage and operating efficiency
C211.4	<b>Analyse</b> the voltage distribution in insulator strings and cables and method to improve the same.
C211.5	<b>Understand</b> the various types of busbar schemes, feeders, distributors, service mains and methods of grounding, types of substation,
<b>EE8403 – MEASUREMENTS AND INSTRUMENTATION</b>	
C212.1	<b>Describe</b> the basic functional elements of instrumentation, characteristics of measuring instruments and different error in measurement.
C212.2	<b>Analyse</b> the suitable instrument for measuring different and magnetic parameters.
C212.3	<b>Implement</b> a suitable circuit for measuring unknown resistance, capacitance and inductance values.
C212.4	<b>Explain</b> the construction and working principles of various types of storage and display devices and compare them.
C212.5	<b>Apply</b> the various types of transducers and explain the function of different blocks in data acquisition systems.
<b>EE8451 – LINEAR INTEGRATED CIRCUITS AND APPLICATIONS</b>	
C213.1	<b>Understand</b> the procedure for the fabricating of IC.
C213.2	<b>Analyze</b> the DC & AC characteristics of Operational amplifier.
C213.3	<b>Explain</b> the various applications of Operational amplifier.
C213.4	<b>Describe</b> the internal functional blocks of special ICs like 555,565 &566.
C213.5	<b>Understand</b> the merits and demerits of different types of voltage regulators and applications.
<b>IC8451 – CONTROL SYSTEM</b>	
C214.1	<b>Understand</b> the control system components and transfer function models of physical

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	systems.
C214.2	<b>Analyze</b> the time response of systems and steady state error.
C214.3	<b>Apply</b> the basic knowledge in determination of open loop and closed-loop frequency responses.
C214.4	<b>Explain</b> about compensators and its stability analysis.
C214.5	<b>Describe</b> the state variable representation of physical systems and the effect of state feedback.
	<b>EE8411 – ELECTRICAL MACHINES II LABORATORY</b>
C215.1	<b>Understand</b> the regulation of three phase alternator by various methods like EMF, MMF, ZPF and ASA methods.
C215.2	<b>Describe</b> the regulation of three phase salient pole alternator by slip test and measuring its negative and zero sequence impedance.
C215.3	<b>Understand</b> the fundamental characteristics of synchronous motor by relating parameters like field current, armature current.
C215.4	<b>Explain</b> the performance characteristics of three phase induction motor
C215.5	<b>Analyse</b> the performance characteristics of single phase induction motor Learning the various types of starters using
	<b>EE8461 – LINEAR AND DIGITAL INTEGRATED CIRCUITS LABORATORY</b>
C216.1	<b>Implement</b> the Boolean functions and construct & verify the code converter circuits
C216.2	<b>Explain</b> the operation of Parity generator, parity checking, Encoders and Decoders
C216.3	<b>Understand</b> the operation of counters and shift registers
C216.4	<b>Demonstrate</b> the applications of multiplexer, de multiplexer and 555 Timer.
C216.5	<b>Apply</b> the applications of op amp, 566[VCO] and 565 PLL
	<b>EE8412 –TECHNICAL SEMINAR</b>
C217.1	<b>Analyze</b> the strengths and weakness of students by allowing them to choose a technical topic of their choice to deliver seminars.
C217.2	<b>Demonstrate</b> the specific technical skills are analyzed by conducting seminars and exams on topics like Smart grid, electric vehicles, automation & robotics, advanced programming skills
C217.3	<b>Describe</b> the Environmental awareness is inhibited and enhanced among students by handling seminars and conducting tests
C217.4	<b>Explain</b> the sustainability of advanced technologies contributing to the continuous development and well being of society is achieved by delivering seminars
C217.5	<b>Describe</b> the importance for adapting professional ethical standards in their future pursuits which has been analyzed from their presentations.

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<b>EE8501 – POWER SYSTEM ANALYSIS</b>	
C301.1	<b>Describe</b> the importance of single line diagram, Impedance diagram and form the Y-bus matrix for the power system.
C301.2	<b>Develop</b> the power flow equation for power system problems and Determine the line flows using various algorithm
C301.3	<b>Analyse</b> the importance of short circuit studies; Calculate the fault currents for symmetrical fault condition.
C301.4	<b>Understand</b> about symmetrical fault analysis and Draw the sequence network for L-G, L-L and L-L-G fault of the power system
C301.5	<b>Explain</b> the concept of power system stability, Analyze the stability of single machine infinite bus system
<b>EE8551 – MICROPROCESSOR AND MICROCONTROLLER</b>	
C302.1	<b>Understand</b> the architecture of 8085
C302.2	<b>Analyse</b> the addressing modes and instruction set of 8085 and write the assembly language programs for the basic operation
C302.3	<b>Explain</b> the architecture and memory organization of 8051
C302.4	<b>Describe</b> the interfacing of external peripherals to 8085 using peripheral interfacing ICS
C302.5	<b>Discuss</b> about addressing modes and instruction set of 8051 and its applications
<b>EE8552–POWER ELECTRONICS</b>	
C303.1	<b>Understand</b> different types of power semiconductor devices, their switching characteristics and driver circuits
C303.2	<b>Classify</b> the various performance parameters in controlled rectifiers with different load conditions
C303.3	<b>Analyze</b> DC –DC switching regulators with its Commutation Techniques and apply it for real time applications like SMPS
C303.4	<b>Explain</b> the various pulse width modulated inverters for different loads and infer the effect of power quality disturbances over the system.
C303.5	<b>Analyze</b> AC voltage controllers, Matrix Converters & Cyclo converters with various loads and infer its various configurations.
<b>EE8591 – DIGITAL SIGNAL PROCESSING</b>	
C204.1	<b>Classify</b> the different types of signals and systems and understand their mathematical representation and sampling process of signals.
C204.2	<b>Apply</b> Z Transform and inverse Z transform for analyzing the discrete time systems.
C204.3	<b>Understand</b> various transformation techniques for FFT and their computation.

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C204.4	<b>Expalin</b> different types of Infinite impulse response filters and Finite impulse response filters
C204.5	<b>Describe</b> the various programmable digital signal processors and apply their concepts in real time application.
<b>CS8392 –OBJECT ORIENTED PROGRAMMING</b>	
C205.1	<b>Understand</b> the basic concepts in object oriented programming concepts.
C205.2	<b>Analyse</b> the basic characteristics of oops like iterators and containers.
C205.3	<b>Explain</b> the basic concepts of advanced of programming.
C205.4	<b>Describe</b> the basics of Java like arrays, operators and control statements.
C205.5	<b>Understand</b> the packages and interfaces involved in exception handling.
<b>OAN551 –SENSORS AND TRANSDUCERS</b>	
C206.1	<b>Understand</b> the concept of measurement technology and study about characteristics of transducers.
C206.2	<b>Analyse</b> the various sensors used to measure motion proximity and ranging parameters.
C206.3	<b>Describe</b> the various sensors used to measure force magnetic and heading parameter.
C206.4	<b>Explain</b> the various sensors used to measure optical pressure temperature parameter.
C206.5	<b>Understand</b> the fundamental of signal conditioning, data acquisition and communication system used in mechatronics.
<b>EE8511 – CONTROL AND INSTRUMENTATION LABORATORY</b>	
C307.1	<b>Understand</b> the use of transfer function for Modeling & analysis of Systems – Machines, Sensors, Transducers Characteristics.
C307.2	<b>Explain</b> the working of P, PI and PID controllers & Process Simulation.
C307.3	<b>Describe</b> the Stability Analysis and design of Lag, Lead and Lag-Lead Compensators using Simulation of Control Systems by Mathematical development tools.
C307.4	<b>Understand</b> the working of Bridge Networks and Dynamics of Sensors/Transducers.
C307.5	<b>Analyse</b> the Signal Conditioning like Instrumentation Amplifier, Analog – Digital and Digital –Analog converters Measurement of Power and Energy.
<b>HS8581 – PROFESSIONAL COMMUNICATION</b>	
C308.1	<b>Develop</b> communicative competence through technology-based tools.
C308.2	<b>Apply</b> critical reading to comprehend different genres of text and practise different forms of written correspondence.
C308.3	<b>Explain</b> the preparation for National and International Competitive exams
C308.4	<b>Demonstrate</b> the employability skills through self-motivation, managerial and career

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	planning abilities.
C308.5	<b>Understand</b> the soft skills using various learning styles and strategies.
	<b>CS8383 – OBJECT ORIENTED PROGRAMMING LABORATORY</b>
C209.1	<b>Understand</b> the basics of object oriented programming concepts.
C209.2	<b>Explain</b> the object oriented programming through C++ and JAVA.
C209.3	<b>Demonstrate</b> the package creation, interfacing and threading.
C209.4	<b>Analyse</b> the development applications using object oriented programming.
C209.5	<b>Implement</b> features of object oriented programming to solve real world problems.
	<b>EE8601 – SOLID STATE DRIVES</b>
C310.1	<b>Understand</b> steady state operation and transient dynamics of a motor load system
C310.2	<b>Analyze</b> the operation of the converter/chopper fed dc drive
C310.3	<b>Describe</b> the operation and performance of AC motor drives.
C310.4	<b>Analyze</b> current and speed controllers for a closed loop solid state AC motor drive.
C310.5	<b>Analyze</b> and compare the various controllers for Electric drives.
	<b>EE8602– PROTECTION AND SWITCHGEAR</b>
C311.1	<b>Identify</b> the various types of over voltages in power system and grounding methods.
C311.2	<b>Describe</b> the characteristics and functions of protective relays.
C311.3	<b>Explain</b> the protection schemes for alternator, transformer, busbar and transmission line.
C311.4	<b>Analyze</b> Rate of Rise of Recovery Voltage of the faulted system
C311.5	<b>Understand</b> the functioning of circuit breakers
	<b>EE8691 – EMBEDDED SYSTEM</b>
C312.1	<b>Understand</b> about the Building Blocks of Embedded System
C312.2	<b>Explain</b> the Various Embedded Development Strategies
C312.3	<b>Understand</b> about Bus Communication in processors, Input/output interfacing various processor scheduling algorithms.
C312.4	<b>Describe</b> about Basics of Real time operating system and example tutorials to discuss on one real time operating system tool
C312.5	<b>Discuss</b> about embedded system application development.
	<b>EE8002 – DESIGN OF ELECTRICAL MACHINES</b>
C313.1	<b>Analyze</b> the concept of thermal rating of various types of electrical machines.
C313.2	<b>Solve</b> the output equation of DC machine and calculate its main dimensions and winding details.

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C313.3	<b>Understand</b> the core, yoke, windings and cooling systems of transformers.
C313.4	<b>Solve</b> the output equation of AC machines and design the stator and rotor of induction machines.
C313.5	<b>Analyse</b> the stator and rotor of synchronous machine and analyze their thermal behavior.
<b>EE8005 – SPECIAL ELECTRICAL MACHINES</b>	
C414.1	<b>Understand</b> the Construction, principle of operation and performance of synchronous reluctance motors and control techniques
C414.2	<b>Describe</b> the Construction, principle of operation, control and performance of stepping motors and control techniques
C414.3	<b>Understand</b> the Construction, principle of operation, control and performance of switched reluctance motors and control techniques
C414.4	<b>Explain</b> the Construction, principle of operation, control and performance of permanent magnet brushless D.C. motors and control techniques
C414.5	<b>Discuss</b> the Construction, principle of operation and performance of permanent magnet synchronous motors and control techniques
<b>EE8661 –POWER ELECTRONICS AND DRIVES LABORATORY</b>	
C315.1	<b>Understand</b> various triggering circuits are designed to generate gate pulses and its Characteristics.
C315.2	<b>Analyse</b> how AC supply is converted to DC and fed to various types of loads
C315.3	<b>Explain</b> DC supply is regulated using the experiments “Step down and step up MOSFET based choppers” and its performance parameters are calculated and analyzed.
C315.4	<b>Describe</b> about DC supply is converted into 1-phase and 3-phase and various modes are studied.
C315.5	<b>Apply</b> Practical application of a power electronic circuit in Switched mode power converter.
<b>EE8681- MICROPROCESSOR AND MICROCONTROLLER LABORATORY</b>	
C316.1	<b>Demonstrate</b> Simple arithmetic operations using 8085
C316.2	<b>Apply</b> the Control instructions like sorting, code conversion and fundamental instructions were used in programs to understand their usage.
C316.3	<b>Understand</b> the Programming 8051 Micro controller using conditional jumps and subroutines
C316.4	<b>Explain</b> about fundamental interface concepts of 8085 microprocessor.
C316.5	<b>Understand</b> the practical interface concepts of 8051 microcontroller.

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<b>EE8611- MINI PROJECT</b>	
C317.1	<b>Solve</b> a specific problem right from its identification and literature review till the successful solution of the same.
C317.2	<b>Analyse</b> the circuit using simulation software which is designed from base paper
C317.3	<b>Implement</b> the project components, PCB design, soldering part, Final prototype model
C317.4	<b>Explain</b> the students in preparing project reports and publication.
C317.5	<b>Solve</b> practical problems and find solution by formulating proper methodology.
<b>EE8701 - High Voltage Engineering</b>	
C701.1	<b>Ability</b> to understand Transients in power system
C701.2	<b>Ability</b> to understand Generation and measurement of high voltage
C701.3	<b>Ability</b> to understand High voltage testing
C701.4	<b>Ability</b> to <b>understand</b> various types of over voltages in power system
C701.5	<b>Ability</b> to <b>measure</b> over voltages
C701.6	Ability to <b>test</b> power apparatus and insulation coordination
<b>EE8702 - Power System Operation and Control</b>	
C702.1	Ability to <b>understand</b> the day-to-day operation of electric power system
C702.2	Ability to <b>analyze</b> the control actions to be implemented on the system to meet the minute-to-minute variation of system demand
C702.3	Ability to <b>understand</b> the significance of power system operation and control
C702.4	Ability to <b>acquire</b> knowledge on real power-frequency interaction
C702.5	Ability to <b>understand</b> the reactive power-voltage interaction
C702.6	Ability to <b>design</b> SCADA and its application for real time operation
<b>EE8703 -Renewable Energy Systems</b>	
C703.1	Ability to <b>create</b> awareness about renewable Energy Sources and technologies
C703.2	Ability to <b>get</b> adequate inputs on a variety of issues in harnessing renewable Energy.
C703.3	Ability to <b>recognize</b> current and possible future role of renewable energy sources.
C703.4	Ability to <b>explain</b> the various renewable energy resources and technologies and their applications
C703.5	Ability to <b>understand</b> basics about biomass energy
C703.6	Ability to <b>acquire</b> knowledge about solar energy
<b>OCS752 - Introduction to C Programming</b>	
C704.1	<b>Develop</b> simple applications using basic constructs

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C704.2	<b>Develop</b> applications using arrays and strings
C704.3	<b>Develop</b> applications using functions and structures
	<b>EI8075- Fibre Optics and Laser Instrumentation</b>
C705.1	<b>Understand</b> the principle, transmission, dispersion and attenuation characteristics of optical fibers
C705.2	<b>Apply</b> the gained knowledge on optical fibers for its use as communication medium and as sensor as well which have important applications in production, manufacturing industrial and biomedical applications
C705.3	<b>Understand</b> laser theory and laser generation system
C705.4	Students will <b>gain</b> ability to apply laser theory for the selection of lasers for a specific Industrial and medical application
	<b>EE8010 - Power System Transients</b>
C706.1	Ability to <b>understand</b> and analyze switching and lightning transients
C706.2	Ability to <b>acquire</b> knowledge on generation of switching transients and their control
C706.3	Ability to <b>analyze</b> the mechanism of lighting strokes
C706.4	Ability to <b>understand</b> the importance of propagation, reflection and refraction of travelling waves
C706.5	Ability to <b>find</b> the voltage transients caused by faults
C706.6	Ability to <b>understand</b> the concept of circuit breaker action, load rejection on integrated power system
	<b>EE8711- Power System Simulation Laboratory</b>
C707.1	Ability to <b>understand</b> power system planning and operational studies
C707.2	Ability to <b>acquire</b> knowledge on Formation of Bus Admittance and Impedance Matrices and solution of networks
C707.3	Ability to <b>analyze</b> the power flow using GS and NR method
C707.4	Ability to <b>find</b> Symmetric and Unsymmetrical fault
C707.5	Ability to <b>understand</b> the economic dispatch
C707.6	Ability to <b>analyze</b> the electromagnetic transients
	<b>EE8712 – Renewable Energy Systems Laboratory</b>
C708.1	Ability to <b>understand</b> and analyze Renewable energy systems
C708.2	Ability to <b>train</b> the students in Renewable Energy Sources and technologies
C708.3	Ability to <b>provide</b> adequate inputs on a variety of issues in harnessing Renewable Energy
C708.4	Ability to <b>simulate</b> the various Renewable energy sources
C708.5	Ability to <b>recognize</b> current and possible future role of Renewable energy sources

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C708.6	Ability to understand basics of Intelligent Controllers
<b>EE8015 - Electric Energy Generation, Utilization And Conservation</b>	
C809.1	To <b>understand</b> the main aspects of generation, utilization and conservation
C809.2	To <b>identify</b> an appropriate method of heating for any particular industrial application
C809.3	To <b>evaluate</b> domestic wiring connection and debug any faults occurred
C809.4	To <b>construct</b> an electric connection for any domestic appliance like refrigerator as well as to design a battery charging circuit for a specific household application.
C809.5	<b>Realize</b> the appropriate type of electric supply system and to evaluate the performance of the traction unit
C809.6	To <b>understand</b> the main aspects of Traction
<b>EE8017 - High Voltage Direct Current Transmission</b>	
C810.1	Ability to <b>understand</b> the principles and types of HVDC system
C810.2	Ability to <b>analyze</b> and understand the concepts of HVDC converters
C810.3	Ability to <b>acquire</b> knowledge on DC link control
C810.4	Ability to <b>understand</b> the concepts of reactive power management, harmonics and power flow analysis
C810.5	Ability to <b>get</b> knowledge about Planning of DC power transmission & comparison with AC power transmission
C810.6	Ability to <b>understand</b> the importance of power flow in HVDC system under steady state
<b>EE8811 - Project Work</b>	
C811.1	<b>Identify</b> and apply the real world and societal importance problems in the Electrical and its allied area
C811.2	<b>Identify, analyze, design, implement</b> and handle prototype projects with a complete and organized solution methodologies
C811.3	<b>Apply</b> modern engineering tools for solution
C811.4	<b>Contribute</b> as an individual or in a team in development of technical projects
C811.5	<b>Develop</b> effective communication skills for presentation of project related activities and prepare reports and examination following professional ethics

  
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## **COURSE OUTCOMES FOR B.TECH INFORMATION TECHNOLOGY**



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HS8151 – COMMUNICATIVE ENGLISH	
C101.1	<b>Enable</b> students to frame sentences, enrich vocabulary and develop basic LSRW Skills
C101.2	<b>Relate</b> synthesis of sentences and enhance LSRW skills for general purposes
C101.3	<b>Apply</b> coherence and sequence expressions and substitutes for advanced task
C101.4	<b>Refine</b> tense sense and word enrichment techniques for more complex and demanding social activities
C101.5	<b>Develop</b> usage of language to ensure development in the LSRW Skills
MA 8151 ENGINEERING MATHEMATICS I	
C102.1	Able to <b>understand</b> the various techniques in differentiation
C102.2	Able to <b>solve</b> the maxima, minima of functions of two variables and applications of Lagrange's method
C102.3	To <b>Acquire</b> skills in analyzing and solving the Integral problems
C102.4	Able to <b>solve</b> the problems based on multiple integration
C102.5	To <b>Acquire</b> skills in analyzing and solving the ordinary differential equations.
PH8151/ ENGINEERING PHYSICS	
C103.1	<b>Retrieve</b> the basics of properties of matter and
C103.2	<b>Summarize</b> the concepts of waves, optical devices and analyze their applications in fiber optics.
C103.3	<b>Understand</b> the concepts of thermal properties of materials and assess their applications in expansion joints and heat exchangers
C103.4	<b>Extend</b> the physics concepts of quantum theory and apply in tunneling microscopes
C103.5	<b>Retrieve</b> the basics of crystals, their structures and experimenting the preparation of different growth techniques.
CY8151 - ENGINEERING CHEMISTRY	
C104.1	<b>Understand</b> the concept of hard water, its problems and water treatment techniques.
C104.2	<b>Categorize</b> the concepts of adsorption, isotherms and catalytic reaction
C104.3	<b>Apply</b> the phase rule to the one and two component system and to understand the significance of alloys.
C104.4	<b>Summarize</b> the different types of fuels and its manufacturing process and able to calculate the calorific value of the fuel
C104.5	<b>Apply</b> the principles of generation of energies in batteries, nuclear reactors and solar cells.
GE8151 PROBLEM SOLVING AND PYTHON PROGRAMMING	
C105.1	<b>Explain</b> algorithmic solutions to simple computational problems
C105.2	<b>To Read</b> , write, execute by simple Python programs.
C105.3	<b>To describe</b> simple Python programs for solving problems. Decompose a Python program

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	into functions.
C105.4	<b>To use</b> compound data with Python lists, tuples and dictionaries.
C105.5	<b>To describe</b> read and write data from/to files in Python.
	<b>GE8152 ENGINEERING GRAPHICS</b>
C106.1	<b>To understand</b> the fundamentals and standards of Engineering graphics
C106.2	<b>To perform</b> freehand sketching of basic geometrical constructions and multiple views of objects
C106.3	<b>To understand</b> the concept of orthographic projections of lines and plane surfaces
C106.4	<b>To draw</b> the projections of section of solids and development of surfaces
C106.5	<b>To visualize</b> and to project isometric and perspective sections of simple solids
	<b>GE8161 - PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY</b>
C107.1	<b>To understand</b> how to write, test, and debug simple Python programs.
C107.2	<b>To describe</b> Python programs with conditionals and loops.
C107.3	<b>To implement</b> Python programs step-wise by defining functions and calling them.
C107.4	<b>To use</b> Python lists, tuples, dictionaries for representing compound data.
C107.5	<b>To implement</b> read and write data from/to files in Python.
	<b>BS8161 - PHYSICS CHEMISTRY LABORATORY</b>
C108.1	<b>Acquire</b> the skills in the determination hardness of the water by EDTA method
C108.2	<b>Analyze</b> the alkalinity present in water by titrimetric method
C108.3	<b>Determine</b> the molecular weight of a polymer.
C108.4	<b>Deduce</b> the amount substance present by pH metry and Potentiometry method.
C108.5	<b>Calculate</b> the amount of acid and base present in the solution and inthe mixture Conductometric method.
	<b>HS8251 TECHNICAL ENGLISH</b>
C109.1	<b>Enables</b> students to acquire competence in LSRW for basic general and technology-based professional requirements.
C109.2	<b>Develop</b> ability in LSRW to achieve more demanding tasks in technical fields
C109.3	<b>Apply</b> more strategies and skills to enhance LSRW to produce quick, effective and coherent responses in the professional fields
C109.4	<b>Build</b> communication employment-based communication competence by making students self reliant and analytical
C109.5	<b>Foster</b> LSRW ability to respond effectively and competently for job-based demands
	<b>MA8251 ENGINEERING MATHEMATICS II</b>

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C110.1	To <b>understand</b> the concepts in diagonalisation of matrices
C110.2	To <b>understands</b> the concept of vector calculus
C110.3	To <b>understand</b> the uses of analytic functions. and conformal mapping
C110.4	Able to <b>understand</b> the techniques of complex integratin and contour integrals
C110.5	Able to <b>understand</b> the applications of laplace transforms
	<b>PH8252 - PHYSICS FOR INFORMATION SCIENCE</b>
C111.1	<b>Retrieve</b> the electrical properties of solid state materials and explain the theoretical aspects of mobility of electrons
C111.2	<b>Determine</b> the doping properties of semiconductors and determining the carrier concentration of materials
C111.3	<b>Understand</b> the magnetic properties of materials and to analyze their applications in data storage.
C111.4	<b>Understand</b> on the functioning of optical properties for opto electronics.
C111.5	<b>Analyze</b> the concept of electrical properties in bulk material and design novel materials
	<b>BE8255 BASIC ELECTRICAL, ELECTRONICS AND MEASUREMENT ENGINEERING</b>
C112.1	<b>Discuss</b> the essentials of electric circuits and analysis.
C112.2	<b>Discuss</b> the basic operation of electric machines and transformers
C112.3	<b>State</b> the renewable sources and common domestic loads.
C1124	To <b>understand</b> the fundamentals of electronic circuit constructions
C112.5	<b>Describe</b> the measurement and metering for electric circuits.
	<b>IT8201- INFORMATION TECHNOLOGY ESSENTIALS</b>
C113.1	<b>Design</b> and deploy web-sites
C113.2	<b>Design</b> and deploy simple web-applications
C113.3	<b>Create</b> simple database applications
C113.4	<b>Develop</b> information system
C113.5	<b>Describe</b> the basics of networking and mobile communications
	<b>CS8251: PROGRAMMING IN C</b>
C114.1	<b>Develop</b> simple applications in C using basic constructs
C114.2	<b>Design</b> and implement applications using arrays and strings
C114.3	<b>Develop</b> and implement applications in C using functions and pointers
C114.4	<b>Develop</b> applications in C using structures.
C114.5	<b>Design</b> applications using sequential and random access file processing

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<b>GE8261 Engineering Practices Laboratory</b>	
C115.1	To <b>fabricate</b> carpentry components and pipe connections including plumbing works, use welding equipments to join the structures and carry out the basic machining operations
C115.2	<b>Build</b> the models using sheet metal works
C115.3	<b>Illustrate</b> on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings
C115.4	<b>Build</b> basic home electrical works and appliances and measure the electrical quantities
C115.5	<b>Elaborate</b> on the components, gates, soldering practices
<b>CS8261 C PROGRAMMING LABORATORY</b>	
C116.1	<b>Develop</b> C programs for simple applications making use of basic constructs, arrays and strings.
C116.2	<b>Develop</b> C programs involving functions, recursion
C116.3	<b>Develop</b> C programs involving pointers, and structures.
C116.4	<b>Design</b> applications using sequential and random access file processing.
C116.5	<b>Design</b> applications like railway reservation system.
<b>IT8211 INFORMATION TECHNOLOGY ESSENTIALS LABORATORY</b>	
C117.1	<b>Design</b> interactive websites using basic HTML tags, different styles, links and with all Basic control elements
C117.2	<b>Implement</b> client side and server side programs using scripts using PHP.
C117.3	<b>Implement</b> dynamic web sites and handle multimedia components
C117.4	<b>Implement</b> applications with PHP connected to database and Implement the technologies behind computer networks and mobile communication.
C117.5	<b>Implement</b> Personal Information System
<b>MA8351: DISCRETE MATHEMATICS</b>	
C201.1	To <b>understand</b> the logic of a program
C201.2	To <b>identify</b> the Programming structures on many levels.
C201.3	To <b>acquire</b> skills in class of functions which transform a finite set into another finite set.
C201.4	To <b>Understand</b> the concepts of the counting principles.
C201.5	To <b>understand</b> the algebraic structures such as groups, rings and fields.
<b>CS8351 - DIGITAL PRINCIPLES AND SYSTEM DESIGN</b>	
C202.1	To <b>design</b> digital circuits using simplified Boolean functions
C202.2	To <b>analyze</b> and design combinational circuits
C202.3	To <b>analyze</b> and design synchronous and asynchronous sequential circuits
C202.4	To <b>understand</b> Programmable Logic Devices
C202.5	To <b>explain</b> HDL code for combinational and sequential circuits

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<b>CS8391- DATA STRUCTURES</b>	
C203.1	<b>Understand &amp; Implement</b> abstract data types for linear data structures - Lists
C203.2	<b>Understand &amp; Apply</b> the different linear(Stack & Queue) data structures to problem solutions
C203.3	<b>Understand &amp; Apply</b> the different Non-Linear(Tree) data structures to problem solutions
C203.4	<b>Understand &amp; Apply</b> the different Non-Linear(Graph) data structures to problem solutions
C203.5	Critically <b>analyze</b> the various sorting algorithms and Hashing Techniques
<b>CS8392 Object Oriented Programming</b>	
C204.1	<b>Develop</b> Java programs using OOP Principles.
C204.2	<b>Develop</b> Java programs with the concepts inheritance and interfaces.
C204.3	<b>Build</b> Java applicatios using exceptions and I/O streams.
C204.4	<b>Develop</b> java applications with threads and generic classes.
C204.5	<b>Develop</b> interactive Java program using Swings.
<b>EC8394 Analog and Digital Communication</b>	
C205.1	<b>Apply</b> analog and digital communication techniques.
C205.2	<b>Use</b> data and pulse communication techniques.
C205.3	To <b>Compare</b> of various Digital Communication System
C205.4	<b>Analyze</b> Source and Error control coding
C205.5	<b>Utilize</b> multi-user radio communication.
<b>CS8381 – DATA STRUCTURES LABORATORY</b>	
C206.1	<b>Develop</b> and Test C programs to implement the concepts of Linear Data Structures.
C206.2	<b>Use</b> appropriate linear data structures for the given problem.
C206.3	<b>Develop</b> and Test C programs to implement non-linear data structures
C206.4	<b>Develop</b> and Test C programs for implementing sorting and searching algorithms
C206.5	<b>Apply</b> appropriate hash functions that result in a collision free scenario for data storage and retrieval
<b>CS8383 - OBJECT ORIENTED PROGRAMMING LABORATORY</b>	
C207.1	<b>Develop</b> and implement Java programs for simple applications that make use of classes.
C207.2	<b>Develop</b> and implement Java programs for packages and interfaces.
C207.3	<b>Develop</b> and implement Java programs with arraylist.
C207.4	<b>Develop</b> and implement Java programs exception handling and multithreading.
C207.5	<b>Design</b> applications using file processing, generic programming and event handling.

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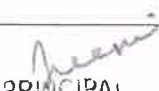
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<b>CS8382 DIGITAL SYSTEMS LABORATORY</b>	
C208.1	<b>Implement</b> simplified combinational circuits using basic logic gates
C208.2	<b>Implement</b> combinational circuits using MSI devices
C208.3	<b>Implement</b> sequential circuits like registers and counters
C208.4	<b>Simulate</b> combinational and sequential circuits using HDL
C208.5	<b>Design</b> and implementation of a simple digital system
<b>HS8381 Interpersonal Skills/Listening &amp; Speaking</b>	
C209.1	<b>Listen</b> and respond appropriately especially in academic contexts
C209.2	<b>Participate</b> in group discussions with special emphasis on stress and intonation
C209.3	<b>Develop</b> lexical accuracy and fluency in articulation
C209.4	<b>Assess</b> conversations and offer Verbal and Non-Verbal feedbacks
C209.5	<b>Plan</b> and devise effective presentations
<b>MA8391- PROBABILITY &amp; STATISTICS</b>	
C210.1	Gain <b>knowledge</b> on Probability and various distributions
C210.2	To <b>Solve</b> the Joint distributions, Covariance, Correlation and Linear regression Problems.
C210.3	To <b>apply</b> various techniques for testing of hypothesis
C210.4	<b>Understand</b> the applications of Design of experiments
C210.5	To <b>prepare</b> and solve the Control charts for measurements and attributes
<b>CS8491 – COMPUTER ARCHITECTURE</b>	
C211.1	<b>Understand</b> the basics structure of computers, operations and instructions.
C211.2	To <b>describe</b> arithmetic and logic unit.
C211.3	<b>Understand</b> pipelined execution and design control unit.
C211.4	<b>Understand</b> parallel processing architectures. I
C211.5	<b>Describe</b> the various memory systems and I/O communication
<b>CS8492- DATABASE MANAGEMENT SYSTEMS</b>	
C212.1	<b>Describe</b> Relational model from ER model to perform database design effectively and optimize queries using normalization criteria.
C212.2	To <b>study</b> SQL and Relational Database design.
C212.3	To <b>understand</b> the internal storage structures using different File and Indexing techniques which will help in physical DB design.

  
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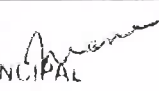
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C212.4	To <b>understand</b> the fundamental concept of transaction processing-concurrency control techniques and recovery procedures.
C212.5	<b>State</b> an introductory knowledge about the storage and Query processing technique.
<b>CS8451 - DESIGN AND ANALYSIS OF ALGORITHMS</b>	
C213.1	<b>Explain</b> algorithms for various computing problems.
C213.2	<b>Analyze</b> the search and sorting complexity of algorithms.
C213.3	<b>Analyze</b> the time and space complexity of algorithms.
C213.4	Critically <b>analyze</b> the different algorithm design techniques for a given problem.
C213.5	<b>Modify</b> existing algorithms to improve efficiency.
<b>CS8493-OPERATING SYSTEM</b>	
C214.1	<b>Explain</b> the basic concepts and functions of operating systems.
C214.2	<b>Analyze</b> Processes ,Threads and Scheduling algorithms.
C214.3	<b>Understand</b> the concept of Deadlocks.
C214.4	<b>Analyze</b> various memory management schemes and understand I/O management and File systems.
C214.5	<b>Understand</b> Linux basic concepts and Mobile OS like iOS and Android.
<b>GE291 - ENVIRONMENTAL SCIENCE AND ENGINEERING</b>	
C215.1	Able to <b>locate</b> and measure the connectivity between the energy flow in ecosystem and to estimate the value of bio diversity
C215.2	To <b>detect</b> , estimate, measure and judge the different environmental pollution levels.
C215.3	To <b>understand</b> , compare and estimate the resources such as land , water, food and minerals
C215.4	To <b>identify</b> , classify and formulate the solutions for social issues in the environment.
C215.5	Able to <b>investigate</b> , evaluate and explain the cause and effects of population statistics.
<b>CS8481- DBMS Lab</b>	
C216.1	<b>Use</b> typical data definitions and manipulation commands.
C216.2	To <b>design</b> applications to test Nested, Join Queries and views
C216.3	<b>Implement</b> applications that require a Front-end Tool.
C216.4	To critically <b>analyze</b> the use of Tables, Views, Functions and Procedures
C216.5	<b>Design</b> and implement real time applications.
<b>CS8461 - OPERATING SYSTEMS LABORATORY</b>	
C217.1	<b>Compare</b> the performance of various CPU Scheduling Algorithms
C217.2	To <b>implement</b> page replacement algorithms, file organization and allocation techniques
C217.3	<b>Implement</b> Deadlock avoidance and Detection Algorithms

  
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C217.4	<b>Implement</b> Semaphores and to Create processes and implement IPC
C217.5	<b>Analyze</b> the performance of the various Page Replacement Algorithms and Implement File Organization and File Allocation Strategies
<b>HS8461 ADVANCED READING AND WRITING</b>	
C218.1	<b>Strengthen</b> the reading and writing skills of the students
C218.2	<b>Comprehend</b> and interpret data into coherent paragraphs
C218.3	<b>Evaluate</b> texts critically
C218.4	<b>Draft</b> winning Job applications
C218.5	<b>Write</b> impressive project proposals with critical acumen
<b>MA8551 ALGEBRA AND NUMBER THEORY</b>	
C301.1	<b>Apply</b> the basic notions of groups, rings, fields which will then be used to solve related problems.
C301.2	<b>Explain</b> the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
C301.3	<b>Demonstrate</b> accurate and efficient use of advanced algebraic techniques
C301.4	<b>Demonstrate</b> 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	<b>Apply</b> integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.
<b>CS8591 - COMPUTER NETWORKS</b>	
C302.1	<b>Understand</b> the basic layers and its functions in computer networks.
C302.2	<b>Evaluate</b> the performance of a network.
C302.3	<b>Understand</b> the basics of how data flows from one node to another.
C302.4	<b>Analyze</b> and design routing algorithms.
C302.5	<b>Explain</b> the protocols for various functions in the network and Understand the working of various application layer protocols
<b>EC8691 - MICROPROCESSORS AND MICROCONTROLLERS</b>	
C303.1	<b>Understand</b> and execute programs based on 8086 microprocessor.
C303.2	<b>Inspect</b> Memory Interfacing circuits.
C303.3	<b>Explain</b> and analyse interface I/O circuits.
C303.4	To <b>implement</b> 8051 microcontroller based systems.
C303.5	<b>Design</b> and develop Traffic Light control, LED display, LCD display and Alarm Controller.
<b>IT8501 - WEB TECHNOLOGY</b>	

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C304.1	<b>Design</b> simple web pages using markup languages like HTML and XHTML.
C304.2	<b>Create</b> dynamic web pages using DHTML and java script that is easy to navigate and use.
C304.3	<b>Study</b> the Program server side web pages that have to process request from client side web pages.
C304.4	<b>Represent</b> web data using XML and develop web pages using JSP.
C304.5	<b>Understand</b> various web services and how these web services interact.
<b>CS8494 SOFTWARE ENGINEERING</b>	
C305.1	<b>Identify</b> the key activities in managing a software project.
C305.2	<b>Compare</b> different process models.
C305.3	<b>Concepts</b> of requirements engineering and Analysis Modeling.
C305.4	<b>Apply</b> systematic procedure for software design and deployment.
C305.5	<b>Identify</b> the various testing and maintenance and Manage project schedule, estimate project cost and effort required
<b>OMD553 TELEHEALTH TECHNOLOGY</b>	
C306.1	<b>Apply</b> multimedia technologies in telemedicine.
C306.2	<b>Explain</b> Protocols behind encryption techniques for secure transmission of data.
C306.3	<b>Apply</b> telehealth in healthcare.
C306.4	<b>Understand</b> telemedical applications.
C306.5	<b>Understand</b> health education and selfcare.
<b>EC8681 - MICROPROCESSORS AND MICROCONTROLLERS LABORATORY</b>	
C307.1	<b>Explain</b> ALP Programmes for fixed and Floating Point and Arithmetic operations
C307.2	<b>Illustrate</b> Interface different I/Os with processor
C307.3	<b>Generate</b> waveforms using Microprocessors
C307.4	<b>Execute</b> Programs in 8051
C307.5	<b>Explain</b> the difference between simulator and Emulator
<b>CS8581 - NETWORKS LABORATORY</b>	
C308.1	<b>Implement</b> various protocols using TCP and UDP.
C308.2	<b>Implement</b> the performance of different transport layer protocols.
C308.3	<b>Use</b> simulation tools to analyze the performance of various network protocols.
C308.4	<b>Analyze</b> various routing algorithms.
C308.5	<b>Implement</b> error correction codes.
<b>IT8511 - WEB TECHNOLOGY LABORATORY</b>	

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C309.1	<b>Design</b> simple web pages using markup languages like HTML and XHTML.
C309.2	<b>Create</b> dynamic web pages using DHTML and java script that is easy to navigate and use.
C309.3	<b>Represent</b> Program server side web pages that have to process request from client side web pages.
C309.4	<b>Represent</b> web data using XML and develop web pages using JSP.
C309.5	<b>Understand</b> various web services and how these web services interact.
<b>IT8601 – COMPUTATIONAL INTELLIGENCE</b>	
C310.1	<b>Describe</b> a basic exposition to the goals and methods of Computational Intelligence.
C310.2	<b>Study</b> of the design of intelligent computational techniques.
C310.3	<b>Apply</b> the Intelligent techniques for problem solving
C310.4	<b>Improve</b> problem solving skills using the acquired knowledge in the areas of, reasoning, natural language understanding,
C310.5	<b>Acquired</b> knowledge in the computer vision, automatic programming and machine learning.
<b>CS8592 – OBJECT ORIENTED ANALYSIS AND DESIGN</b>	
C311.1	<b>Express</b> software design with UML diagrams
C311.2	<b>Design</b> software applications using OO concepts.
C311.3	<b>Identify</b> various scenarios based on software requirements
C311.4	<b>Transform</b> UML based software design into pattern based design using design patterns
C311.5	<b>Understand</b> the various testing methodologies for OO software
<b>IT8602 MOBILE COMMUNICATION</b>	
C312.1	<b>Explain</b> the basics of mobile telecommunication system
C312.2	<b>Illustrate</b> the generations of telecommunication systems in wireless network
C312.3	<b>Understand</b> the architecture of Wireless LAN technologies
C312.4	<b>Determine</b> the functionality of network layer and Identify a routing protocol for a given Ad hoc networks
C312.5	<b>Explain</b> the functionality of Transport and Application layer
<b>CS8091 BIG DATA ANALYTICS</b>	
C313.1	<b>Illustrate</b> with big data tools and its analysis techniques
C313.2	<b>Analyze</b> data by utilizing clustering and classification algorithms
C313.3	<b>Learn</b> and apply different mining algorithms and recommendation systems for large volumes of data
C313.4	<b>Perform</b> analytics on data streams
C313.5	<b>Learn</b> NoSQL databases and management.

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<b>CS8092 - COMPUTER GRAPHICS AND MULTIMEDIA</b>	
C314.1	<b>Apply</b> two dimensional transformations.
C314.2	<b>Apply</b> three dimensional transformations. Apply Illumination and color models.
C314.3	<b>Apply</b> clipping techniques to graphics.
C314.4	<b>Understood</b> Different types of Multimedia File Format
C314.5	<b>Use</b> Basic 3d Scenes using Blender
<b>CS8662 - MOBILE APPLICATION DEVELOPMENT LABORATORY</b>	
C315.1	<b>Develop</b> mobile applications using GUI and Layouts.
C315.2	<b>Develop</b> mobile applications using Event Listener.
C315.3	<b>Develop</b> mobile applications using Databases.
C315.4	<b>Develop</b> mobile applications using RSS Feed, Internal/External Storage, SMS, Multi-threading and GPS.
C315.5	<b>Analyze</b> and discover own mobile app for simple needs.
<b>CS8582 - OBJECT ORIENTED ANALYSIS AND DESIGN LABORATORY</b>	
C316.1	<b>Perform</b> OO analysis and design for a given problem specification.
C316.2	<b>Identify</b> and map basic software requirements in UML mapping.
C316.3	<b>Improve</b> the software quality using design patterns
C316.4	<b>Explain</b> the rationale behind applying specific design patterns
C316.5	<b>Identify</b> the compliance of the software with the SRS
<b>IT8611 - MINI PROJECT</b>	
C317.1	<b>Identify</b> the problem by applying acquired knowledge.
C317.2	<b>Analyze</b> and categorize executable project modules after considering risks.
C317.3	<b>Choose</b> efficient tools for designing project modules.
C317.4	<b>Combine</b> all the modules through effective team work after efficient testing
C318.5	<b>Elaborate</b> the completed task and compile the project report.
<b>MG8591 - PRINCIPLES OF MANAGEMENT</b>	
C401.1	<b>Able</b> to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management
C401.2	<b>Enable</b> the students to study the evolution of Management
C401.3	To <b>study</b> the functions and principles of management
C401.4	To <b>learn</b> the application of the principles in the organization
C401.5	To <b>learn</b> and understand the effective administration

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<b>CS8792 - CRYPTOGRAPHY AND NETWORK SECURITY</b>	
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
<b>CS8791 - CLOUD COMPUTING</b>	
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	Be able to install and use current cloud technologies
C403.6	Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud
<b>OEC754 - MEDICAL ELECTRONICS</b>	
C404.1	Know the human body electro-physiological parameters and recording of bio-potentials
C404.2	Comprehend the non-electrical physiological parameters and their measurement - body temperature, blood pressure, pulse, blood cell count, blood flow meter etc.,
C404.3	Interpret the various assist devices used in the hospitals viz.,pacemakers, defibrillators, dialyzers and ventilators
C404.4	Comprehend physical medicine methods eg. shortwave, microwave surgical diathermies & bio-telemetry principles and methods
C404.5	Know about recent trends in medical instrumentation
<b>IT8075 - SOFTWARE PROJECT MANAGEMENT</b>	
C405.1	Understand Project Management principles while developing software
C405.2	Gain extensive knowledge about the basic project management concepts, framework and the process models
C405.3	Obtain adequate knowledge about software process models and software effort estimation techniques
C405.4	Estimate the risks involved in various project activities
C405.5	Define the checkpoints, project reporting structure, project progress and tracking mechanisms using project management principles
C405.6	Learn staff selection process and the issues related to people management
<b>CS8079 - HUMAN COMPUTER INTERACTION</b>	
C406.1	Design effective dialog for HCI

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C406.2	Design effective HCI for individuals and persons with disabilities
C406.3	Assess the importance of user feedback
C406.4	Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Web sites
C406.5	Develop meaningful user interface
<b>IT8711 - FOSS AND CLOUD COMPUTING LABORATORY</b>	
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
<b>IT8761 - SECURITY LABORATORY</b>	
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
<b>IT8811 - PROJECT WORK</b>	
C409.1	Identify the problem by applying acquired knowledge.
C409.2	Analyze and categorize executable project modules after considering risks.
C409.3	Choose efficient tools for designing project modules.
C409.4	Combine all the modules through effective team work after efficient testing
C409.5	Elaborate the completed task and compile the project report.

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## **COURSE OUTCOMES FOR M.E. COMMUNICATION SYSTEMS**



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<b>DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING - M.E.CSE</b>	
<b>Regulation 2017</b>	
<b>MA5154-Applied Mathematics for Communication Engineers</b>	
C101.1	<b>Concepts</b> on vector spaces, linear transformation, inner product spaces, eigenvalues and generalized eigenvectors.
C101.2	<b>Apply</b> various methods in linear algebra to solve system of linear equations.
C101.3	Using discrete time Markov chains to <b>model</b> computer systems.
C101.4	<b>Numerical solution</b> of differential equations by single and multistep methods.
C101.5	<b>Computation</b> of probability, random variables and their associated distributions, correlations and regression.
<b>CU5191-Advanced Radiation Systems</b>	
C102.1	<b>Ability</b> to understand antenna concepts
C102.2	<b>Ability</b> to design antenna for various applications
C102.3	<b>Knowledge</b> of modern antenna design
<b>CU5151-Advanced Digital Communication Techniques</b>	
C103.1	<b>Develop</b> the ability to understand the concepts of signal space analysis for coherent and non-coherent receivers.
C103.2	<b>Conceptually</b> appreciate different Equalization techniques
C103.3	<b>Possess</b> knowledge on different block codes and convolutional codes.
C103.4	<b>Comprehend</b> the generation of OFDM signals and the techniques of multiuser detection.
<b>AP5152-Advanced Digital Signal Processing</b>	
C104.1	<b>Formulate</b> time domain and frequency domain description of Wide Sense Stationary process in terms of matrix algebra and relate to linear algebra concepts.
C104.2	<b>State</b> Parseval's theorem, W-K theorem, principle of orthogonality, spectral factorization theorem, Widrow-Hoff LMS algorithm and Shannon's sampling theorem, and define linear prediction, linear estimation, sample auto-correlation, periodogram, bias and consistency.
C104.3	<b>Explain</b> various noise types, Yule-Walker algorithm, parametric and non-parametric methods, Wiener and Kalman filtering, LMS and RMS algorithms, Levinson Durbin algorithm, adaptive noise cancellation and adaptive echo cancellation, speed verses convergence issues, channel equalization, sampling rate change, subband coding and wavelet transform.
C104.4	<b>Calculate</b> mean, variance, auto-correlation and PSD for WSS stochastic processes, and derive prediction error criterion, Wiener-Hoff equations, Parseval's theorem, W-K theorem and normal equations.
C104.5	<b>Design</b> AR, MA, ARMA models, Wiener filter, anti aliasing and anti imaging filters, and develop FIR adaptive filter and polyphase filter structures.

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<b>CU5192-Optical Networks</b>	
C105.1	<b>Design</b> and Analyze Network Components
C105.2	<b>Assess</b> and Evaluate optical networks
<b>CU5091 - Advanced Satellite Communication and Navigation System</b>	
C106.1	<b>Discuss</b> satellite navigation and global positioning system
C106.2	<b>Outline</b> deep space networks and inter planetary missions
<b>CU5161-Communication Systems Laboratory</b>	
C107.1	<b>Measure</b> and analyze various transmission line parameters.
C107.2	<b>Design</b> Microstrip patch antennas.
C107.3	<b>Implement</b> the adaptive filtering algorithms
C107.4	To <b>generate</b> and detect digital communication signals of various modulation techniques using MATLAB.
C107.5	<b>Evaluate</b> cellular mobile communication technology and propagation model.
<b>CU5291-Advanced Wireless Communication Systems</b>	
C208.1	<b>Analyze</b> MIMO system.
C208.2	<b>Discuss</b> millimeter wave communication.
C208.3	<b>Demonstrate</b> software defined radio and cognitive radio.
<b>CU5201-MIC and RF System Design</b>	
C209.1	Capability to <b>design</b> RF circuits.
C209.2	To be able to <b>analyze</b> RF circuits.
<b>CU5292-Electromagnetic Interference and Compatibility</b>	
C210.1	<b>Identify</b> Standards
C210.2	<b>Compare</b> EMI test methods
C210.3	<b>Discuss</b> EMI mitigation techniques
<b>CU5071 - Digital Communication Receivers</b>	
C211.1	<b>Apply</b> basic principles of digital communication techniques
C211.2	<b>Discuss</b> on receivers for AWGN & Fading channel
C211.3	<b>Describe</b> various synchronization techniques
C211.4	<b>Design</b> adaptive equalization algorithms to satisfy the evolving demands in digital communication
<b>DS5291 - Advanced Digital Image Processing</b>	
C212.1	<b>Explain</b> the fundamentals digital image processing

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C212.2	<b>Describe</b> image various segmentation and feature extraction techniques for image analysis
C212.3	<b>Discuss</b> the concepts of image registration and fusion
C212.4	<b>Explain</b> 3D image visualization
<b>CU5096 - Pattern Recognition and Machine Learning</b>	
C213.1	<b>Classify</b> the data and identify the patterns
C213.2	<b>Utilize</b> the given data set to extract and select features for Pattern recognition
C213.3	<b>Describe</b> the decision tree and concept learning
C213.4	<b>Discuss</b> on recent advances in pattern recognition
<b>CU5211-RF System Design Laboratory</b>	
C214.1	<b>Apply</b> knowledge to identify a suitable architecture and systematically design an RF system.
C214.2	<b>Comprehensively</b> record and report the measured data, and would be capable of analyzing, interpreting the experimentally measured data and produce the meaningful conclusions.
C214.3	<b>Design</b> and develop microstrip filters.
<b>CP5281-Term Paper Writing and Seminar</b>	
C215.1	<b>Ability</b> to understand Millimeter devices and circuits
C215.2	<b>Ability</b> to design antenna for Millimeter wave frequencies
C215.3	<b>Knowledge</b> of Millimeter wave technology
<b>CU5301-Millimeter Wave Communication</b>	
C301.1	<b>Ability</b> to understand Millimeter devices and circuits
C301.2	<b>Ability</b> to design antenna for Millimeter wave frequencies
C301.3	<b>Knowledge</b> of Millimeter wave technology
<b>MU5091 - Multimedia Compression Techniques</b>	
C302.1	<b>Implement</b> basic compression algorithms with MATLAB and its equivalent open source environments.
C302.2	<b>Design</b> and implement some basic compression standards.
C302.3	Critically <b>analyze</b> different approaches of compression algorithms in multimedia related mini projects.

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## **COURSE OUTCOMES FOR M.E. COMPUTER SCIENCE AND ENGINEERING**



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<b>MA5160-Applied Probability and Statistics</b>	
C101.1	<b>Basic</b> probability axioms and rules and the moments of discrete and continuous random variables.
C101.2	<b>Consistency</b> , efficiency and unbiasedness of estimators, method of maximum likelihood estimation and Central Limit Theorem.
C101.3	<b>Use</b> statistical tests in testing hypotheses on data.
C101.4	<b>Perform</b> exploratory analysis of multivariate data, such as multivariate normal density, calculating descriptive statistics, testing for multivariate normality.
<b>CP5151-Advanced Data Structures and Algorithms</b>	
C102.1	<b>Design</b> data structures and algorithms to solve computing problems
C102.2	<b>Design</b> algorithms using graph structure and various string matching algorithms to solve real-life problems
C102.3	<b>Apply</b> suitable design strategy for problem solving
<b>CP5152-Advanced Computer Architecture</b>	
C103.1	<b>Identify</b> the limitations of ILP.
C103.2	<b>Discuss</b> the issues related to multiprocessing and suggest solutions
C103.3	<b>Point</b> out the salient features of different multicore architectures and how they exploit parallelism
C103.4	<b>Discuss</b> the various techniques used for optimising the cache performance
C103.5	<b>Design</b> hierarchal memory system
C103.6	<b>Point</b> out how data level parallelism is exploited in architectures
<b>CP5153-Operating System Internals</b>	
C104.1	To <b>explain</b> the functionality of a large software system by reading its source.
C104.2	To revise any algorithm present in a system.
C104.3	To <b>design</b> a new algorithm to replace an existing one.
C104.4	To appropriately <b>modify</b> and use the data structures of the linux kernel for a different software system
<b>CP5154-Advanced Software Engineering</b>	
C105.1	<b>Understand</b> the advantages of various Software Development Lifecycle Models
C105.2	<b>Gain</b> knowledge on project management approaches as well as cost and schedule estimation strategies
C105.3	<b>Perform</b> formal analysis on specifications
C105.4	<b>Use</b> UML diagrams for analysis and design
C105.5	<b>Architect</b> and design using architectural styles and design patterns
C105.6	<b>Understand</b> software testing approaches
C105.7	<b>Understand</b> the advantages of DevOps practices
<b>CP5191-Machine Learning Techniques</b>	
C106.1	<b>Distinguish</b> between, supervised, unsupervised and semi-supervised learning
C106.2	<b>Apply</b> the appropriate machine learning strategy for any given problem
C106.3	<b>Suggest</b> supervised, unsupervised or semi-supervised learning algorithms for any given problem

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C106.4	<b>Design</b> systems that uses the appropriate graph models of machine learning
C106.5	<b>Modify</b> existing machine learning algorithms to improve classification efficiency
	<b>CP5161-Data Structures Laboratory</b>
C107.1	<b>Design</b> and implement basic and advanced data structures extensively.
C107.2	<b>Design</b> algorithms using graph structures
C107.3	<b>Design</b> and develop efficient algorithms with minimum complexity using design techniques
	<b>CP5201-Network Design and Technologies</b>
C208.1	Identify the components required for designing a network
C208.2	Design a network at a high-level using different networking technologies
C208.3	<b>Analyze</b> the various protocols of wireless and cellular networks
	<b>CP5291-Security Practices</b>
C209.1	<b>Understand</b> the core fundamentals of system security
C209.2	<b>Apply</b> the security concepts related to networks in wired and wireless scenario
C209.3	<b>Implement</b> and Manage the security essentials in IT Sector
C209.4	<b>Able</b> to explain the concepts of Cyber Security and encryption Concepts
C209.5	Able to attain a through knowledge in the area of Privacy and Storage security and related Issues.
	<b>CP5292-Internet of Things</b>
C210.1	<b>Analyze</b> various protocols for IoT
C210.2	<b>Develop</b> web services to access/control IoT devices.
C210.3	<b>Design</b> a portable IoT using Rasperry Pi
C210.4	<b>Deploy</b> an IoT application and connect to the cloud.
C210.5	<b>Analyze</b> applications of IoT in real time scenario
	<b>CP5293-Big Data Analytics</b>
C211.1	<b>Understand</b> how to leverage the insights from big data analytics
C211.2	<b>Analyze</b> data by utilizing various statistical and data mining approaches
C211.3	<b>Perform</b> analytics on real-time streaming data
C211.4	<b>Understand</b> the various NoSql alternative database models
	<b>CP5092 - Cloud Computing Technologies</b>
C212.1	<b>Employ</b> the concepts of storage virtualization, network virtualization and its management
C212.2	<b>Apply</b> the concept of virtualization in the cloud computing
C212.3	<b>Identify</b> the architecture, infrastructure and delivery models of cloud computing
C212.4	<b>Develop</b> services using Cloud computing
C212.5	<b>Apply</b> the security models in the cloud environment

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<b>CP5072 - Software Architectures and Design</b>	
C213.1	<b>Understand</b> the need of software architecture for sustainable dynamic systems
C213.2	Have a sound knowledge on design principles and to <b>apply</b> for large scale systems
C213.3	<b>Design</b> architectures for distributed heterogeneous systems
C213.4	Have good <b>knowledge</b> on service oriented and model driven architectures and the aspect oriented architecture
C213.5	Have a working knowledge to <b>develop</b> appropriate architectures through various case studies
<b>CP5261-Data Analytics Laboratory</b>	
C214.1	<b>Process</b> big data using Hadoop framework
C214.2	<b>Build</b> and apply linear and logistic regression models
C214.3	<b>Perform</b> data analysis with machine learning methods
C214.4	<b>Perform</b> graphical data analysis
<b>CP5281-Term Paper Writing and Seminar</b>	
C215.1	<b>Identify</b> the Domain Specific Objective
C215.2	<b>Summarize</b> the literature Survey
C215.3	<b>Analyzing</b> different Methodologies
C215.4	<b>Produce</b> Final Draft of the Research Paper
C215.5	<b>Prepare</b> Presentation for the research undergone
<b>CP5005 - Software Quality Assurance</b>	
C301.1	<b>Perform</b> functional and nonfunctional tests in the life cycle of the software product
C301.2	<b>Understand</b> system testing and test execution process
C301.3	<b>Identify</b> defect prevention techniques and software quality assurance metrics
C301.4	<b>Apply</b> techniques of quality assurance for typical applications
<b>CP5097 - Mobile Application Development</b>	
C302.1	<b>Describe</b> the requirements for mobile applications
C302.2	<b>Explain</b> the challenges in mobile application design and development
C302.3	<b>Develop</b> design for mobile applications for specific requirements.
C302.4	<b>Implement</b> the design using Android SDK.
C302.5	<b>Implement</b> the design using Objective C and iOS.
C302.6	<b>Deploy</b> mobile applications in Android and iPhone marketplace for distribution
<b>CP5073 - Embedded Software Development</b>	
C303.1	<b>Understand</b> different architectures of embedded processor, microcontroller and peripheral devices. Interface memory and peripherals with embedded systems
C303.2	<b>Work</b> with embedded network environment
C303.3	<b>Understand</b> challenges in Real time operating systems
C303.4	<b>Design</b> and <b>analyze</b> applications on embedded systems

*Neeraj*  
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CP5311-Project Work Phase – I	
C304.1	<b>Identify</b> the problem by applying acquired knowledge
C304.2	<b>Construct</b> and organize executable project modules through proper designing
C304.3	<b>Choose</b> efficient tools for implementation of the designed modules
C304.4	<b>Analyze</b> and categorize the outcomes of the implementation and derive inferences.
C304.5	<b>Examine</b> the completed task and compile the project report
CP5411-Project Work Phase – II	
C401.1	<b>Plan</b> and <b>construct</b> improved methods for an identified problem by applying acquired knowledge
C402.2	<b>Experiment</b> and <b>Develop</b> effective solutions through proper designing
C401.2	<b>Analyze</b> and <b>categorize</b> the outcomes of the implementation and derive inferences.
C402.3	<b>Assess</b> the acquired outcomes based on evaluation metrics
C401.3	<b>Examine</b> the completed task and compile the project report

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## **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING PROGRAMME OUTCOMES**



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## **DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING PROGRAMME OUTCOMES**





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## **DEPARTMENT OF BACHELOR OF INFORMATION TECHNOLOGY PROGRAMME OUTCOMES**



# IDHAYA ENGINEERING COLLEGE FOR WOMEN

CHINNASALEM-606 201, VILLUPURAM DISTRICT, TAMIL NADU, INDIA.

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S.No	POs
a)	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
b)	<b>Problem analysis:</b> Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
c)	<b>Design/development of solutions:</b> 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.
d)	<b>Conduct investigations of complex problems:</b> 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.
e)	<b>Modern tool usage:</b> 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.
f)	<b>The engineer and society:</b> 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.
g)	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
h)	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
i)	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
j)	<b>Communication:</b> 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.
k)	<b>Project management and finance:</b> 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.
l)	<b>Life-long learning:</b> 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

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## **M.E.COMMUNICATION SYSTEMS PROGRAMME OUTCOMES**



# IDHAYA ENGINEERING COLLEGE FOR WOMEN

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S.No	POs
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l)	<b>Life-long learning:</b> 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

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## **M.E.COMPUTER SCIENCE AND ENGINEERING PROGRAMME OUTCOMES**





# IDHAYA ENGINEERING COLLEGE FOR WOMEN

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S.No	POs
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i)	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
j)	<b>Communication:</b> 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.
k)	<b>Project management and finance:</b> 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.
l)	<b>Life-long learning:</b> 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

  
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## **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING PROGRAMME SPECIFIC OBJECTIVES**



# IDHAYA ENGINEERING COLLEGE FOR WOMEN

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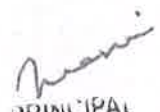
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S.No	PSOs
a)	Ability to apply the acquired knowledge of basic skills, principles of computing, mathematical foundations, algorithmic principles, modeling and design of computer- based systems in solving engineering Problems.
b)	Ability to understand and analyze the interdisciplinary problems for developing innovative sustained solutions with environmental concerns.
c)	Ability to update knowledge continuously in the tools like Rational Rose, MATLAB,NS, Argo UML and technologies like storage, Computing, communication to meet the industry requirements and ability to manage effectively as part of a team with professional behavior and ethics

  
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## **DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING PROGRAMME SPECIFIC OUTCOMES**



# IDHAYA ENGINEERING COLLEGE FOR WOMEN

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S.No	PSOs
a)	To analyze, design and develop solutions by applying foundational concepts of electronics and communication engineering
b)	To apply design principles and best practices for developing quality products for scientific and business applications
c)	To adapt to emerging information and communication technologies (ICT) to innovate ideas and solutions to existing/novel problems

  
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## **DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING PROGRAMME SPECIFIC OUTCOMES**



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S.No	PSOs
a)	To prepare the students have successful career in industry and motivate for higher education and to provide an opportunity to work in inter disciplinary groups
b)	To provide strong foundation in basic science and mathematics necessary to formulate, solve and analyze electrical & electronics problems.
c)	To provide necessary foundation on computational platforms and software applications related to the respective field of engineering

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**Dr.R.GURUMANI, M.E., Ph.D., M.B.A., M.I.S.T.E., P.H.D.**  
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## **DEPARTMENT OF BACHELOR OF INFORMATION TECHNOLOGY PROGRAMME SPECIFIC OUTCOMES**





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S.No	PSOs
a)	To create, select, and apply appropriate techniques, resources, modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
b)	To manage complex IT projects with consideration of the human, financial, ethical and environmental factors and an understanding of risk management processes, and operational and policy implications

  
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2(f) Status of UGC, An ISO 9001: 2015 Certified Institution

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## **M.E.COMMUNICATION SYSTEMS PROGRAMME SPECIFIC OUTCOMES**



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S.No	PSOs
a)	To inculcate the ability in graduates to design and analyze the subsystems such as RF, Signal Processing, Modern communication systems and networks
b)	To enhance problem solving skills in communication systems design using latest hardware and software tools
c)	To apply communication engineering principles and practices for developing products for scientific and business applications

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## **M.E.COMPUTER SCIENCE AND ENGINEERING PROGRAMME SPECIFIC OUTCOMES**



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S.No	PSOs
a)	To analyze, design and develop computing solutions by applying foundational concepts of computer science and engineering
b)	To apply software engineering principles and practices for developing quality software for scientific and business applications
c)	To adapt to emerging information and communication technologies (ICT) to innovate ideas and solutions to existing/novel problems

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