AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
Gunthapally(V) Abdullapurmet(M),Hyderabad,pin-501512

2.6.1 Program outcomes, program specific outcomes and course outcomes

PROGRAM OUTCOMES (POs)

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

PO.1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO.2. Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO.3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO.4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO.5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO.6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

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PO.7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO.8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO.9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

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

PO.11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO.12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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PROGRAM SPECIFIC OUTCOMES(PSO's)

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

1.Design, implement ,test and evaluate a computer system ,component or algorithm to meet desired needs and to solve a computational problem.

2.Ability to analyze,design and implement hardware and software components

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

The Electronics and Communication Engineering Graduates will be able to

1. Be proficient and employment ready with career development skills in both software and hardware through Industry oriented mini & major projects, internship, industry visits seminars and workshops to ethically serve the needs of the society.

2. Develop hardware / software for components / systems for applications in Signal processing, VLSI, Communication, Networking, Computer-based Systems and/or pursue Higher Studies / Research with a strong base in Electronics and communication Engineering

DEPARTMENT OF MECHANICAL ENGINEERING

1. Graduates will have an ability to identify, formulate and analyze the problems related to design, manufacturing, thermal and materials engineering

2. Graduates will have an ability to implement/use appropriate techniques, programming skills, and latest/recent computer aided engineering tools/packages for modelling, simulation and analysis of mechanical engineering problems

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

By the completion of Electrical and Electronics Engineering program the students will have following Program Specific Outcomes (PSOs):

1. To analyze, design and develop electrical and electronics circuits by applying the fundamental concepts of Electrical and Electronics Engineering.
2. To design, simulate and control the electrical and electronic applications using the concepts of power and control engineering.
3. To adapt emerging trends in electrical engineering with the aid of recent development in communication technologies, to innovate ideas and solutions to existing/novel problems

MASTER OF BUSINESS ADMINISTRATION

1. Students should explore practical application of the management concept and to become professional managers
2. Students should have a strong analytical foundation in key functional areas and continuously learn, improvise, adapt, energize, excel and grow.

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COURSE OUTCOMES

DEPARTMENT OF HUMANITIES AND SCIENCES

ENGLISH

C.O 1. Evaluate reading texts and articles of a general kind in magazines and newspapers

C.O 2. Elaborate creative ideas, interpret different contexts in writing

C.O3. Demonstrate critical thinking and creative writing

C.O 4. Write effective job applications and professional reports

C.O5. Develop preliminary, intermediate and advanced reading techniques

C.O 6. Improve effective writing skills to master eloquent, concise and elegant professional communication

ENGINEERING CHEMISTRY

C.O1. Describe the basic knowledge on water treatment, boiler troubles and the purpose of water treatment by internal and external conditioning methods.

C.O 2. Analyze the basic concepts of phase rule and its applications to one and two component systems and appreciate the purpose and significance of alloying

C.O3.Interpret the basic knowledge on fuels and combustion Process. Describe the proximate, ultimate & flue gas analysis.

C.O4. Explain the principle and generation of energies in batteries, nuclear reactors, solar cells, wind mills, fuel cells & super capacitors.

C.O 5. Comprehend the knowledge on synthesis of nano materials & Analyze the application of nano materials in various fields.

PROGRAMMING IN C

C.O1.Apply knowledge on different problem-solving techniques

C.O2.Use appropriate data types and control structures for solving a given problem. C.O3.Execute different array and string operations.

C.O 4.Experiment with the usage of pointers and functions.

C.O5.Organize data using structures and unions.

C.O6.Demonstrate data persistency using files.

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BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

C.O1. Apply basic circuit laws to solve DC circuits

C.O2. Solve single phase AC circuits and Describe the construction and working principle of Transformers

C.O 3. Describe the construction and characteristics of diodes and transistors

C.O 4. Analyse the various number systems and combinational logic circuits .

C.O5. Identify various Electrical installation components and Describe the construction and working principle of measuring instruments

CHEMSITRY LABORATORY

C.O1.Explain the measurement of conductance of strong acid vs strong base and mixture of acids vs strong base using conductivity meter.

C.O2.Determine the strength of given acid using pH mete

C.O3.Estimate the Iron content of the given solution using potentiometer.

C.O 4.Estimate the Iron content of the given solution using spectrophotometer

C.O 5.Determine the amount of hardness, chloride and alkalinity present in the given water sample by titrimetric analysis.

English Laboratory

C.O 1. Comprehend and evaluate conversations and short talks delivered in English.

C.O2. Present creative ideas, interpret different contexts and respond with critical thinking in conversations

C.O3. Demonstrate effective interpersonal

ENGINEERING PHYSICS

C.O1. Define the basics of properties of matter and its applications.

C.O 2. Explore the basics of crystals, their structure and different crystal growth techniques.

C.O3. Differentiate the concept of thermal properties of materials and their applications.

C.O4. Demonstrate the concepts of lasers and advanced physics of quantum theory and its applications in tunneling microscopes.

C.O5. Discuss the basics of semiconductor physics and magnetic properties of materials and their applications

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PHYSICS LABORATORY:

C.O1.Explore the knowledge of young's modulus by non uniform bending to the girders.

C.O 2.Test the bad conductor by measuring the thermal conductivity and study the thermal properties of a material.

C.O 3.Demonstrate the rigidity modulus of the wire and moment of inertia of the disc. C.O4.Apply physics principles of optics and distinguish the spectrum of colours using grating.

C.O5.Demonstrate the total internal reflection in optical fibres by calculating acceptance angle.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II-I SEM

ANALOG AND DIGITAL ELECTRONICS

Co.1. Know the characteristics of various components.

Co.2 Understand the utilization of components.

Co.3 Design and analyze small signal amplifier circuits.

Co.4 Learn Postulates of Boolean algebra and to minimize combinational functions

Co.5 Design and analyze combinational and sequential circuits

Co.6 Know about the logic families and realization of logic gates

DATA STRUCTURES

Co.1.Ability to select the data structures that efficiently model the information in a problem.

Co.2. Ability to assess efficiency trade-offs among different data structure implementations or combinations.

I Co.3. Implement and know the application of algorithms for sorting and pattern matching.

Co.4. Design programs using a variety of data structures, including hash tables, binary and general tree structures, search trees, tries, heaps, graphs, and AVL-trees.

COMPUTER ORIENTED STATISTICAL METHODS

Co.1 Apply the concepts of probability and distributions to some case studies

Co.2 Correlate the material of one unit to the material in other units

Co.3 Resolve the potential misconceptions and hazards in each topic of study.

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COMPUTER ORGANIZATION AND ARCHITECTURE

Co.1 Understand the basics of instructions sets and their impact on processor design.

Co.2 Demonstrate an understanding of the design of the functional units of a digital computer system.

Co.3 Evaluate cost performance and design trade-offs in designing and constructing a computer processor including memory.

Co.4 Design a pipeline for consistent execution of instructions with minimum hazards.

Co.5 Recognize and manipulate representations of numbers stored in digital computers.

OBJECT ORIENTED PROGRAMMING USING C++

Co.1 Able to develop programs with reusability

Co.2 Develop programs for file handling

Co.3 Handle exceptions in programming

Co.4 Develop applications for a range of problems using object-oriented programming techniques.

II-II SEM

DISCRETE MATHEMATICS

Co.1 Ability to understand and construct precise mathematical proofs

Co.2 Ability to use logic and set theory to formulate precise statements

Co.3 Ability to analyze and solve counting problems on finite and discrete structures

Co.4 Ability to describe and manipulate sequences

Co.5 Ability to apply graph theory in solving computing problems.

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

Co.1 The students will understand the various Forms of Business and the impact of economic variables on the Business.

Co.2 The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt. Co.3 The Students can study the firm's financial position by analyzing the Financial Statements of a Company.

OPERATING SYSTEMS

Co.1 Introduce operating system concepts (i.e., processes, threads, scheduling, synchronization, deadlocks, memory management, file and I/O subsystems and protection)

Co.2 Introduce the issues to be considered in the design and development of operating system

Co.3 Introduce basic Unix commands, system call interface for process management, interposes communication and I/O in Unix.

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DATABASE MANAGEMENT SYSTEMS

Co.1 Gain knowledge of fundamentals of DBMS, database design and normal forms

Master the basics of SQL for retrieval and management of data.

Co.2 Be acquainted with the basics of transaction processing and concurrency control.

Co.3 Familiarity with database storage structures and access techniques.

JAVA PROGRAMMING

Co.1 Able to solve real world problems using OOP techniques.

Co.1 Able to understand the use of abstract classes.

Co.1 Able to solve problems using java collection framework and I/o classes.

Able to develop multithreaded applications with synchronization.

Able to develop applets for web applications.

Able to design GUI based applications.

III-I SEM

FORMAL LANGUAGES AND AUTOMATA THEORY

Able to understand the concept of abstract machines and their power to recognize the languages.

Co.1 Able to employ finite state machines for modeling and solving computing problems.

Co.2 Able to design context free grammars for formal languages.

Co.3 Able to distinguish between decidability and undecidability.

Co.4 Able to gain proficiency with mathematical tools and formal methods.

SOFTWARE ENGINEERING

Co.1 Ability to translate end-user requirements into system and software requirements, using e.g. UML, and structure the requirements in a Software Requirements Document (SRD).

Co.2 Identify and apply appropriate software architectures and patterns to carry out high level design of a system and be able to critically compare alternative choices.

Co.3 Will have experience and/or awareness of testing problems and will be able to develop a simple testing report.

COMPUTER NETWORKS

Co.1 Gain the knowledge of the basic computer network technology.

Co.2 Gain the knowledge of the functions of each layer in the OSI and TCP/IP reference Co.1 model.

Co3 Obtain the skills of subnetting and routing mechanisms.

Co 4 Familiarity with the essential protocols of computer networks, and how they can be applied in network design and implementation.

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WEB TECHNOLOGIES

Co.1 Gain knowledge of client-side scripting, validation of forms and AJAX programming

Co 2. Understand server-side scripting with PHP language

Co 3. Understand what is XML and how to parse and use XML Data with Java

Co 4. To introduce Server-side programming with Java Servlets and JSP.

III-II SEM

MACHINE LEARNING

Co.1 Understand the concepts of computational intelligence like machine learning.

Co.2Ability to get the skill to apply machine learning techniques to address the real time problems in different areas.

Co.3Understand the Neural Networks and its usage in machine learning application.

COMPILER DESIGN

Co.1 Introduce the major concepts of language translation and compiler design and impart the knowledge of practical skills necessary for constructing a compiler.

Co.2 Topics include phases of compiler, parsing, syntax directed translation, type checking use of symbol tables, code optimization techniques, intermediate code generation, code generation and data flow analysis.

DESIGN AND ANALYSIS OF ALGORITHMS

Co.1 Ability to analyze the performance of algorithms.

Co.2 Ability to choose appropriate data structures and algorithm design methods for a specified application.

Co.3 Ability to understand how the choice of data structures and the algorithm design methods impact the performance of programs.

NETWORK PROGRAMMING (Professional Elective - III)

Co.01 To write socket API based programs

Co.2 To design and implement client-server applications using TCP and UDP sockets

Co.3 To analyze network programs

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IV-I SEM

CRYPTOGRAPHY AND NETWORK SECURITY (PC)

Co.1 Student will be able to understand basic cryptographic algorithms, message and web authentication and security issues.

Co.2 Ability to identify information system requirements for both of them such as client and server.

Co.3 Ability to understand the current legal issues towards information security.

DATA MINING (PC)

Co.1 Ability to understand the types of the data to be mined and present a general classification of tasks and primitives to integrate a data mining system.

Co.1 Apply preprocessing methods for any given raw data.

Co.2 Extract interesting patterns from large amounts of data.

Co.3 Discover the role played by data mining in various fields.

Co.4 Choose and employ suitable data mining algorithms to build analytical applications

Co.5 Evaluate the accuracy of supervised and unsupervised models and algorithms.

INTRODUCTION TO EMBEDDED SYSTEMS

Co.1 To provide an overview of principles of Embedded System

Co.2 To provide a clear understanding of role of firmware, operating systems in correlation with hardware systems.

ADVANCED ALGORITHMS (Professional Elective - V)

Co.1 Ability to analyze the performance of algorithms

Co.2 Ability to choose appropriate data structures and algorithm design methods for a specified application

Co.3

Ability to understand how the choice of data structures and the algorithm design methods impact the performance of programs

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INTERNET OF THINGS (Professional Elective - V)

Co.1 Interpret the impact and challenges posed by IoT networks leading to new architectural models.

Co.2 Compare and contrast the deployment of smart objects and the technologies to connect them to network.

Co.3 Appraise the role of IoT protocols for efficient network communication.

Co.4 Elaborate the need for Data Analytics and Security in IoT.

Co.4 Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry.

IV-II SEM

COMPUTATIONAL COMPLEXITY (Professional Elective - VI)

Ability to classify decision problems into appropriate complexity classes

Co.1 Ability to specify what it means to reduce one problem to another, and construct reductions for simple examples.

Co.2 Ability to classify optimization problems into appropriate approximation complexity classes

Co.3 Ability to choose appropriate data structure for the given problem • Ability to choose and apply appropriate design method for the given problem

NEURAL NETWORKS & DEEP LEARNING (Professional Elective - VI)

Co.1 Ability to understand the concepts of Neural Networks

Co.2 Ability to select the Learning Networks in modeling real world systems

Co.3 Ability to use an efficient algorithm for Deep Models

Co.4 Ability to apply optimization strategies for large scale applications

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

II-I SEM

ELECTRONIC DEVICES AND CIRCUITS

Upon completion of the Course, the students will be able to:

CO1. Know the characteristics of various components

CO2. Understand the utilization of components.

CO3. Understand the biasing techniques

CO4. Design and analyze small signal amplifier circuits.

NETWORK ANALYSIS AND TRANSMISSION LINES

Upon successful completion of the course, students will be able to

CO1. Gain the knowledge on basic RLC circuits' behavior

CO2. Analyze the Steady state and transient analysis of RLC Circuits.

CO3. Know the characteristics of two port network parameters.

CO4. Analyze the transmission line parameters and configurations.

DIGITAL SYSTEM DESIGN

Upon completing this course, the student will be able to

CO1.Understand the numerical information in different forms and Boolean algebra theorems

CO2. Postulates of Boolean algebra and to minimize combinational functions

CO3. Design and analyze combinational and sequential circuits

CO4. Known about the logic families and realization of logic gates.

SIGNALS AND SYSTEMS

Upon completing this course, the student will be able to

CO1. Differentiate various signal functions.

CO2. Represent any arbitrary signal in time and frequency domain.

CO3. Understand the characteristics of linear time invariant systems.

CO4. Analyze the signals with different transform technique

PROBABILITY THEORY AND STOCHASTIC PROCESSES

Upon completing this course, the student will be able to

CO1. Understand the concepts of Random Process and its Characteristics.

CO2. Understand the response of linear time Invariant system for a Random Processes.

CO3. Determine the Spectral and temporal characteristics of Random Signals.

CO4. Understand the concepts of Noise in Communication systems.

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II -II SEM

LAPLACE TRANSFORMS, NUMERICAL METHODS AND COMPLEX VARIABLES

After learning the contents of this paper, the student must be able to

CO1. Use the Laplace transforms techniques for solving ODE's

CO2.Find the root of a given equation.

CO3.Estimate the value for the given data using interpolation

CO4.Find the numerical solutions for a given ODE's

CO5Analyze the complex function with reference to their analyticity, integration using Cauchy's Integral and residue theorems

CO6.Taylor's and Laurent's series expansions of complex function

ELECTROMAGNETIC FIELDS AND WAVES

Upon completing this course, the student will be able to

CO1 Get the knowledge of Basic Laws, Concepts and proofs related to Electrostatic Fields and Magneto static Fields

CO2. Distinguish between the static and time-varying fields; establish the corresponding sets of Maxwell's Equations and Boundary Conditions.

CO3. Analyze the Wave Equations for good conductors, good dielectrics and evaluate the UPW Characteristics for several practical media of interest.

CO4. To analyze completely the rectangular waveguides, their mode characteristics, and design waveguides for solving practical problems.

ANALOG AND DIGITAL COMMUNICATIONS

Upon completing this course, the student will be able to

CO1. Analyze and design of various continuous wave and angle modulation and demodulation techniques

CO2. Understand the effect of noise present in continuous wave and angle modulation techniques.

CO3. Attain the knowledge about AM, FM Transmitters and Receivers

CO4. Analyze and design the various Pulse Modulation Techniques.

CO5. Understand the concepts of Digital Modulation Techniques and Baseband transmission.

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LINEAR IC APPLICATIONS

Upon completing this course, the student will be able to

CO1 A thorough understanding of operational amplifiers with linear integrated circuits.

C02. Attain the knowledge of functional diagrams and applications of IC 555 and IC 565.

CO3 Acquire the knowledge about the Data converters.

ELECTRONIC CIRCUIT ANALYSIS

Upon completing this course, the student will be able to

CO1. Design the multistage amplifiers and understand the concepts of High Frequency Analysis of Transistors.

CO2. Utilize the Concepts of negative feedback to improve the stability of amplifiers and positive feedback to generate sustained oscillations

CO3 Design and realize different classes of Power Amplifiers and tuned amplifiers useable for audio and Radio applications

C04. Design Multivibrators and sweep circuits for various applications.

III-I SEM

MICROPROCESSORS AND MICROCONTROLLERS

Upon completing this course, the student will be able to

CO1. Understands the internal architecture, organization and assembly language programming of 8086 processors.

CO2. Understands the internal architecture, organization and assembly language programming of 8051/controllers

CO3. Understands the interfacing techniques to 8086 and 8051 based systems.

CO4. Understands the internal architecture of ARM processors and basic concepts of advanced ARM processors.

DATA COMMUNICATIONS AND NETWORKS

Upon completing this course, the student will be able to

CO1. Know the Categories and functions of various Data communication Networks

CO2. Design and analyze various error detection techniques.

CO3. Demonstrate the mechanism of routing the data in network layer

CO4. Know the significance of various Flow control and Congestion control Mechanisms

CO5. Know the Functioning of various Application layer Protocols.

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CONTROL SYSTEMS

At the end of this course, students will demonstrate the ability to

CO1. Understand the modeling of linear-time-invariant systems using transfer function and state space representations.

CO2 Understand the concept of stability and its assessment for linear-time invariant systems.

CO3. Design simple feedback controllers.

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

At the end of the course, the student will demonstrate

CO1. The students will understand the various Forms of Business and the impact of economic variables on the Business.

CO2. The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt.

CO3. The students can study the firm's financial position by analyzing the Financial Statements of a Company.

COMPUTER ORGANIZATION & OPERATING SYSTEMS (PE-1)

At the end of this course, students will demonstrate the ability to

CO1.Able to visualize the organization of different blocks in a computer

CO2. Able to use micro-level operations to control different units in a computer.

CO3.Able to use Operating systems in a computer.

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION :(PE-1)

Upon completing this course, the student will be able to

CO1. Measure electrical parameters with different meters and understand the basic definition of measuring parameters

CO2. Use various types of signal generators, signal analyzers for generating and analyzing various real-time signals.

CO3. Operate an Oscilloscope to measure various signals

CO4. Measure various physical parameters by appropriately selecting the transducers.

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III-II SEM

ANTENNAS AND PROPAGATION:

Upon completing this course, the student will be able to

CO1 explain the mechanism of radiation, definitions of different antenna characteristic parameters and establish their mathematical relations.

CO2. Characterize the antennas based on frequency, configure the geometry and establish the radiation patterns of VHF, UHF and Microwave antennas and also antenna arrays.

CO3. Specify the requirements for microwave measurements and arrange a setup to carry out the antenna far zone pattern and gain measurements in the laboratory

CO4. Classify the different wave propagation mechanisms, determine the characteristic features of different wave propagations, and estimate the parameters involved.

DIGITAL SIGNAL PROCESSING:

Upon completing this course, the student will be able to

CO1. Understand the LTI system characteristics and MultiMate signal processing

CO2 Understand the inter-relationship between DFT and various transforms.

CO3. Design a digital filter for a given specification.

CO4. Understand the significance of various filter structures and effects of round off errors.

VLSI DESIGN:

Upon completing this course, the student will be able to

CO1. Acquire qualitative knowledge about the fabrication process of integrated circuits using MOS transistors.

CO2. Draw the layout of any logic circuit which helps to understand and estimate parasitic effect of any logic circuit

CO3. Design building blocks of data path systems, memories and simple logic circuits using PLA, PAL, FPGA and CPLD.

CO4. Understand different types of faults that can occur in a system and learn the concept of testing and adding extra hardware to improve testability of system.

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EMBEDDED SYSTEM DESIGN (Professional Elective-II)

Upon completing this course, the student will be able to:

CO1. To understand the selection procedure of Processors in the embedded domain

CO2. Design Procedure for Embedded Firmware

CO3. To visualize the role of Real time Operating Systems in Embedded Systems

CO4. To evaluate the Correlation between task synchronization and latency issues

POWER SYSTEM OPERATION AND CONTROL (Open Elective -I)

At the end of the course the student will be able to:

CO1. Understand operation and control of power systems.

CO2.Analyze various functions of Energy Management System (EMS) functions.

CO3.Analyze whether the machine is in stable or unstable position.

CO4.Understand power system deregulation and restructuring

IV -I SEM

MICROWAVE AND OPTICAL COMMUNICATIONS (PC):

Upon completing this course, the student will be able to

CO1. Known power generation at microwave frequencies and derive the performance characteristics

CO2. Realize the need for solid state microwave sources and understand the principles of solid-state devices.

CO3. Distinguish between the different types of waveguide and ferrite components, and select proper components for engineering applications

CO4. Understand the utility of S-parameters in microwave component design and learn the measurement procedure of various microwave parameters

CO5. Understand the mechanism of light propagation through Optical Fibers.

DIGITAL IMAGE PROCESSING (PE – III)

Upon completing this course, the student will be able to

CO1. Explore the fundamental relations between pixels and utility of 2-D transforms in image processer.

CO2. Understand the enhancement, segmentation and restoration processes on an image.

CO3. Implement the various Morphological operations on an image

CO4. Understand the need of compression and evaluation of basic compression algorithms.

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NETWORK SECURITY AND CRYPTOGRAPHY (PE – IV)

Upon completing this course, the student will be able to

CO1. Describe network security fundamental concepts and principles

CO2. Encrypt and decrypt messages using block ciphers and network security technology and protocols

CO3. Analyze key agreement algorithms to identify their weaknesses

CO4. Identify and assess different types of threats, malware, spyware, viruses, and vulnerabilities

PYTHON PROGRAMMING (Open Elective - II)

Upon completing this course, the student will be able to

CO1. Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.

CO2. Demonstrate proficiency in handling Strings and File Systems.

CO3. Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.

CO4. Interpret the concepts of Object-Oriented Programming as used in Python.

CO5. Implement exemplary applications related to Network Programming, Web Services and Databases in Python.

PROFESSIONAL PRACTICE, LAW AND ETHICS (PC)

At the end of the course the student will be able to:

CO1. The students will understand the importance of professional practice, Law and Ethics in their personal lives and professional careers

CO2. The students will learn the rights and responsibilities as an employee, team member and a global citizen

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IV-II SEM

SATELLITE COMMUNICATIONS (PE – V)

Upon completing this course, the student will be able to

CO1. Understand basic concepts and frequency allocations for satellite communication, orbital mechanics and launch vehicles.

CO2.Envision the satellite sub systems and design satellite links for specified C/N.

CO3. Understand the various multiple access techniques for satellite communication systems and earth station technologies

CO4. Known the concepts of LEO, GEO Stationary Satellite Systems and satellite navigation.

SYSTEM ON CHIP ARCHITECTURE (PE – VI)

After completion of this course, the student able to

CO1. Expected to understand SOC Architectural features.

CO2. To acquire the knowledge on processor selection criteria and limitations

CO3. To acquires the knowledge of memory architectures on SOC.

C04. To understands the interconnection strategies and their customization on SOC.

NON-CONVENTIONAL SOURCES OF ENERGY (Open Elective – III)

At the end of the course, the student will be able to:

CO1. Identify renewable energy sources and their utilization. Understand the basic concepts of solar radiation and analyze the working of solar and thermal systems.

CO2. Understand principles of energy conversion from alternate sources including wind, geothermal, ocean, biomass, biogas and hydrogen.

CO3. Understand the concepts and applications of fuel cells, thermoelectric convertor and MHD generator

C04. Identify methods of energy storage for specific applications

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

II-I SEM

ENGINEERING MECHANICS

At the end of the course, students will be able to

Co.1 Determine resultant of forces acting on a body and analyse equilibrium of a body subjected to a system of forces.

Co.2 Solve problem of bodies subjected to friction.

Co.3 Find the location of centroid and calculate moment of inertia of a given section.

Co.4 Understand the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory motion and rigid body motion.

Co.4Solve problems using work energy equations for translation, fixed axis rotation and plane motion and solve problems of vibration.

ELECTRICAL CIRCUIT ANALYSIS

At the end of this course, students will demonstrate the ability to

Co.1 Apply network theorems for the analysis of electrical circuits.

Co.2 Obtain the transient and steady-state response of electrical circuits.

C0.3 Analyze circuits in the sinusoidal steady-state (single-phase and three-phase).

Co.4 Analyze two port circuit behavior.

ANALOG ELECTRONICS

At the end of this course, students will demonstrate the ability to

Co.1Know the characteristics, utilization of various components.

Co.2 Understand the biasing techniques

Co.3 Design and analyze various rectifiers, small signal amplifier circuits.

Co.4 Design sinusoidal and non-sinusoidal oscillators.

Co.5. A thorough understanding, functioning of OP-AMP, design OP-AMP based circuits with linear integrated circuits.

ELECTRICAL MACHINES – I

Co.1At the end of this course, students will demonstrate the ability to

Co.2 Identify different parts of a DC machine & understand its operation

Co.3 Carry out different testing methods to predetermine the efficiency of DC machines

Co.4 Understand different excitation and starting methods of DC machines

Co.5 Control the voltage and speed of a DC machines

Analyze single phase and three phase transformers circuits.

ELECTROMAGNETIC FIELDS

At the end of the course, students will demonstrate the ability

To understand the basic laws of electromagnetism.

To obtain the electric and magnetic fields for simple configurations under static conditions.

To analyze time varying electric and magnetic fields.

To understand Maxwell's equation in different forms and different media.

To understand the propagation of EM waves.

II-II SEM

LAPLACE TRANSFORMS, NUMERICAL METHODS AND COMPLEX VARIABLES

After learning the contents of this paper the student must be able to

Co.1 Use the Laplace transforms techniques for solving ODE's

Co.2 Find the root of a given equation.

Co. 3 Estimate the value for the given data using interpolation

Co. Find the numerical solutions for a given ODE's

Co.4 Analyze the complex function with reference to their analyticity, integration using Cauchy's integral and residue theorems

Co.5 Taylor's and Laurent's series expansions of complex function

ELECTRICAL MACHINES – II

At the end of this course, students will demonstrate the ability to

Co.1 Understand the concepts of rotating magnetic fields.

Co.2 Understand the operation of ac machines.

Co.3 Analyze performance characteristics of ac machines

DIGITAL ELECTRONICS

At the end of this course, students will demonstrate the ability to

Co.1 Understand working of logic families and logic gates.

Co.2 Design and implement Combinational and Sequential logic circuits.

Co.3 Understand the process of Analog to Digital conversion and Digital to Analog conversion.

Co.4 Be able to use PLDs to implement the given logical problem.

CONTROL SYSTEMS

At the end of this course, students will demonstrate the ability to

Co.1 Understand the modeling of linear-time-invariant systems using transfer function and statespace representations.

Co.2 Understand the concept of stability and its assessment for linear-time invariant systems.

Co.3 Design simple feedback controllers.

POWER SYSTEM – I

At the end of this course, students will demonstrate the ability to

Co.1 Understand the concepts of power systems.

Co.2 Understand the operation of conventional generating stations and renewable sources of electrical power.

Co.3 Evaluate the power tariff methods.

Co.4 Determine the electrical circuit parameters of transmission lines

C0.5 Understand the layout of substation and underground cables and corona.

III-I SEM

POWER ELECTRONICS

At the end of this course students will demonstrate the ability to

Co.1 Understand the differences between signal level and power level devices.

Co.2 Analyze controlled rectifier circuits.

Co.3 Analyze the operation of DC-DC choppers.

Co.4 Analyze the operation of voltage source inverters.

POWER SYSTEM – II

At the end of this course, students will demonstrate the ability to

Co.1 Analyze transmission line performance.

Co.2 Apply load compensation techniques to control reactive power

Co.3 Understand the application of per unit quantities.

Co.4 Design over voltage protection and insulation coordination

Co.5 Determine the fault currents for symmetrical and unbalanced faults

MEASUREMENTS AND INSTRUMENTATION

After completion of this course, the student able to

- Understand different types of measuring instruments, their construction, operation and characteristics
- Identify the instruments suitable for typical measurements
- Apply the knowledge about transducers and instrument transformers to use them effectively.
- Apply the knowledge of smart and digital metering for industrial applications

COMPUTER ARCHITECTURE (Professional Elective - I)

At the end of this course, students will demonstrate the ability to

- Understand the concepts of microprocessors, their principles and practices.
- Write efficient programs in assembly language of the 8086 family of microprocessors.
- Organize a modern computer system and be able to relate it to real examples.
- Develop the programs in assembly language for 80286, 80386 and MIPS processors in real and protected modes.
- Implement embedded applications using ATOM processor.

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

The students will understand the various Forms of Business and the impact of economic variables on the Business. The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt. The students can study the firm's financial position by analyzing the Financial Statements of a Company.

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III-II

OPTIMIZATION TECHNIQUES (Professional Elective - III)

After completion of this course, the student will be able to

Co.1 explain the need of optimization of engineering systems

Co.2 understand optimization of electrical and electronics engineering problems

Co.3 apply classical optimization techniques, linear programming, simplex algorithm, transportation problem

Co.4 apply unconstrained optimization and constrained non-linear programming and dynamic programming

Co.5 Formulate optimization problems.

POWER SEMICONDUCTOR DRIVES (Professional Elective - II)

After completion of this course the student is able to

Co.1 Identify the drawbacks of speed control of motor by conventional methods.

Co.2 Differentiate Phase controlled and chopper-controlled DC drives speed-torque characteristics merits and demerits

Co.3 Understand Ac motor drive speed–torque characteristics using different control strategies its merits and demerits

Co.4 Describe Slip power recovery schemes

SIGNALS AND SYSTEMS

Upon completing this course, the student will be able to

Co.1 Differentiate various signal functions.

Co.2 Represent any arbitrary signal in time and frequency domain.

Co.3 Understand the characteristics of linear time invariant systems.

Co.4 Analyze the signals with different transform technique

MICROPROCESSORS & MICROCONTROLLERS

Upon completing this course, the student will be able to

Co.1 understands the internal architecture, organization and assembly language programming of 8086 processors.

Co.2 understands the internal architecture, organization and assembly language programming of 8051/controllers

Co.3 understands the interfacing techniques to 8086 and 8051 based systems. 4. Understands the internal architecture of ARM processors and basic concepts of advanced ARM processors.

POWER SYSTEM PROTECTION

At the end of the course the student will be able to:

Co.1 Compare and contrast electromagnetic, static and microprocessor-based relays

Co.2 Apply technology to protect power system components.

Co.3 Select relay settings of over current and distance relays.

Co.4 Analyze quenching mechanisms used in air, oil and vacuum circuit breakers.

POWER SYSTEM OPERATION AND CONTROL

At the end of the course the student will be able to:

Co.1 Understand operation and control of power systems.

Co.2 Analyze various functions of Energy Management System (EMS) functions.

Co.3 Analyze whether the machine is in stable or unstable position.

Co.4 Understand power system deregulation and restructuring

ENVIRONMENTAL SCIENCE

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

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IV-I SEM

DIGITAL CONTROL SYSTEMS (PE – III)

At the end of this course, students will demonstrate the ability to

Co.1 Obtain discrete representation of LTI systems.

Co.2 Analyze stability of open loop and closed loop discrete-time systems.

Co.3 Design and analyze digital controllers.

Co.4 Design state feedback and output feedback controllers.

ELECTRICAL AND HYBRID VEHICLES (PE – III)

At the end of this course, students will demonstrate the ability to

Co.1 Understand the models to describe hybrid vehicles and their performance.

Co.2 Understand the different possible ways of energy storage.

Co.3 Understand the different strategies related to energy storage systems.

HVDC TRANSMISSION (PE – IV)

After completion of this course the student is able to

Co.1 Compare EHV AC and HVDC system and to describe various types of DC links

Co.2 Analyze Graetz circuit for rectifier and inverter mode of operation

Co.3 Describe various methods for the control of HVDC systems and to perform power flow analysis in AC/DC systems

Co.4 Describe various protection methods for HVDC systems and classify Harmonics and design different types of filters

FUNDAMENTALS OF MANAGEMENT FOR ENGINEERS

The students understand the significance of Management in their Profession. The various Management Functions like Planning, Organizing, Staffing, Leading, Motivation and Control aspects are learnt in this course. The students can explore the Management Practices in their domain area.

IV-II

POWER QUALITY AND FACTS (PE - V)

After completion of this course, the student will be able to:

Co.1 Know the severity of power quality problems in distribution system

Co.2 Understand the concept of voltage sag transformation from up-stream (higher voltages) to down-stream (lower voltage)

Co.3 Concept of improving the power quality to sensitive load by various mitigating custom power devices

Co.4 Choose proper controller for the specific application based on system requirements

Co.5 Understand various systems thoroughly and their requirements

Co.6 understand the control circuits of Shunt Controllers SVC & STATCOM for various functions viz. Transient stability Enhancement, voltage instability prevention and power oscillation damping

Co.7 Understand the Power and control circuits of Series Controllers GCSC, TSSC and TCSC

SMART GRID TECHNOLOGIES (PE – VI)

At the end of the course the student will be able to:

Co.1 Understand the features of small grid in the context of Indian grid.

Co.2 Understand the role of automation in transmission and distribution.

Co.3 Apply evolutionary algorithms for smart grid.

Co.4 Understand operation and maintenance of PMUs, PDCs, WAMs, and voltage and frequency control in micro grid

DEPARTEMENT OF MECHANICAL ENGINERRING

II-I SEM

MECHANICS OF SOLIDS

Co.1. Analyze the behavior of the solid bodies subjected to various types of loading.

Apply knowledge of materials and structural elements to the analysis of simple structure.

Co.3.Undertake problem identification, formulation and solution using a range of analytical methods.

Co.4. Analyze and interpret laboratory data relating to behavior of structures and the materials they are made of, and undertake associated laboratory work individually and in teams.

Co.5. Expectation and capacity to undertake lifelong learning.

PRODUCTION TECHNOLOGY

Co.1. Understand the idea for selecting materials for patterns.

Co.2 Know Types and allowances of patterns used in casting and analyze the components of moulds.

Co.3. Design core, core print and gating system in metal casting processes.

Co.4. Understand the arc, gas, solid state and resistance welding processes.

Co.5. Develop process-maps for metal forming processes using plasticity principles.

Co.6. Identify the effect of process variables to manufacture defect free products.

THERMODYNAMICS

Co.1. At the end of the course, the student should be able to Understand and differentiate between different thermodynamic systems and processes.

Co.2. Understand and apply the laws of Thermodynamics to different types of systems undergoing various processes and to perform
thermodynamic analysis.
Co.3. Understand and analyze the Thermodynamic cycles and evaluate
Performance parameters.

II-II SEM

THERMAL ENGINEERING-I

Co.1 At the end of the course, the student should be able to evaluate the performance
of IC engines and compressors under the given operating conditions.
Co.2. Apply the laws of Thermodynamics to evaluate the performance of Refrigeration and air-conditioning cycles
Co.3. Understand the functionality of the major components of the IC Engines and effects of operating conditions on their performance.

FLUID MECHANICS AND HYDRAULIC MACGINARY

Co.1. Able to explain the effect of fluid properties on a flow system
Co.2. Able to identify type of fluid flow patterns and describe continuity equation.
Co.3. To analyze a variety of practical fluid flow and measuring devices and utilize Fluid Mechanics principles in design.
Co.4. To select and analyze an appropriate turbine with reference to given situation in power plants.
Co.5. To estimate performance parameters of a given Centrifugal and Reciprocating pump.

INSTRUMENTATION AND CONTROL SYSTEMS

At the end of this course, students will demonstrate the ability to
Co.1To identify various elements and their purpose in typical instruments, to identify various errors that would occur in instruments.
Co.2Analysis of errors so as to determine correction factors for each instrument.
Co.3.To understand static and dynamic characteristics of instrument and should be able to determine loading response time.
Co.4. For given range of displacement should be able to specify transducer, it accurate and loading time of that transducer.

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III-I

DYNAMICS OF MACHINARY

At the end of this course students will demonstrate the ability to

Co.1 Study of KOM & DOM are necessary to have an idea while designing the various Machine members like shafts, bearings, gears, belts & chains

Co.2 Study of various I.C. Engine Components.

Co.3. Study of Machine tool parts

DESIGN OF MACHINE MEMBERS – I

Co.1 The student acquires the knowledge about the principles of design, material selection, Component behavior subjected to loads, and criteria of failure.

Co.2 Understands the concepts of principal stresses, stress concentration in machine members and fatigue loading

Co.3 Design on the basis of strength and rigidity and analyze the stresses and strains induced in a machine element

MEASUREMENTS AND INSTRUMENTATION

After completion of this course, the student able to

Co.1 Identify techniques to minimize the errors in measurement.

Co.2 Identify methods and devices for measurement of length, angle, gear & thread parameters, surface roughness and geometric features of parts

Co.3 Understand working of lathe, shaper, planer, drilling, milling and grinding machines

Co.4 Comprehend speed and feed mechanisms of machine tools.

Co.5 Estimate machining times for machining operations on machine tools

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III-II SEM OUTCOMES

HEAT TRANSFER

At the end of the course the student will be able to:

Co1: Be able to understand the basic modes of heat transfer.

Co2: Be able to Compute one dimensional steady state heat transfer with and without heat generation and understand and analyze heat transfer through extended surfaces.

Co3: Be able to understand one dimensional transient conduction heat transfer and understand concepts of continuity, momentum and energy equations.

Co4: Be able to Interpret and analyze forced and free convective heat transfer.

Co5: Be able to Design of heat exchangers using LMTD and NTU methods.

Co6: Be able to understand the principles of boiling, condensation and radiation heat transfer.

THERMAL ENGINEERING-II

At the end of the course the student will be able to:

CO1: Calculate the thermal efficiency of Ranking Cycle and methods to Improve the efficiency of a steam power plant.

CO2: Classify different types of steam turbines and working of impulse turbine and its performance parameters.

CO3: Understand the working of different types of steam nozzles and its applications, conditions for maximum discharge of steam through it.

CO4: Understand the working of different types of condensers, performance
Parameters and its applications in steam power plants.

CAD&CAM

After completion of this course the student is able to

Co.1 Understand geometric transformation techniques in CAD.

Co.2 Develop mathematical models to represent curves and surfaces.

Co.3 Model engineering components using solid modeling techniques.

Co.4 Develop programs for CNC to manufacture industrial components.

Co.5 To understand the application of computers in various aspects of Manufacturing viz., Design, Proper planning, Manufacturing cost, Layout & Material Handling system.

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IV-I SEM OUTCOMES

REFRIGERATION AND AIR CONDITIONING

At the end of this course, students will demonstrate the ability to

Co.1 Be able to Differentiate between different types of refrigeration systems with respect to application as well as conventional and unconventional refrigeration systems.

Co.2 Thermodynamically analyze refrigeration and air conditioning systems and evaluate performance parameters.

Co.3 Apply the principles of Psychometrics to design the air conditioning loads for the industrial applications.

ADDITIVE MANUFACTURING

After completion of this course the student is able to

Co.1 Describe various CAD issues for 3D printing and rapid prototyping and related operations for STL model manipulation.

Co.2 Formulate and solve typical problems on reverse engineering for surface reconstruction from physical prototype models through digitizing and spline-based surface fitting.

Co.3 Formulate and solve typical problems on reverse engineering for surface reconstruction from digitized mesh models through topological modelling and subdivision surface fitting.

Co.4 Explain and summarize the principles and key characteristics of additive manufacturing technologies and commonly used 3D printing and additive manufacturing systems.

Co.5 Explain and summarize typical rapid tooling processes for quick batch production of plastic and metal parts.

POWER PLANT ENGINEERING

At the end of the course students are able to:

Co.1 Understand the concept of Rankine cycle.

Co.2 Understand working of boilers including water tube, fire tube and high-pressure boilers and determine efficiencies.

Co.3 Analyze the flow of steam through nozzles

Co.4 Evaluate the performance of condensers and steam turbines

CO.5 Evaluate the performance of gas turbines

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IV-II

ROBOTICS

After completion of this course, the student able to

Co1: To acquire the knowledge on advanced algebraic tools for the description of motion.

Co2: Be able to use matrix algebra and Linear algebra for computing the kinematics of robots.

Co3: Be able to calculate the forward kinematics and inverse kinematics of serial and parallel robots.

Co4**:** Be able to calculate the Jacobian for serial and parallel robot and path planning for a robotic system.

PRODUCTION AND OPERATIONS MANAGEMENT

After completion of this course, the student will be able to:

Co.1 Able to execute operations management functions.

Co.2 Able to carry out value analysis.

Co.3 Able to carry out aggregate planning and implement MRP Or JIT.

Co.4 Able to schedule the jobs so as to complete them in minimum makespan time

Co.5 Able to carry out network analysis.

INTERNSHIP/MINI PROJECT

C0 – 1 : Identify the requirements for the real-world problems

C0 – 2 : Conduct a survey of several available literatures in the preferred field of Study.

C0 – 3 : Study and enhance software/ hardware skills.

PROJECT WORK:

C0 – 1 : Function as a mock laboratory technician in the mechanical industry who is expected to design, build, and test electronic circuitry.

C0 – 2 : Apply project management skills and develop and demonstrate troubleshooting ability in mechanical engineering.

C0 - 3 : Make comprehensive use of the technical knowledge gained from previous Courses.

C0 -4 : Establish a robotics laboratory to learn the advanced automation skills.

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MASTER OF BUSINESS ADMINISTRATION

I-I SEM

MANAGEMENT ORGANIZATIONAL BEHAVIOR

CO1: To understand the various attitude and personalities and perceptions and leadership and motivation and apply in organizational situations

CO2: To evaluate the management and contribution of management thinkers

CO3: To apply the relevance of environmental scanning ,planning and to take decisions

CO4: To interpret the individual and interpersonal behaviour process for team building and group behaviour development

CO5: To analyze the organizing and controlling

BUSINESS ECONOMICS

CO1: To understand and learn the basics of economic principles in business

CO2: To illustrate determinants of supply and demand and Demand Analysis and Forecasting

CO3: To develop production and cost estimates

CO4: To analyze the market structure

CO5: To develop the pricing strategies

FINANCIAL ACCOUNTING ANALYSIS

CO1: To understand the basic concepts of financial accounting

CO2: To summarize preparation of financial statement

CO3: To develop the inventory valuation

CO4: To analyze the accounting process

CO5: To understand the interpretation of accounting concepts

RESEARCH METHODOLOGY & STATISTICAL ANALYSIS

CO1: To understand and learn basics of Research, Process of Research and elements of research Proposal

CO2: To apply the various simple and advanced statistical tools

CO3: To analyze the features and good research design

CO4: To apply the principals of research methodology for various projects

CO5: To understand the time series analysis and report writing

LEGAL AND BUSINESS ENVIRONMENT

CO1: To understand all important legal provisions pertaining to Business Laws

CO2: To Known the business laws related to incorporating a company

CO3: To understand all important legal regulatory frame work in India

CO4: To analyze the Law of Contract

CO5: To develop the negotiable instruments

PROJECT MANAGEMENT

CO1: To understand the importance of project management

CO2: To apply the project planning and execution and implementation

CO3: To develop the significance of teams in projects

CO4: To analyze the project evaluation techniques

CO5: To evaluate the organizational behavior in project management

I-II SEM

MARKETING MANAGEMENT

CO1: Explain New Product Development & Product Life Cycle

CO2: Explain Factors influencing pricing decisions

CO3: Differentiate Product vs. Brand

CO4: Illustrate selecting pricing method, selecting final price.

CO5: Explain Wholesaling, Retailing, Franchising, Direct marketing, Ecommerce Marketing Practices

FINANCIAL MANAGEMENT

CO1: Explain the basic concept of financial management.

CO2: Apply the tools from financial management this would facilitate the decision making i.e. Capital Budgeting, Ratio Analysis

CO3: develop analytical skills this would facilitate the decision making in business situations

CO4: Explain and use of financial analysis techniques i.e. Fund Flow, Cash Flow.

CO5: Estimate working capital requirement of Business concern

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HUMAN RESOURCE MANAGEMENT

CO1: Explain Nature of HRM, Scope, Functions and Objectives, HRM Policies and practices.

CO2: Understand SHRM Model

CO3: Design Human Resource Planning

CO4: Implement Recruitment & Selection through different sources & tests

CO5: Make Career Planning

QUANTITATIVE ANALYSIS FOR BUSINESS DECISIONS

CO1: Explain Importance of Decision Sciences & Role of quantitative techniques In decision making

CO2: Solve numerical on Assignment Models including special cases in Assignment models.

CO3: Solve numerical on Transportation Models by North West Corner method, Least Cost method, VAM method and Optimal Solution by using MODI Method

CO4: Solve numerical on Linear Programming problems by graphical method

CO5: Solve numerical on Markov Chains & Simulation Techniques

LOGISTICS SUPPLY CHAIN MANAGEMENT

CO1: Explain the importance, scope and functions of Operations and Supply Chain Management in Present Scenario

CO2: Explain the term Quality and can related different dimensions of Quality affecting customer satisfaction.

CO3: Explain different operations processes, and identify different types of process-product matrix

CO4: Prepare a service blue print for given service providing organization

CO5: Demonstrate the Production Planning and Control and its functions for effective and efficient operations management

ENTREPRENEURSHIP

CO1: understand the nature of entrepreneurship

CO2: understand the function of the entrepreneur in the successful, commercial application of innovations

CO3: confirm an entrepreneurial business idea

CO4: identify personal attributes that enable best use of entrepreneurial opportunities

CO5: understand the function of the entrepreneur in the successful

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TOTAL QUALITY MANAGEMENT

CO1: Discuss quality and various contributors to Quality.

CO2: Apply in-depth various QC tools

CO3: Explain frameworks of Global Quality Awards.

CO4: Discuss Strategic Quality management and its components.

CO5: Apply Statistical Quality Control like process capability, Six Sigma quality, Process control , p charts and c charts, Process control for variables, X bar R chart

II-I SEM

PRODUCTION OPERATIONS MANAGEMENT

CO1: Gaining knowledge about managing production processes

CO2: How to run operations effectively.

CO3: Better understanding of modern production techniques

CO4: Better understanding of quality management

CO5: You will learn about practical applications of operations management to plan for the future.

DATA ANALYTICS

CO1: Data will be collected around the business case after careful evaluation of the business case in a particular domain.

CO2: A Database with the data collected in the above step will be created using SQL.

CO3: Connect the SQL database with Tableau/ Python/ R and extracting this data into environments

CO4: Preparation of reports based on the business objective and context

CO5: Building the dashboard using Tableau/ Power BI

MANAGEMENT INFORMATION SYSTEM

CO1: Acquire on job the skills, knowledge, attitudes, and perceptions along with the experience needed to constitute a professional identity.

CO2: .Get actual supervised professional experiences.

CO3: Get insight into the working of the real organizations

CO4: Develop perspective about business organizations in their totality

CO5: Explore career opportunities in their areas of interest.

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PERFORMANCE MANAGEMENT SYSTEMS

CO1: Setting and defining goals to fulfil company objectives

CO2: Setting the right expectations for managers and employees

CO3: Effective communication between individuals and teams

CO4: Determining individual training and performance plans

CO5: Determining individual training and performance plans

LEARNING & DEVELOPMENT

CO1: To develop an understanding of the evolution of training & development from a tactical to a strategic function

CO2: .To provide an insight into what motivates adults to learn and the most appropriate methodologies to impart training

CO3: To understand the concept of training audit & training evaluation

CO4: To learn how design a training module and execute it

CO5: To understand various strategies used by organizations to measure performance & reward for the same

MANAGEMENT OF INDUSTRIAL RELATIONS

CO1: Students should able to elaborate the concept of Industrial Relations

CO2: The students should able to illustrate the role of trade union in the industrial setup

CO3: Students should able to outline the important causes & impact of industrial disputes.

CO4: Students should able to elaborate Industrial Dispute settlement procedures.

CO5: Student should be able to summarize the important provisions of Wage Legislations, in reference to Payment of Wages Act 1936, Minimum Wages Act 1948 & Payment of Bonus Act 1965

SECURITY ANALYSIS PORTFOLIO MANAGEMENT

CO1: Explored to different avenues of investment.

CO2: Equipped with the knowledge of security analysis.

CO3: apply the concept of portfolio management for the better investment

CO4: invest in less risk and more return securities

CO5: Encourage students to apply stock and option valuation models in portfolio management

FINANCIAL INSTITUTIONS MARKETS & SERVICES

CO1: Understand the role and function of the financial system in reference to the macro economy

CO2: .Demonstrate an awareness of the current structure and regulation of the Indian financial services sector

CO3: Evaluate and create strategies to promote financial products and services.

CO4: To enrich student's understanding of the fundamental concepts and working of financial service institutions

CO5: To equip students with the knowledge and skills necessary to become employable in the financial service industry

STRATEGIC MANAGEMENT ACCOUNTING

CO1: Explain how management accounting information is used in strategic decision making.

CO2: Illustrate the process of strategy formulation, communication, implementation and control within an organization.

CO3: Explain how to integrate conventional and contemporary management accounting techniques into a strategic management accounting framework

CO4: Solve practical and applied problems by using research papers and case study analysis

CO5: Identify and evaluate the business strategies of contemporary organizations, based on an understanding of their internal and external environments;

SUMMER INTERNSHIP

CO1: Acquire on job the skills, knowledge, attitudes, and perceptions along with the experience needed to constitute a professional identity

CO2: Get actual supervised professional experiences

CO3: Get insight into the working of the real organizations

CO4: Develop perspective about business organizations in their totality

CO5: Explore career opportunities in their areas of interest

II-II SEM

STRATEGIC MANAGEMENT

CO1: Explain the importance, scope and concept of Strategy and Strategic Management Process

CO2: .differentiate between Tactics, Strategies and Planning and importance of each component in Strategic Management

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CO3: Prepare Vision, Mission statements and define goals, objectives for Organization

CO4: Identify Critical Success Factors. Key Performance Indicators and Key Result Areas for any given service sector

CO5: Demonstrate the importance of external environmental analysis as well prepare PESTLE Analysis and ETOP model for decision making

INTERNATIONAL HUMAN RESOURCE MANAGEMENT

CO1: Describe the role of the HR Manager in an International context

CO2: .Describe Human Resource activities in an International Context

CO3: List and explain the differences between domestic and international HRM

CO4: Explain the importance of cultural sensitivity in an international assignment

CO5: Critically appraise the impact of cultural and contextual factors in shaping human resource practices in MNCs

LEADERSHIP AND CHANGE MANAGEMENT

CO1: Can explain how the particular context of public organizations influences change management and leadership.

CO2: Is able to apply the key concepts of this course in a systematic analysis of an organizational change process in a public organization

CO3: Has developed the ability to stay informed about current leadership developments and trends through online resources and networks

CO4: Can describe the characteristics of central change management approaches and leadership theories

CO5: Is able to formulate and effectively communicate a change vision in an organizational setting.

TALENT AND KNOWLEDGE MANAGEMENT

CO1: Evaluate the potential and appropriateness of talent development strategies, policies and methods with reference to relevant contextual factors.

CO2: .Assess the role and influence the politics of knowledge management policy and practice in a range of contexts

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CO3: Express the nature of knowledge management alternative views of knowledge, types of knowledge and concept of location of knowledge

CO4: Examine the purpose of developing a talent management information strategy and the role of leaders in talent management

CO5: Express the nature of knowledge management alternative views of knowledge, types of knowledge and concept of location of knowledge

INTERNATIONAL FINANCIAL MANAGEMENT

CO1: Understand international capital and foreign exchange market

CO2: Identify and appraise investment opportunities in the international environment.

CO3: Identify risk relating to exchange rate fluctuations and develop strategies to deal with them

CO4: Develop strategies to deal with other types of country risks associated with foreign operations

CO5: Express well considered opinion on issues relating to international financial management.

STRATEGIC INVESTMENT & FINANCING DECISIONS

CO1: Understand the risk, uncertainty, risk analysis in investment decisions, risk adjusted rate of return and certainty equivalents.

CO2: .Enumerate the investment decisions under capital constraints like capital rationing, portfolio risk and diversified projects.

CO3: Explain the concept of multiple internal rate of return, Modified internal rate of return, pure, simple and mixed investments

CO4: Determine the Lorie savage paradox, adjusted net present value and know the impact of inflation on capital budgeting decisions.

CO5: Discuss the concepts of lease financing, leasing Vs. Operating risk, borrowing vs. procuring, hire purchase and installment purchase decisions

RISK MANAGEMENT

CO1: Be able to describe standard derivative contracts, their properties and functionality

CO2: Be able to understand and apply scientific methods for valuation of options and other derivatives, in continuous and discrete time.

CO3: Be able to interpret and apply risk measures that are commonly used in risk management.

CO4: Be able to reflect over and critically survey different assumptions and principles behind derivatives pricing and risk management.

CO5: Demonstrate an understanding of pricing forwards, futures and options contracts

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MASTER OF TECHNOLOGY

MTECH- ELECTRICAL POWER SYSTEMS

I YEAR I SEM

POWER SYSTEM ANALYSIS

CO1.To build/construct YBUS and ZBUS of any practical network.

CO2.calculate voltage phasors at all buses, given the data using various methods of load flow.

CO3. calculate fault currents in each phase.

CO4..Rank various contingencies according to their severity.

C05.Estimate the bus voltage phasors given various quantities viz. power flow, voltages, taps , CB status etc.

ECONOMIC OPERATION OF POWER SYSTEMS

student will be able to

CO1. distinguish between economic load dispatch and unit commitment problem

CO2.solve economic load scheduling (with and without network losses) and unit commitment problem

CO3.solve hydro-thermal scheduling problem

CO4.analyze the single area and two area systems for frequency deviation

CO5.solve the OPF problem using ac and dc load flow methods.

HVDC TRANSMISSION

CO1.understand the state-of-the-art of HVDC technology.

CO2.model and analye the HVDC system for inter-area power flow regulation.

CO3.analyze the converter and dc grid faults and adopt methods to mitigate them.

CO4.analyse the HVDC converter reactive power requirements and address the issues.

RENEWABLE ENERGY SYSTEMS

CO1.Knowledge about renewable energy

CO2.Understand the working of distributed generation system in autonomous/grid connected modes.

SMART GRID TECHNOLOGIES

CO1.Distinguish between conventional grid and smart grid

CO2.Apply smart metering concepts to industrial and commercial installations

C03.Formulate solutions in the areas of smart substations, distributed generation and wide area measurements

CO4.Develop smart grid solutions using modern communication technologies

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MODERN CONTROL THEORY

Upon completion of this course, students should be able to:

CO1. terms of basic and modern control system for the real time analysis and design of control systems.

CO2.To perform state variables analysis for any real time system.

CO3.Apply the concept of optimal control to any system.

CO4.Able to examine a system for its stability, controllability and observability.

CO5.Implement basic principles and techniques in designing linear control systems.

CO6.Formulate and solve deterministic optimal control problems in terms of performance indices.

I YR II SEM

POWER SYSTEM DYNAMICS

Students will be able to:

CO1. Understand the modeling of synchronous machine in details

CO2.Understand the modeling of Exciter and Governor control

CO3.Carry out simulation studies of power system dynamics using MATLAB-SIMULINK, MI POWER

CO4. Carry out stability analysis with and without power system stabilizer (PSS)

EHV AC TRANSMISSION

Upon the completion of this course, the student will be able to

CO1. Understand the importance of EHV AC transmission

CO2.ustimate choice of voltage for transmission, line losses and power handling capability of EHV Transmission.

CO3.apply statistical procedures for line designs, scientific and engineering principles in power systems.

AI TECHNIQUES IN POWER SYSTEMS

CO1.Learn the concepts of biological foundations of artificial neural networks

CO2.Learn Feedback networks and radial basis function networks and fuzzy logics

CO3.Identifications of fuzzy and neural network

CO4.Acquire the knowledge of GA

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RESTRUCTURED POWER SYSTEMS

CO1.Know about various types of regulations in power systems.

CO2.Identify the need of regulation and deregulation.

CO3.Understand technical and Non-technical issues in deregulated Power Industry.

CO4.Identify existing electricity markets.

CO5.Classify different market mechanisms and summarize the role of various entities in the market

POWER QUALITY

CO1.Know the severity of power quality problems in distribution system;

CO2.Understand the concept of voltage sag transformation from up-stream (higher voltages) to down-stream (lower voltage)

CO3.Compute the power quality improvement by using various mitigating custom power devices

POWER SYSTEM RELIABILITY AND PLANNING

CO1.Understand the importance of maintaining reliability of power system components.

CO2.Apply the probabilistic methods for evaluating the reliability of generation and transmission systems.

CO3.Assess the different models of system components in reliability studies.

CO4.Assess the reliability of single area and multi area systems.

II Year I Sem

FLEXIBLE AC TRANSMISSION SYSTEMS

Upon the completion of this course, the student will be able to

CO1. apply proper controller for a specific system requirement

CO2.understand various systems thoroughly and their requirements

CO3.interpret the control circuits of Shunt Controllers SVC & STATCOM for various functions viz.

CO4.Transient stability Enhancement, voltage instability prevention and power oscillation damping

CO5.detect the power and control circuits of Series Controllers GCSC, TSSC, TCSC and SSSC

GAS INSULATED SYSTEMS

Upon the completion of this course, the student will be able to

CO1. Know the advantages of GIS systems over air insulated systems

CO2.Observe constructional design features of GIS design

CO3.Discriminate the problems and design diagnostic methods of GIS

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WASTE TO ENERGY

CO1 Understood and acquired fundamental knowledge on the science and engineering.of energy technologies and systems.

CO2 Acquired the expertise and skills required for energy auditing and .management, economical calculation of energy cost, development, implementation, maintenance of systems. Become capable of analysis and design of energy conversion systems

CO3.energy. Acquired skills in the scientific and technological communications and project preparation, planning and implementation of energy projects

MTECH-COMPUTER SCIENCE ENGINEERING

I YEAR I SEM

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

After completion of course, students would be able to:

CO1. To understand the basic notions of discrete and continuous probability**.**

CO2.To understand the methods of statistical inference, and the role that sampling distributions play in those methods.

CO3.To be able to perform correct and meaningful statistical analyses of simple to moderate complexity.

ADVANCED DATA STRUCTURES

After completion of course, students would be able to:

CO1. Understand the implementation of symbol table using hashing techniques.

CO2.Understand the implementation of symbol table using hashing techniques.

CO3.Develop algorithms for text processing applications.

C04.Identify suitable data structures and develop algorithms for computational geometry problems.

INFORMATION SECURITY

CO1.Demonstrate the knowledge of cryptography, network security concepts and applications.

CO2. Ability to apply security principles in system design.

CO3. Ability to identify and investigate vulnerabilities and security threats and mechanisms to counter them.

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MACHINE LEARNING

After completion of course, students would be able to:

CO1. Extract features that can be used for a particular machine learning approach in various IOT applications.

CO2.To compare and contrast pros and cons of various machine learning techniques and to get an insight of when to apply a particular machine learning approach.

CO3. To mathematically analyse various machine learning approaches and paradigms.

NETWORK SECURITY

After completion of course, students would be able to:

CO1. To understand basics of security and issues related to it.

CO2.Understanding of biometric techniques available and how they are used in today's world.

CO3.Security issues in web and how to tackle them.

CO4.Learn mechanisms for transport and network security

CLOUD COMPUTING

After completion of course, students would be able to:

CO1. Identify security aspects of each cloud model

CO2. Develop a risk-management strategy for moving to the Cloud

CO3.Implement a public cloud instance using a public cloud service provider

CO4. Apply trust-based security model to different layer

I YEAR II SEM

ADVANCED ALGORITHMS

After completion of course, students would be able to:

CO1. Analyze the complexity/performance of different algorithms.

CO2.Determine the appropriate data structure for solving a particular set of problems.

CO3.Categorize the different problems in various classes according to their complexity.

CO4.Students should have an insight of recent activities in the field of the advanced data structure.

ADVANCED COMPUTER ARCHITECTURE

Gain knowledge of

CO1. Computational models and Computer Architectures.

CO2. Concepts of parallel computer models.

CO3. Scalable Architectures, Pipelining, Superscalar processors, multiprocessor

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WEB AND DATABASE SECURITY

Students should be able to

CO1. Understand the Web architecture and applications

CO2. Understand client side and service side programming

CO3. Understand how common mistakes can be bypassed and exploit the application

CO4. Identify common application vulnerabilities

DATA SCIENCE

After completion of course, students would be able to:

CO1. Explain how data is collected, managed and stored for data science;

CO2. Understand the key concepts in data science, including their real-world applications and the Tool kit used by data scientists

CO3.Implement data collection and management scripts using MongoDB

CYBER SECURITY

CO1.Explainn about cyber crimes and how they are planned.

CO2.Understand the vulnerabilities of mobile and wireless devices.

CO3.Explain about the crimes in mobile and wireless devices

ADVANCED COMPUTER NETWORKS

CO1.Understanding of holistic approach to computer networking

CO2.Ability to understand the computer networks and their application

CO3.Ability to design simulation concepts related to packet forwarding in networks

II YEAR I – SEMESTER

DIGITAL FORENSICS

On completion of the course the student should be able to

CO1. Understand relevant legislation and codes of ethics.

CO2. Computer forensics and digital detective and various processes, policies and procedures.

CO3. E-discovery, guidelines and standards, E-evidence, tools and environment.

CO4.Email and web forensics and network forensics.

HIGH PERFORMANCE COMPUTING

CO1.Understanding the concepts in grid computing

CO2.Ability to set up cluster and run parallel applications

CO3.Ability to understand the cluster projects and cluster OS

CO4.Understanding the concepts of pervasive computing & quantum computing

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DEEP LEARNING

CO1.Ability to understand the concepts of Neural Networks

CO2.Ability to select the Learning Networks in modeling real world systems

CO3. Ability to use an efficient algorithm for Deep Models

CO4.Ability to apply optimization strategies for large scale applications

MTECH-EMBEDDED SYSTEMS

I YEAR I SEM

MICROCONTROLLERS AND PROGRAMMABLE DIGITAL SIGNAL PROCESSOR

At the end of this course, students will be able to

CO1. Compare and select ARM processor core based SoC with several features/peripherals based on requirements of embedded applications.

CO2. Identify and characterize architecture of Programmable DSP Processors

CO3. Develop small applications by utilizing the ARM processor core and DSP processor based platform.

SYSTEM DESIGN WITH EMBEDDED LINUX

At the end of this course, students will be able to

CO1. Familiarity of the embedded Linux development model.

CO2. Write, debug, and profile applications and drivers in embedded Linux.

CO3. Understand and create Linux BSP for a hardware platform

PROGRAMMING LANGUAGES FOR EMBEDDED SOFTWARE

At the end of this course, students will be able to

CO1. Write an embedded C application of moderate complexity.

CO2. Develop and analyze algorithms in C++.

CO3. Differentiate interpreted languages from compiled languages

COMPUTER VISION

At the end of this course, students will be able to

CO1. Study the image formation models and feature extraction for computer vision

CO2. Identify the segmentation and motion detection and estimation techniques

CO3. Develop small applications and detect the objects in various applications

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COMMUNICATION BUSES AND INTERFACES

At the end of the course, students will be able to:

CO1. Select a particular serial bus suitable for a particular application.

CO2. Develop APIs for configuration, reading and writing data onto serial bus.

CO3. Design and develop peripherals that can be interfaced to desired serial bus.

PARALLEL PROCESSING

At the end of this course, students will be able to

CO1. Identify limitations of different architectures of computer

CO2. Analysis quantitatively the performance parameters for different architectures

CO3. Investigate issues related to compilers and instruction set based on type of architectures.

RESEARCH METHODOLOGY AND IPR

At the end of this course, students will be able to

CO1. Understand research problem formulation.

CO2.Analyze research related information

CO3. Follow research ethics

CO4.Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.

CO5.Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.

CO6.Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.

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I YEAR- II SEMESTER

RTL SIMULATION AND SYNTHESIS WITH PLDs

At the end of the course, students will demonstrate the ability to:

CO1. Familiarity of Finite State Machines, RTL design using reconfigurable logic.

CO2. Design and develop IP cores and Prototypes with performance guarantees

CO3. Use EDA tools like Cadence, Mentor Graphics and Xilinx

ADVANCED DIGITAL SIGNAL PROCESSING

At the end of this course, students will be able to

CO1. To understand theory of different filters and algorithms

CO2. To understand theory of multirate DSP, solve numerical problems and write algorithms

CO3. To understand theory of prediction and solution of normal equations

CO4. To know applications of DSP at block level.

IOT AND ITS APPLICATIONS

At the end of this course, students will be able to

CO1. Understand the concept of IOT and M2M

CO2. Study IOT architecture and applications in various fields

CO3. Study the security and privacy issues in IOT

VLSI SIGNAL PROCESSING

On successful completion of the module, students will be able to:

CO1. Ability to modify the existing or new DSP architectures suitable for VLSI.

CO2. Understand the concepts of folding and unfolding algorithms and applications.

CO3. Ability to implement fast convolution algorithms.

CO4. Low power design aspects of processors for signal processing and wireless applications.

HARDWARE AND SOFTWARE CO-DESIGN

CO1. To acquire the knowledge on various models of Co-design.

CO2. To explore the interrelationship between Hardware and software in a embedded system

CO3. To acquire the knowledge of firmware development process and tools during Co-design.

CO4. Understand validation methods and adaptability

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NETWORK SECURITY AND CRYPTOGRAPHY

At the end of the course, students will be able to:

CO1. Identify and utilize different forms of cryptography techniques.

CO2. Incorporate authentication and security in the network applications.

CO3. Distinguish among different types of threats to the system and handle the same.

PHYSICAL DESIGN AUTOMATION

At the end of the course, students will be able to:

CO1. Study automation process for VLSI System design.

CO2. Understanding of fundamentals for various physical design CAD tools.

CO3. Develop and enhance the existing algorithms and computational techniques for physical design process of VLSI systems.

II YEAR- I SEMESTER

MEMORY TECHNOLOGIES

At the end of the course, students will be able to:

CO1. Select architecture and design semiconductor memory circuits and subsystems.

CO2. Identify various fault models, modes and mechanisms in semiconductor memories and their testing procedures.

CO3. Know, how of the state-of-the-art memory chip design

WIRELESS SENSOR NETWORKS

Upon completion of the course, the student will be able to:

CO1. Analyze and compare various architectures of Wireless Sensor Networks

CO2. Understand Design issues and challenges in wireless sensor networks

CO3. Analyze and compare various data gathering and data dissemination methods.

CO4. Design, Simulate and Compare the performance of various routing and MAC protocol

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