

GURU NANAK INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

PROGRAMME OUTCOMES:

Engineering Graduates will be able to:

- A. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- B. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- C. 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.
- D. 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.
- E. 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.
- F. 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.
- G. 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.
- H. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- I. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- J. 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.
- K. 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.
- L. Lifelong learning: Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

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PROGRAM EDUCATIONAL OBJECTIVES

PEO 1: Graduates shall have the ability to apply knowledge across the Branches and in emerging areas of CE/ME/EEE/ECE/CSE/IT for higher studies, research, employability and handle the realistic problems.

PEO 2: Graduates shall have good communication skills, to possess ethical conduct, sense of responsibility to serve the society, and protect the environment.

PEO 3: Graduates shall have strong foundation in academic excellence, soft skills, managerial skills, leadership qualities and understand the need for lifelong learning for a successful professional career.

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO 1: Able to apply the knowledge gained during the course of the program from Mathematics, Basic Computing, Basic Sciences and Social Sciences in general and all electrical courses in particular to identify, formulate and solve real life problems faced in industries and/or during research work.

PSO 2: Able to provide socially acceptable technical solutions to complex electrical engineering problems with the application of modern and appropriate techniques for sustainable development.

PSO 3: Able to apply the knowledge of ethical and management principles required to work in a team as well as to lead a team


HOD-EEE

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II YEAR I SEMESTER

Subject: ELECTRICAL CIRCUIT ANALYSIS (EE302PC)

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

- Apply network theorems for the analysis of electrical circuits.
- Obtain the transient and steady-state response of electrical circuits.
- Analyze circuits in the sinusoidal steady-state (single-phase and three-phase).
- Analyze two port circuit behavior.

Subject: ELECTRICAL MACHINES – I (EE304PC)

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

- Identify different parts of a DC machine & understand its operation
- Carry out different testing methods to predetermine the efficiency of DC machines
- Understand different excitation and starting methods of DC machines
- Control the voltage and speed of a DC machines
- Analyze single phase and three phase transformers circuits.

Subject: ELECTROMAGNETIC FIELDS (EE305PC)

Course Outcomes: 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.

Subject: ENGINEERING MECHANICS (EE301ES)

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

- Determine resultant of forces acting on a body and analyse equilibrium of a body subjected to a system of forces.
- Solve problem of bodies subjected to friction.
- Find the location of centroid and calculate moment of inertia of a given section.
- Understand the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory motion and rigid body motion.
- Solve problems using work energy equations for translation, fixed axis rotation and plane motion and solve problems of vibration.

Subject: ANALOG ELECTRONICS (EE303PC)

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

- Know the characteristics, utilization of various components.
- Understand the biasing techniques
- Design and analyze various rectifiers, small signal amplifier circuits.
- Design sinusoidal and non-sinusoidal oscillators.
- A thorough understanding, functioning of OP-AMP, design OP-AMP based circuits with

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linear integrated circuits.

Subject: ELECTRICAL MACHINES LAB – I (EE306PC)

Course Outcomes: After completion of this lab the student is able to

- Start and control the Different DC Machines.
- Assess the performance of different machines using different testing methods
- Identify different conditions required to be satisfied for self - excitation of DC Generators.
- Separate iron losses of DC machines into different components

Subject: ANALOG ELECTRONICS LAB (EE307PC)

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

- Know the characteristics, utilization of various components.
- Understand the biasing techniques
- Design and analyze various rectifiers, small signal amplifier circuits.
- Design sinusoidal and non-sinusoidal oscillators.
- A thorough understanding, functioning of OP-AMP, design OP-AMP based circuits with linear integrated circuits.

Subject: ELECTRICAL CIRCUITS LAB (EE308PC)

Course Outcomes: After Completion of this lab the student is able to

- Analyze complex DC and AC linear circuits
- Apply concepts of electrical circuits across engineering
- Evaluate response in a given network by using theorems

II YEAR II SEMESTER

Subject: LAPLACE TRANSFORMS, NUMERICAL METHODS AND COMPLEX VARIABLES (MA401BS)

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

- Use the Laplace transforms techniques for solving ODE's
- Find the root of a given equation.
- Estimate the value for the given data using interpolation
- Find the numerical solutions for a given ODE's
- Analyze the complex function with reference to their analyticity, integration using Cauchy's integral and residue theorems
- Taylor's and Laurent's series expansions of complex function

Subject: ELECTRICAL MACHINES – II (EE402PC)

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

- Understand the concepts of rotating magnetic fields.
- Understand the operation of ac machines.
- Analyze performance characteristics of ac machines.

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Subject: DIGITAL ELECTRONICS (EE403PC)

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

- Understand working of logic families and logic gates.
- Design and implement Combinational and Sequential logic circuits.
- Understand the process of Analog to Digital conversion and Digital to Analog conversion.
- Be able to use PLDs to implement the given logical problem.

Subject: CONTROL SYSTEMS (EE404PC)

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

- Understand the modeling of linear-time-invariant systems using transfer function and state- space representations.
- Understand the concept of stability and its assessment for linear-time invariant systems.
- Design simple feedback controllers.

Subject: POWER SYSTEM – I (EE405PC)

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

- Understand the concepts of power systems.
- Understand the operation of conventional generating stations and renewable sources of electrical power.
- Evaluate the power tariff methods.
- Determine the electrical circuit parameters of transmission lines
- Understand the layout of substation and underground cables and corona.

Subject: DIGITAL ELECTRONICS LAB (EE406PC)

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

- Understand working of logic families and logic gates.
- Design and implement Combinational and Sequential logic circuits.
- Understand the process of Analog to Digital conversion and Digital to Analog conversion.
- Be able to use PLDs to implement the given logical problem.

Subject: ELECTRICAL MACHINES LAB – II (EE407PC)

Course Outcomes: After the completion of this laboratory course, the student will be able

- Assess the performance of different machines using different testing methods
- To convert the Phase from three phase to two phase and vice versa
- Compensate the changes in terminal voltages of synchronous generator after estimating the change by different methods
- Control the active and reactive power flows in synchronous machines
- Start different machines and control the speed and power factor

Subject: CONTROL SYSTEMS LAB (EE408PC)

Course Outcomes: After completion of this lab the student is able to

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- How to improve the system performance by selecting a suitable controller and/or a compensator for a specific application
- Apply various time domain and frequency domain techniques to assess the system performance
- Apply various control strategies to different applications (example: Power systems, electrical drives etc)
- Test system controllability and observability using state space representation and applications of state space representation to various systems

III YEAR I SEMESTER

Subject: POWER ELECTRONICS (EE501PE)

Course Outcomes: At the end of this course students will demonstrate the ability to

- Understand the differences between signal level and power level devices.
- Analyze controlled rectifier circuits.
- Analyze the operation of DC-DC choppers.
- Analyze the operation of voltage source inverters.

Subject: POWER SYSTEM – II (EE502PE)

Course Outcomes:

- Analyze transmission line performance.
- Apply load compensation techniques to control reactive power
- Understand the application of per unit quantities.
- Design over voltage protection and insulation coordination
- Determine the fault currents for symmetrical and unbalanced faults

Subject: MEASUREMENTS AND INSTRUMENTATION (EE503PE)

Course Outcomes: 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

Subject: COMPUTER ARCHITECTURE (EE511PE)

Course Outcomes: 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.

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Subject: BUSINESS ECONOMICS AND FINANCIAL ANALYSIS (SM504MS)

Course Outcome: 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 analysing the Financial Statements of a Company.

Subject: POWER SYSTEM SIMULATION LAB(EE505PC)

Course Outcomes: After completion of this lab, the student will be able to

- Perform various transmission line calculations
- Understand Different circuits time constants
- Analyze the experimental data and draw the conclusions.

Subject: POWER ELECTRONICS LAB (EE506PC)

Course Outcomes: After completion of this course, the student is able to

- Understand the operating principles of various power electronic converters.
- Use power electronic simulation packages & hardware to develop the power converters.
- Analyze and choose the appropriate converters for various applications

Subject: MEASUREMENTS AND INSTRUMENTATION LAB (EE507PC)

Course Outcomes: After completion of this lab the student is able to

- to choose instruments
- test any instrument
- find the accuracy of any instrument by performing experiment
- calibrate PMMC instrument using D.C potentiometer

Subject: ADVANCED COMMUNICATION SKILLS LAB (EN508HS)

OBJECTIVES:

This Lab focuses on using multi-media instruction for language development to meet the following targets:

- To improve the students' fluency in English, through a well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.
- Further, they would be required to communicate their ideas relevantly and coherently in writing.
- To prepare all the students for their placements.

III YEAR II SEMESTER

Subject: POWER SEMICONDUCTOR DRIVES (EE612PE)

Course Outcomes: After completion of this course the student is able to

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- Identify the drawbacks of speed control of motor by conventional methods.
- Differentiate Phase controlled and chopper-controlled DC drives speed-torque characteristics merits and demerits
- Understand Ac motor drive speed–torque characteristics using different control strategies its merits and demerits
- Describe Slip power recovery schemes

Subject: SIGNALS AND SYSTEMS (EE601PC)

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

- Differentiate various signal functions.
- Represent any arbitrary signal in time and frequency domain.
- Understand the characteristics of linear time invariant systems.
- Analyze the signals with different transform technique

Subject: EE602PC: MICROPROCESSORS & MICROCONTROLLERS

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

- Understands the internal architecture, organization and assembly language programming of 8086 processors.
- Understands the internal architecture, organization and assembly language programming of 8051/controllers
- Understands the interfacing techniques to 8086 and 8051 based systems.
- Understands the internal architecture of ARM processors and basic concepts of advanced ARM processors.

Subject: POWER SYSTEM PROTECTION (EE603PC)

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

- Compare and contrast electromagnetic, static and microprocessor-based relays
- Apply technology to protect power system components.
- Select relay settings of over current and distance relays.
- Analyze quenching mechanisms used in air, oil and vacuum circuit breakers

Subject: POWER SYSTEM OPERATION AND CONTROL (EE604PC)

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

- Understand operation and control of power systems.
- Analyze various functions of Energy Management System (EMS) functions.
- Analyze whether the machine is in stable or unstable position.
- Understand power system deregulation and restructuring

Subject: POWER SYSTEM LAB (EE605PC)

Course Outcomes: After completion of this lab, the student will be able to

- Perform various load flow techniques

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- Understand Different protection methods
- Analyze the experimental data and draw the conclusions.

Subject: SIGNALS AND SYSTEMS LAB (EE607PC)

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

- Understand the concepts of continuous time and discrete time systems.
- Analyze systems in complex frequency domain.
- Understand sampling theorem and its implications.

IV YEAR I SEMESTER

Subject: POWER SEMICONDUCTOR DRIVES (EE701PC)

Course Outcomes: After completion of this course the student is able to

- Identify the drawbacks of speed control of motor by conventional methods.
- Differentiate Phase controlled and chopper controlled DC drives speed-torque characteristics merits and demerits
- Understand AC motor drive speed–torque characteristics using different control strategies its merits and demerits
- Describe Slip power recovery schemes

Subject: POWER SYSTEM OPERATION AND CONTROL (EE702PC)

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

- Analyze the optimal scheduling of power plants
- Analyze the steady state behavior of the power system for voltage and frequency fluctuations
- Describe reactive power control of a power system
- Design suitable controller to dampen the frequency and voltage steady state oscillations

Subject: HVDC TRANSMISSION (EE722PE)

Course Outcomes: After completion of this course the student is able to

- Compare EHV AC and HVDC system and to describe various types of DC links
- Analyze Graetz circuit for rectifier and inverter mode of operation
- Describe various methods for the control of HVDC systems and to perform power flow analysis in AC/DC systems
- Describe various protection methods for HVDC systems and classify Harmonics and design different types of filters

Subject: POWER QUALITY (EE732PE)

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

- Know the severity of power quality problems in distribution system
- Understand the concept of voltage sag transformation from up-stream (higher voltages) to down-stream (lower voltage)
- Concept of improving the power quality to sensitive load by various mitigating custom

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power devices

Subject: FLEXIBLE A.C. TRANSMISSION SYSTEMS (EE743PE)

Course Outcomes: After completion of this course the student is able to

- Choose proper controller for the specific application based on system requirements
- Understand various systems thoroughly and their requirements
- Understand the control circuits of Shunt Controllers SVC & STATCOM for various functions viz. Transient stability Enhancement, voltage instability prevention and power oscillation damping
- Understand the Power and control circuits of Series Controllers GCSC, TSSC and TCSC

Subject: ELECTRICAL SYSTEMS SIMULATION LAB (EE703PC)

Course Outcomes: After going through this lab the student will be able to

- Design and Analyze electrical systems in time and frequency domain
- Analyze various transmission lines and perform fault analysis
- Model Load frequency control of Power Systems
- Design various Power Electronic Converters and Drives.

Subject: ELECTRICAL WORKSHOP (EE704PC)

Course Outcomes: After completion of course, student will be able to

- Get practical knowledge related to electrical
- Fabricate basic electrical circuit elements/networks
- Trouble shoot the electrical circuits
- Design filter circuit for application
- Get hardware skills such as soldering, winding etc.
- Get debugging skills.

IV YEAR II SEMESTER

SUBJECT: ENTREPRENEURSHIP AND SMALL BUSINESS ENTERPRISES (CE833OE)

Course Outcome: It enables students to learn the basics of Entrepreneurship and entrepreneurial development which will help them to provide vision for their own Start-up.

SUBJECT: WIND, SOLAR AND HYBRID ENERGY SYSTEMS (EE853PE)

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

- Understand the energy scenario and the consequent growths of the power generate renewable energy sources.
- Understand the basic physics of wind and solar power generation.
- Understand the power electronic interfaces for wind and solar generation.
- Understand the issues related to the grid-integration of solar and wind energy systems

SUBJECT: UTILIZATION OF ELECTRIC POWER (EE863PE)

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

- Acquire knowledge on, electric drives characteristics and their applicability in industry based

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on the nature of different types of loads and their characteristics

- understands the concepts and methods of electric heating, welding, illumination and electric traction
- apply the above concepts to real-world electrical and electronics problems and applications.


HOD-EEE

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1.1.1

Curriculum developed and implemented have relevance to the local, national, regional and global developmental needs which are reflected in Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) of the various Programmes offered by the Institution.

The institution has developed a curriculum for each programmes according to the guidelines of AICTE, UGC, and affiliating university in tune with PEOs, POs and PSOs of the institution which are in turn aligned with its vision and mission statements. The institution has meticulously drawn the PEOs keeping in view the needs of the nation and the society. Keeping the PEOs as a base, PSOs for each programmes are charted out.

Each department has a BoS that consists of senior faculty of the respective department, representatives from academia, industry, R & D organizations and nominee from the university. BoS members are involved to develop curriculum and course content with clear learning objectives and well-defined outcomes and to ensure that the curriculum meets the demands of local, regional, national and global development. The institution periodically revises the syllabus and introduces new courses with the valuable inputs of BoS members, so as to keep abreast with contemporary needs of industry and society.

Curriculum of all the programs consists of basic sciences, engineering sciences, humanities and social sciences, professional core courses, professional electives, open electives, project work, internship and mandatory courses for the holistic development of the students.

The relevance of the curriculum to the developmental needs at various levels is provided below.

Local and regional developmental needs

The curriculum includes a number of courses in all the programmes aimed at enabling students to analyze the local and regional needs and provide possible solutions to them. The mini and major project work courses provide the students with an opportunity to understand and involve in developmental activities of the region. Apart from the courses in curriculum, internships, field trips, industrial visits, NSS camps, extension activities, etc. are provided to acquire the awareness of social needs and issues and to know the various initiatives of Government of India, such as Unnat Bharat Abhiyan, Swachh Bharat, Atmanirbhar Bharat, etc. to serve the society,

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National and global developmental needs

In tune with the national and global developmental needs, the institution has introduced several new programmes in the areas of Data Science, Cyber Security, Artificial Intelligence and Machine Learning, and others. Additionally, several courses are aimed at enhancing the technical and entrepreneurial skills of the students. This enhances the employability skills of students. Courses on Environmental studies, Disaster management, and Renewable Energy are also offered to sensitize students on the environmental issues affecting our nation and the world in whole. These courses also inculcate sustainability measures to be undertaken to protect the prosperity of the environment and natural resources. The courses such as Professional Ethics, Management and Organizational Behavior, Business Law and Ethics, Entrepreneurship, Human Resource Management, etc. impart a set of ethical standards, professional practice and entrepreneurial skills for national and global relevance.

HOD CE

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DEPARTMENT OF MECHANICAL ENGINEERING

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- D. 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.
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PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO 1: Able to apply the knowledge gained during the course of the program from Mathematics, Basic Computing, Basic Sciences and Social Sciences in general and all electrical courses in particular to identify, formulate and solve real life problems faced in industries and/or during research work.

PSO 2: Able to provide socially acceptable technical solutions to complex electrical engineering problems with the application of modern and appropriate techniques for sustainable development.

PSO 3: Able to apply the knowledge of ethical and management principles required to work in a team as well as to lead a team

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II YEAR I SEMESTER

Subject: PROBABILITY AND STATISTICS & COMPLEX VARIABLES (MA301BS)

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

- Formulate and solve problems involving random variables and apply statistical methods for analysing experimental data.
- Analyse the complex function with reference to their analyticity, integration using Cauchy's integral and residue theorems.
- Taylor's and Laurent's series expansions of complex function.

Subject: MECHANICS OF SOLIDS (ME302PC)

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

- 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 structures;
- Undertake problem identification, formulation and solution using a range of analytical methods;
- 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.
- Expectation and capacity to undertake lifelong learning

Subject: MATERIAL SCIENCE AND METALLURGY (ME303PC)

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

- Understand major types of special steels such as HSLA, TRIP, Dual and Tool steels and cast irons .
- Understand the structure and properties of nonferrous metals and alloys.
- Identify the phases present in different alloy systems by analyzing the phase diagrams .
- Apply the basic principles of ferrous and non-ferrous physical metallurgy for selecting materials for specific applications.

Subject: PRODUCTION TECHNOLOGY (ME304PC)

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

- Understand the idea for selecting materials for patterns.
- Know Types and allowances of patterns used in casting and analyze the components of moulds.
- Design core, core print and gating system in metal casting processes.
- Understand the arc, gas, solid state and resistance welding processes.
- Develop process-maps for metal forming processes using plasticity principles.
- Identify the effect of process variables to manufacture defect free products.

Subject: THERMODYNAMICS (ME305PC)

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

- Understand and differentiate between different thermodynamic systems and processes.
- Understand and apply the laws of Thermodynamics to different types of systems undergoing various processes and to perform thermodynamic analysis.
- Understand and analyze the Thermodynamic cycles and evaluate performance parameters.

Subject: ME306PC: PRODUCTION TECHNOLOGY LAB

Course Outcomes: After completion of this lab the student is able to

- Understanding the properties of moulding sands and pattern making.
- Fabricate joints using gas welding and arc welding.
- Evaluate the quality of welded joints.
- Basic idea of press working tools and performs moulding studies on plastics.

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Subject MACHINE DRAWING PRACTICE (ME307PC)

Course Outcomes :

- Preparation of engineering and working drawings with dimensions and bill of material during Design and development.
- Developing assembly drawings using part drawings of machine components.
- Conventional representation of materials, common machine elements and parts such as Screws, nuts, bolts, keys, gears, webs, ribs.
- Types of sections – selection of section planes and drawing of sections and auxiliary sectional views. Parts not usually sectioned.
- Methods of dimensioning, general rules for sizes and placement of dimensions for holes, centers, curved and tapered features.
- Title boxes, their size, location and details - common abbreviations and their liberal usage
- Types of Drawings – working drawings for machine parts.

Subject: ME308PC: MATERIAL SCIENCE & MECHANICS OF SOLIDS LAB

Course Outcomes:

- The Primary focus of the Metallurgy and Material science program is to provide
- Under graduates with a fundamental knowledge based associated materials properties, and their Selection and application.
- Upon graduation, students would have acquired and developed the Necessary background and skills for successful careers in the materials-related industries.
- Furthermore, after completing the program, the student should be well prepared for management positions in industry or continued education toward a graduate degree.
- 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 structures.
- Undertake problem identification, formulation and solution using a range of analytical methods
- 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.
- Expectation and capacity to undertake lifelong learning.

CONSTITUTION OF INDIA (MC309)

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

Understand the emergence and evolution of Indian Constitution

Understand the structure and composition of Indian Constitution

Understand and analyse federalism in the Indian context

Analyse Panchayathi Raj institutions as a medium of decentralization

Understand and analyse the three organs of the state in the contemporary scenario.

II YEAR II SEMESTER

SUBJECT : BASIC ELECTRICAL AND ELECTRONICS ENGINEERING: (EE401ES)

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

- To analyze and solve electrical circuits using network laws and theorems.
- To understand and analyze basic Electric and Magnetic circuits
- To study the working principles of Electrical Machines
- To introduce components of Low Voltage Electrical Installations
- To identify and characterize diodes and various types of transistors.

Subject KINEMATICS OF MACHINERY (ME402PC)

Course Outcomes: At the end of this course,

- students will demonstrate the ability to Know an idea about the relative motions obtained in all the above type of components used in mechanical Engineering.

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Subject THERMAL ENGINEERING – I (ME403PC)

Course Outcomes: After completion of this subject the student is able to

- Evaluate the performance of IC engines and compressors under the given operating conditions.
- Apply the laws of Thermodynamics to evaluate the performance of Refrigeration and air-conditioning cycles.
- Understand the functionality of the major components of the IC Engines and effects of operating conditions on their performance.

Subject: FLUID MECHANICS AND HYDRAULIC MACHINES (ME404PC)

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

- Explain the effect of fluid properties on a flow system.
Able to identify type of fluid flow patterns and describe continuity equation.
- To analyze a variety of practical fluid flow and measuring devices and utilize Fluid Mechanics Principles in design.
- To select and analyze an appropriate turbine with reference to given situation in power plants.
- To estimate performance parameters of a given Centrifugal and Reciprocating pump.
- Able to demonstrate boundary layer concepts.

Subject: INSTRUMENTATION AND CONTROL SYSTEMS (ME405PC)

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

- To identify various elements and their purpose in typical instruments, to identify various errors that would occur in instruments.
- Analysis of errors so as to determine correction factors for each instrument.
- To understand static and dynamic characteristics of instrument and should be able to determine loading response time.
- For given range of displacement should be able to specify transducer, its accurate and loading time of that transducer.

Subject: BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LAB (EE409ES)

Course Outcomes: At the end of this course, students will demonstrate the ability

- To analyze and solve electrical circuits using network laws and theorems.
- To understand and analyze basic Electric and Magnetic circuits
- To study the working principles of Electrical Machines
- To introduce components of Low Voltage Electrical Installations
- To identify and characterize diodes and various types of transistors.

Subject: FLUID MECHANICS AND HYDRAULIC MACHINES LAB (ME407PC)

Course Outcomes: At the end of this course, students will

- Able to explain the effect of fluid properties on a flow system.
- Able to identify type of fluid flow patterns and describe continuity equation.
- To analyze a variety of practical fluid flow and measuring devices and utilize fluid mechanics principles in design.
- To select and analyze an appropriate turbine with reference to given situation in power plants.
- To estimate performance parameters of a given Centrifugal and Reciprocating pump.
- Able to demonstrate boundary layer concepts

Subject: INSTRUMENTATION AND CONTROL SYSTEMS LAB (ME408PC)

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

- Characterize and calibrate measuring devices
- Identify and analyze errors in measurement.
- Analyze measured data using regression analysis.

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- Calibration of Pressure Gauges, temperature, LVDT, capacitive transducer, Rotameter.

Subject: GENDER SENSITIZATION LAB (*MC409/*MC309)

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

Subject: DYNAMICS OF MACHINERY(ME501P)

Course Outcome:

- the study of KOM & DOM are necessary to have an idea while designing the various machine members like shafts, bearings, gears, belts & chains and various I.C. Engine Components & Machine tool parts.

Subject: DESIGN OF MACHINE MEMBERS - I (ME502PC)

Course Outcomes:

- The student acquires the knowledge about the principles of design, material selection, component behavior subjected to loads, and criteria of failure.
- Understands the concepts of principal stresses, stress concentration in machine members and fatigue loading.
- Design on the basis of strength and rigidity and analyze the stresses and strains induced in a machine element.

Subject: METROLOGY AND MACHINE TOOLS (ME503PC)

Course Outcome: At the end of the course, the student would be able to

- Identify techniques to minimize the errors in measurement.
- Identify methods and devices for measurement of length, angle, gear & thread parameters, surface roughness and geometric features of parts.
- Understand working of lathe, shaper, planer, drilling, milling and grinding machines.
- Comprehend speed and feed mechanisms of machine tools.
- Estimate machining times for machining operations on machine tools.

Subject: BUSINESS ECONOMICS AND FINANCIAL ANALYSIS (SM504MS)

Course Outcome: 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 analysing the Financial Statements of a Company.

Subject: THERMAL ENGINEERING – II (ME505PC)

Course Outcomes: At the end of the course, the student should be able to

- Develop state – space diagrams based on the schematic diagrams of process flow of steam and gas turbine plants

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- Apply the laws of Thermodynamics to analyze thermodynamic cycles
- Differentiate between vapour power cycles and gas power cycles
- Infer from property charts and tables and to apply the data for the evaluation of performance parameters of the steam and gas turbine plants
- Understand the functionality of major components of steam and gas turbine plants and to do the analysis of these components

Subject: OPERATIONS RESEARCH (ME506PC)

Course Outcome:

- Understanding the problem, identifying variables & constants,
- Formulation of optimization model and applying appropriate optimization technique

Subject: THERMAL ENGINEERING LAB (ME507PC)

Course Outcomes: At the end of the course, the student should be able to

- Appreciate the practical ways to find calorific values of fuel
- Understand the various components and mechanisms of I. C. Engines. Appreciate the Mechanism of ports /Valves functioning in 2-stroke petrol /Diesel engine
- Evaluating the performance characteristics of single cylinder petrol engine at different loads and single cylinder diesel engine at different loads and draw the heat balance sheet
- Understand the method of finding the indicated power of individual cylinders of an engine by using morse test
- Understand the method of evaluating the co efficient of performance of refrigerator

Subject: METROLOGY AND MACHINE TOOLS LAB (ME508PC)

Course Outcomes: At the end of the course, the student should be able to

- Hands on experience on lathe machine to perform turning, facing, threading operations
- Practical exposure on flat surface machining, milling and grinding operations.
- Skill development in drilling and threading operations.
- Linear and angular measurements exposure
- Understand the concept of machine tool alignment and Thread measurement by 2-wire and 3-wire methods

Subject: KINEMATICS AND DYNAMICS LAB (ME509PC)

Course Outcomes: Upon successful completion of this lab, students should be able to:

- Understand types of motion
- Analyze forces and torques of components in linkages
- Understand static and dynamic balance
- Understand forward and inverse kinematics of open-loop mechanisms

Subject: INTELLECTUAL PROPERTY RIGHTS (*MC510)

Subject: DESIGN OF MACHINE MEMBERS – II (ME601PC)

Course Outcomes:

- Knowledge about journal bearing design using different empirical relations.
- Estimation of life of rolling element bearings and their selection for given service conditions.
- Acquaintance with design of the components as per the standard, recommended procedures which is essential in design and development of machinery in industry.

Subject: HEAT TRANSFER (ME602PC)

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

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- Understand the basic modes of heat transfer
- Compute one dimensional steady state heat transfer with and without heat generation
- Understand and analyze heat transfer through extended surfaces
- Understand one dimensional transient conduction heat transfer
- Understand concepts of continuity, momentum and energy equations
- Interpret and analyze forced and free convective heat transfer
- Understand the principles of boiling, condensation and radiation heat transfer
- Design of heat exchangers using LMTD and NTU methods

Subject: CAD & CAM (ME603PC)

Course Outcomes:

- Understand geometric transformation techniques in CAD.
- Develop mathematical models to represent curves and surfaces
- Model engineering components using solid modeling techniques
- Develop programs for CNC to manufacture industrial components.
- To understand the application of computers in various aspects of Manufacturing viz., Design, Proper planning, Manufacturing cost, Layout & Material Handling system planning.

Subject: UNCONVENTIONAL MACHINING PROCESSES (Professional Elective - I) (ME611PE)

Course Outcomes:

- Understand the basic techniques of Unconventional Machining processes modeling
- Estimate the material removal rate and cutting force, in an industrially useful manner, for Unconventional Machining processes

Subject: PRODUCTION PLANNING AND CONTROL (ME613PE)

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

- Understand production systems and their characteristics.
- Evaluate MRP and JIT systems against traditional inventory control systems.
- Understand basics of variability and its role in the performance of a production system.
- Analyze aggregate planning strategies.
- Apply forecasting and scheduling techniques to production systems.
- Understand theory of constraints for effective management of production systems.

Subject: FINITE ELEMENT METHODS (ME604PC)

Course Outcomes: At the end of the lab sessions, the student will be able to

- to solve problems in solid mechanics, fluid mechanics and heat transfer.
- Formulate and solve problems in one dimensional structures including trusses, beams and frames.
- Formulate FE characteristic equations for two dimensional elements and analyze plain stress, plain strain, axisymmetric and plate bending problems.
- ANSYS, ABAQUS, NASTRAN, etc.

Subject: HEAT TRANSFER LAB (ME605PC)

Course Outcome: At the end of the lab sessions, the student will be able to

- Perform steady state conduction experiments to estimate thermal conductivity of different Materials.
- Perform transient heat conduction experiment.t
- Estimate heat transfer coefficients in forced convection, free convection, condensation and correlate with theoretical values.
- Obtain variation of temperature along the length of the pin fin under forced and free Convection.
- Perform radiation experiments: Determine surface emissivity of a test plate and Stefan-Boltzmann's constant and compare with theoretical value.

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Subject: CAD & CAM LAB (ME606PC)

Course Outcomes: To understand the analysis of various aspects in of manufacturing design

Subject: ADVANCED COMMUNICATIONS SKILLS LAB (EN608HS)

Course Outcomes:

This Lab focuses on using multi-media instruction for language development to meet the following targets:

- To improve the students' fluency in English, through a well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.
- Further, they would be required to communicate their ideas relevantly and coherently in writing.
- To prepare all the students for their placements.

Subject: ENVIRONMENTAL SCIENCE (*MC609)

Course Outcomes: 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.

Subject: REFRIGERATION AND AIR CONDITIONING (ME701PC)

Course Outcomes: At the end of the course, the student should be able to

- Differentiate between different types of refrigeration systems with respect to application as well as conventional and unconventional refrigeration systems.
- Thermodynamically analyse refrigeration and air conditioning systems and evaluate performance parameters.
- Apply the principles of Psychometrics to design the air conditioning loads for the industrial applications.

Subject: ADDITIVE MANUFACTURING (PE - II) (ME711PE)

Course Outcomes:

- Describe various CAD issues for 3D printing and rapid prototyping and related operations for STL model manipulation.
- Formulate and solve typical problems on reverse engineering for surface reconstruction from physical prototype models through digitizing and spline-based surface fitting.
- Formulate and solve typical problems on reverse engineering for surface reconstruction from digitized mesh models through topological modelling and subdivision surface fitting.
- Explain and summarize the principles and key characteristics of additive manufacturing technologies and commonly used 3D printing and additive manufacturing systems.
- Explain and summarize typical rapid tooling processes for quick batch production of plastic and metal parts.

Subject: MEMS (PE – II) (ME713PE)

Course Outcomes:

- Students will be able to understand working principles of currently available micro sensors, actuators, and motors, valves, pumps, and fluidics used in Microsystems.
- Students will be able to apply scaling laws that are used extensively in the conceptual design of micro devices and systems. Students will be able to differentiate between the positive and negative consequences of scaling down certain physical quantities that are pertinent to Microsystems.
- Students will be able to use materials for common micro components and devices.
- Students will be able to choose a micromachining technique, such as bulk micromachining and surface micromachining for a specific MEMS fabrication process.
- Students will be able to understand the basic principles and applications of micro-fabrication

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- processes, such as photolithography, ion implantation, diffusion, oxidation, CVD, PVD, and etching.
- Students will be able to consider recent advancements in the field of MEMS and devices.
- Students will be able to communicate their results and findings orally via formal presentations and in writing through reports.

Subject: POWER PLANT ENGINEERING (PE – III) (ME721PE)

Course Outcomes: At the end of the course students are able to:

- Understand the concept of Rankine cycle.
- Understand working of boilers including water tube, fire tube and high pressure boilers and determine efficiencies.
- Analyze the flow of steam through nozzles
- Evaluate the performance of condensers and steam turbines
- Evaluate the performance of gas turbines

Subject: AUTOMOBILE ENGINEERING (PE – III) (MT701PC/ME722PE)

Course Outcomes:

Subject: RENEWABLE ENERGY SOURCES (PE – III) (ME723PE)

Understanding of renewable energy sources

- Knowledge of working principle of various energy systems
- Capability to carry out basic design of renewable energy systems

Subject: COMPUTATIONAL FLUID DYNAMICS (PE – IV) (ME731PE)

Course Outcomes: At the end of the course, the student should be able to:

- Differentiate between different types of Partial Differential Equations and to know and understand appropriate numerical techniques.
- Solve the simple heat transfer and fluid flow problems using different numerical techniques, viz., FDM.
- Understand and to appreciate the need for validation of numerical solution.

Subject: TURBO MACHINERY (PE – IV) (ME732PE)

Course Outcomes: At the end of the course, the student should be able to:

- Design and calculate different parameters for turbo machines
- Prerequisite to CFD and Industrial fluid power courses
- Formulate design criteria
- Understand thermodynamics and kinematics behind turbo machines

Subject: FLUID POWER SYSTEMS (PE – IV) (ME733PE)

Course outcomes: After doing this, student should be able to

- Understand the Properties of fluids, Fluids for hydraulic systems,
- governing laws. distribution of fluid power, Design and analysis of typical hydraulic circuits.
- Know accessories used in fluid power system, Filtration systems and maintenance of system.

Subject : INDUSTRIAL ROBOTICS (PE – V) (ME811PE)

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

- Understand the basic components of robots.
- Differentiate types of robots and robot grippers.
- Model forward and inverse kinematics of robot manipulators.
- Analyze forces in links and joints of a robot.
- Programme a robot to perform tasks in industrial applications.
- Design intelligent robots using sensors.

Subject :MECHANICAL VIBRATIONS (PE – V) (ME812PE)

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

- Understand the causes and effects of vibration in mechanical systems.

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- Develop schematic models for physical systems and formulate governing equations of motion.
- Understand the role of damping, stiffness and inertia in mechanical systems Analyze rotating and reciprocating systems and compute critical speeds.
- Analyze and design machine supporting structures, vibration isolators and absorbers.

Subject : COMPOSITE MATERIALS (PE – V) (MM813PE)

Course Outcomes:

- Knowledge of the crystal structures of a wide range of ceramic materials and glasses.
- Able to explain how common fibers are produced and how the properties of the fibers are related to the internal structure.
- Able to select matrices for composite materials in different applications.
- Able to describe key processing methods for fabricating composites.

Subject : INDUSTRIAL MANAGEMENT (PE – VI) (ME821PE)

Course outcomes:

- Able to apply principles of management
- Able to design the organization structure
- Able to apply techniques for plant location, design plant layout and value analysis
- Able to carry out work study to find the best method for doing the work and establish standard time for a given method
- Able to apply various quality control techniques and sampling plans
- Able to do job evaluation and network analysis.

Subject : PRODUCTION AND OPERATIONS MANAGEMENT (PE – VI) (ME822PE)

Course Outcomes:

- Able to execute operations management functions
- Able to carry out value analysis
- Able to carry out aggregate planning and implement MRP Or JIT
- Able to schedule the jobs so as to complete them in minimum make span time
- Able to carry out network analysis.

Subject: TRIBOLOGY (PE – VI) (ME833PE)

Course Outcomes:

- Understanding friction characteristics in journal bearings.
- Knowledge about different theories of lubrication to reduce friction and wear.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

PROGRAMME OUTCOMES:

Engineering Graduates will be able to:

- A. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- B. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- C. 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.
- D. 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.
- E. 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.
- F. 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.
- G. 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.
- H. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- I. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- J. 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.
- K. 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.
- L. Lifelong learning: Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

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PROGRAM EDUCATIONAL OBJECTIVES

PEO1: Graduates shall have the ability to apply knowledge across the disciplines and in emerging areas of Electronics and Communications Engineering for higher studies, research, employability and handle the realistic problems.

PEO2: Graduates shall have good communication skills, possess ethical conduct, sense of responsibility to serve for the sustainable development of the society, and protect the environment.

PEO3: Graduates shall have strong foundation in academic excellence, managerial skills, leadership qualities and understand the need for lifelong learning for a successful professional career.

II YEAR I SEMESTER

Subject: ELECTRONIC DEVICES AND CIRCUITS (EC301PC)

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

- Student will be able to understand the concept of diode and its application
- Student will be able to expose towards BJT and design approaches using load line analysis
- Student will be able to understand concept of JFET
- Student will be able to understand small signal BJT analysis
- Student will be able to design various configuration of FET amplifier

Subject: NETWORK ANALYSIS AND TRANSMISSION LINES (EC302PC)

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

- Apply and assess the Gained knowledge on basic RLC circuit's behavior
- Analyze the Steady state and transient analysis of RLC Circuits
- Know the characteristics of two port network parameters.
- Justify and analyze the transmission line parameters and configurations

Subject: DIGITAL SYSTEM DESIGN (EC303PC)

Course Outcomes: At the end of the course,

- student will understand the numerical information in different forms and Boolean algebra theorems
- student will be exposed to the Postulates of Boolean algebra and to minimize combinational functions
- student will be able to Design and analyze combinational and sequential circuits
- Student will know about the logic families and realization of logic gates.

Subject: SIGNALS AND SYSTEMS (EC304PC)

- **Course Outcomes:** At the end of the course,
- Students will be able to differentiate various signal functions.
- Students will be able to represent any arbitrary signal in time and frequency domain
- Students will be able to understand the characteristics of linear time invariant systems
- Students will be able to analyze the signals with different transform technique

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Subject: PROBABILITY THEORY AND STOCHASTIC PROCESSES (EC305ES)

Course Outcomes: At the end of this course,

- Students will be able to have the basic understanding of random signals and processes.
- Students will be able to utilize the random signals and systems in communications and signal processing areas
- Students will be able to know the spectral and temporal characteristics of random process.
- Students will be able to learn the basic concepts of noise sources

Subject: Constitution of India (*MC309)

Course Outcomes: After completion of this course the student is able to

- The scheme of the Fundamental Duties and its legal status
- Scheme of the fundamental rights

Subject: ELECTRONIC DEVICES AND CIRCUITS LAB (EC306PC)

Course Outcomes: After completion of this lab the student is able to

- Students can analyze the different types of diodes, operation and its characteristics
- Students can design and analyze the DC bias circuitry of BJT and FET.
- Students can analyze and design diode application circuits, amplifier circuits and oscillators employing BJT, FET devices.

Subject: DIGITAL SYSTEM DESIGN LAB (EC307PC)

Course Outcomes: After completion of this lab the student is able to

- Student will be able to Design and analyze combinational circuits
- Student will be able to Design and analyze Sequential circuits

Subject: BASIC SIMULATION LAB (EC308ES)

Course Outcomes: After completion of this lab the student is able to

- Student will be able to represent any arbitrary analog or Digital time domain signal in frequency domain
- Student will be able to understand the characteristics of linear time invariant systems
- Student will be able to understand the concepts of Random Process and its Characteristics

II YEAR II SEMESTER

Subject: LAPLACE TRANSFORMS, NUMERICAL METHODS AND COMPLEX VARIABLES (MA401BS)

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

- Use the Laplace transforms techniques for solving ODE's
- Find the root of a given equation.
- Estimate the value for the given data using interpolation
- Find the numerical solutions for a given ODE's
- Analyze the complex function with reference to their analyticity, integration using

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Cauchy's integral and residue theorems

- Taylor's and Laurent's series expansions of complex function

Subject: ELECTROMAGNETIC FIELDS AND WAVES (EC402PC)

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

- Get the knowledge of Basic Laws, Concepts and proofs related to Electrostatic Fields and Magnetostatic Fields.
- Distinguish between the static and time-varying fields, establish the corresponding sets of Maxwell's Equations and Boundary Conditions.
- Analyze the Wave Equations for good conductors, good dielectrics and evaluate the UPW Characteristics for several practical media of interest.
- To analyze completely the rectangular waveguides, their mode characteristics, and design waveguides for solving practical problems.

Subject: ANALOG AND DIGITAL COMMUNICATIONS (EC403PC)

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

- Analyze and design of various continuous wave and angle modulation and demodulation techniques
- Understand the effect of noise present in continuous wave and angle modulation techniques.
- Attain the knowledge about AM, FM Transmitters and Receivers
- Analyze and design the various Pulse Modulation Techniques
- Understand the concepts of Digital Modulation Techniques and Baseband transmission.

Subject: LINEAR IC APPLICATIONS (EC404PC)

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

- A thorough understanding of operational amplifiers with linear integrated circuits.
- Attain the knowledge of functional diagrams and applications of IC 555 and IC 565
- Acquire the knowledge about the Data converters.

Subject: ELECTRONIC CIRCUIT ANALYSIS (EC405PC)

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

- Design the multistage amplifiers and understand the concepts of High Frequency Analysis of Transistors.
- Utilize the Concepts of negative feedback to improve the stability of amplifiers and positive feedback to generate sustained oscillations
- Design and realize different classes of Power Amplifiers and tuned amplifiers useable for audio and Radio applications.
- Design Multivibrators and sweep circuits for various applications.
-

Subject: ANALOG AND DIGITAL COMMUNICATIONS LAB (EC406PC)

Course Outcomes: After completion of this lab the student is able to

- Analyze and design of various continuous wave and angle modulation and demodulation techniques
- Analyze and design the various Pulse Modulation Techniques
- Understand the concepts of Digital Modulation Techniques and Baseband transmission.

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Subject: IC APPLICATIONS LAB (EC407PC)

Course Outcomes: After completion of this lab the student is able to

- Students will able to design the circuits using linear IC's
- Students will able to distinguish Analog and digital IC's
- Student will be able to design circuits using operational amplifiers of various applications

Subject: ELECTRONIC CIRCUIT ANALYSIS LAB (EC408PC)

Course Outcomes: After completion of this lab the student is able to

- Design the multistage amplifiers and understand the concepts of High Frequency Analysis of Transistors
- Design and realize different classes of Power Amplifiers and tuned amplifiers useable for audio and Radio applications

Subject: GENDER SENSITIZATION LAB (MC409)

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

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics. Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.

III YEAR I SEMESTER

Subject: MICROPROCESSORS AND MICROCONTROLLERS (EC501PC)

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

- Understands the internal architecture, organization and assembly language programming of 8086 processors.
- Understands the internal architecture, organization and assembly language programming of 8051/controllers
- Understands the interfacing techniques to 8086 and 8051 based systems.
- Understands the internal architecture of ARM processors and basic concepts of advanced ARM processors.

Subject: DATA COMMUNICATIONS AND NETWORKS (EC502PC)

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

- Know the Categories and functions of various Data communication Networks
- Design and analyze various error detection techniques.

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- Demonstrate the mechanism of routing the data in network layer
- Know the significance of various Flow control and Congestion control Mechanisms
- Know the Functioning of various Application layer Protocols.

Subject: CONTROL SYSTEMS (EC503PC)

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

- Understand the modeling of linear-time-invariant systems using transfer function and statespace representations.
- Understand the concept of stability and its assessment for linear-time invariant systems.
- Design simple feedback controllers.

Subject: BUSINESS ECONOMICS AND FINANCIAL ANALYSIS (SM504MS)

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

- 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 analysing the Financial Statements of a Company.

Subject: ELECTRONIC MEASUREMENTS AND INSTRUMENTATION (EC513PE)

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

- Measure electrical parameters with different meters and understand the basic definition of measuring parameters.
- Use various types of signal generators, signal analyzers for generating and analyzing various real-time signals.
- Operate an Oscilloscope to measure various signals.
- Measure various physical parameters by appropriately selecting the transducers.

Subject: INTELLECTUAL PROPERTY RIGHTS

Course Outcomes: Upon completing this course,

- Students will be able to analyze international intellectual property rights System, the main forms of intellectual property rights and the relevant international institutional frame work.
- Students will be able to demonstrate context of sustainable development.
- Students will be able to emphasize three dimensions of sustainable Development: Environmental, Economic and social.
- Students will be able to analyze necessary analytical tools of intellectual property rights.

Subject: MICROPROCESSORS AND MICROCONTROLLERS LAB (EC505PC)

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

- Design and implement programs on 8086 microprocessor.
- Design interfacing circuits with 8086.
- Design and implement 8051 microcontroller based systems

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Subject: DATA COMMUNICATIONS AND NETWORKS LAB (EC506PC)

- Student will understand the working principles of LAN protocol.
- Know the Functioning of various Application layer Protocols.
- Student will be able understand and analyze the principles and operations behind various application layer protocols like HTTP, DNS, DHCP.

Subject: ADVANCED COMMUNICATION SKILLS LAB (EN508HS)

Course Outcomes: Upon successful completion of this lab the student will be able to

- Students will be able to speak effectively
- Students will be able to express and communicate fluently and appropriately in social professional contexts.
- The development of comprehensive ability through English Language enables the students in understanding and assimilating other Engineering subjects.
- The awareness of English Lab enriches their communication and soft skills contributing to their overall development and success.
- Students will be able to draft various letters and reports for all official purposes.

III YEAR II SEMESTER

Subject: ANTENNAS AND PROPAGATION (EC601PC)

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

- Characterize the antennas based on frequency, configure the geometry and establish the radiation patterns of VHF, UHF and Microwave antennas and also antenna arrays.
- Specify the requirements for microwave measurements and arrange a setup to carry out the antenna far zone pattern and gain measurements in the laboratory.
- Classify the different wave propagation mechanisms, determine the characteristic features of different wave propagations, and estimate the parameters involved.

Subject: DIGITAL SIGNAL PROCESSING (EC602PC)

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

- Understand the LTI system characteristics and Multirate signal processing.
- Understand the inter-relationship between DFT and various transforms.
- Design a digital filter for a given specification.
- Understand the significance of various filter structures and effects of round off errors.

Subject: VLSI DESIGN (EC603PC)

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

- Acquire qualitative knowledge about the fabrication process of integrated circuits using MOS transistors.
- Draw the layout of any logic circuit which helps to understand and estimate parasitic effect of any logic circuit
- Design building blocks of data path systems, memories and simple logic circuits using PLA, PAL, FPGA and CPLD.
- 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.

GURU NANAK INSTITUTE OF TECHNOLOGY

Subject: OBJECT ORIENTED PROGRAMMING THROUGH JAVA (EC611PE)

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

- Develop Applications for Range of Problems Using Object-Oriented Programming Techniques
- Design Simple Graphical User Interface Applications.

Subject: DIGITAL SIGNAL PROCESSING LAB (EC604PC)

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

- Understand the inter-relationship between DFT and various transforms.
- Design a digital filter for a given specification.
- Able to Implement Decimation Process and vary the sampling rate.
- Able to Implement Interpolation Process and vary the sampling rate.

Subject: E-CAD LAB (EC605PC)

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

- Able to develop an ability to simulate and synthesize various digital circuits
- Able to simulate all combinational circuits using programming language.
- An ability to design CMOS logic circuits

Subject: SCRIPTING LANGUAGE LAB (EC606PC)

Course Outcomes:

- Ability to understand the differences between Scripting languages and programming languages
- Able to gain some fluency programming in Ruby, Perl, TCL

Subject: ENVIRONMENTAL SCIENCE (MC609)

Course Outcomes:

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

IV YEAR I SEMESTER

Subject: MICROWAVE ENGINEERING (EC701PC)

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

- To analyze completely the rectangular waveguides, their mode characteristics and design waveguides for solving practical microwave transmission line problems.
- To distinguish between the different types of waveguide and ferrite components, explain their functioning and select proper components for engineering applications.
- To distinguish between the methods of power generation at microwave frequencies, derive the performance characteristics of 2-Cavity and Reflex Klystrons, Magnetrons, TWTs and estimate their efficiency levels, and solve related numerical problems
- To realize the need for solid state microwave sources, understand the concepts of TEDs, RWH Theory and explain the salient features of Gunn Diodes and ATT Devices.

GURU NANAK INSTITUTE OF TECHNOLOGY

- To establish the properties of Scattering Matrix, formulate the S-Matrix for various microwave junctions, and understand the utility of S-parameters in microwave component design.

Subject: COMPUTER NETWORKS (EC721PE)

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

- Students should understand and explore the basics of Computer Networks and Various Protocols. He/ She will be in a position to understand the World Wide Web Concepts.
- Students will be in a position to administrate a network and flow of information further he/she can understand easily the concepts of network security, Mobile and ad hoc networks.

Subject: EMBEDDED SYSTEM DESIGN (EC734PE)

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

- Expected to understand the selection procedure of Processors in the embedded domain.
- Design Procedure for Embedded Firmware.
- Expected to visualize the role of Real time Operating Systems in Embedded Systems.
- Expected to evaluate the Correlation between task synchronization and latency issues

Subject: ELECTRONIC MEASUREMENTS AND INSTRUMENTATION (EC743PE)

Course Outcomes: On completion of this course student will be able to

- Identify the various electronic instruments based on their specifications for carrying Out a particular task of measurement.
- Measure various physical parameters by appropriately selecting the transducers.
- Use various types of signal generators, signal analyzers for generating and analyzing various real-time signals.

Subject: VLSI DESIGN (EC702PC)

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

- Acquire qualitative knowledge about the fabrication process of integrated circuits using MOS transistors.
- Draw the layout of any logic circuit which helps to understand and estimate parasitic effect of any logic circuit
- Design building blocks of data path systems, memories and simple logic circuits using PLA, PAL, FPGA and CPLD.
- 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.

Subject: VLSI AND E-CAD LAB (EC703PC)

Course Outcomes: On completion of this lab students will be able to

- Draw the layout of any logic circuit which helps to understand and estimate parasitic effect of any logic circuit
- Design entry and simulation of flip-flops with test bench
- An ability to design CMOS logic circuits
- Able to develop an ability to simulate and synthesize various digital circuits

GURU NANAK INSTITUTE OF TECHNOLOGY

Subject: MICROWAVE ENGINEERING LAB (EC704PC)

Course Outcomes: On completion of this lab students will be able to

- Able to handle microwave equipment
- Able to understand microwave measurements.
- Able to understand Wave guide and antenna measurements

IV YEAR II SEMESTER

Subject: LINUX PROGRAMMING (CS831OE)

Course Outcomes: After completion of the course students will be able to

- Work confidently in Unix/Linux environment
- Write shell scripts to automate various tasks
- Master the basics of Linux administration

Subject: SYSTEM DESIGN USING FPGAs (EC852PE)

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

- Understand the verilog hardware description, languages(HDL)
- Understand the Design digital circuits.
- Design and Verify Behavioral and RTL models.
- Understand the Register Transfer Level (RTL) models of Digital Circuits.

Subject: GLOBAL POSITIONING SYSTEM (EC863PE)

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

- Demonstrate a clear understanding of the GPS signal, codes and biases
- Discuss the practical applications of GPS and the implications of its modernization
- Be aware of some of the opportunities afforded by the coming GNSS systems
- Describe the differences between relative and autonomous GPS positioning, code phase carrier phase.



HOD-ECE

GURU NANAK INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAMME OUTCOMES:

Engineering Graduates will be able to:

- A. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- B. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- C. 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.
- D. 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.
- E. 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.
- F. 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.
- G. 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.
- H. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- I. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- J. 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.
- K. 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.
- L. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME EDUCATIONAL OBJECTIVES:

PEO-1: Graduates shall have the ability to apply knowledge and technical skills in emerging areas of Computer Science and Engineering for higher studies, research, employability, product development and handle realistic problems.

PEO-2: Graduates shall possess managerial skills, maintain ethical conduct, sense of responsibility to serve the society and to protect the environment.

PEO-3: Graduates shall possess academic excellence with innovative insight, soft skills, leadership qualities, knowledge of contemporary issues for successful professional career.

GURU NANAK INSTITUTE OF TECHNOLOGY

COURSE OUTCOMES II YEAR I SEMESTER

CS301ES: ANALOG AND DIGITAL ELECTRONICS

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

- Know the characteristics of various components.
- Understand the utilization of components.
- Design and analyze small signal amplifier circuits.
- Learn Postulates of Boolean algebra and to minimize combinational functions
- Design and analyze combinational and sequential circuits
- Know about the logic families and realization of logic gates.

CS302ES: DATA STRUCTURES

Course Outcomes:

- Ability to select the data structures that efficiently model the information in a problem.
- Ability to assess efficiency trade-offs among different data structure implementations or combinations.
- Implement and know the application of algorithms for sorting and pattern matching.
- Design programs using a variety of data structures, including hash tables, binary and general tree structures, search trees, tries, heaps, graphs, and AVL-trees.

MA303BS: COMPUTER ORIENTED STATISTICAL METHODS

Course Outcomes: After learning the contents of this course, the student must be able to

- Apply the concepts of probability and distributions to some case studies
- Correlate the material of one unit to the material in other units
- Resolve the potential misconceptions and hazards in each topic of study.

CS304PC: COMPUTER ORGANIZATION AND ARCHITECTURE

Course Outcomes:

- Understand the basics of instructions sets and their impact on processor design.
- Demonstrate an understanding of the design of the functional units of a digital computer system.
- Evaluate cost performance and design trade-offs in designing and constructing a computer processor including memory.
- Design a pipeline for consistent execution of instructions with minimum hazards.
- Recognize and manipulate representations of numbers stored in digital computers.

CS305PC: OBJECT ORIENTED PROGRAMMING USING C++

Course Outcomes:

- Able to develop programs with reusability
- Develop programs for file handling
- Handle exceptions in programming
- Develop applications for a range of problems using object-oriented programming techniques

CS306ES: ANALOG AND DIGITAL ELECTRONICS LAB

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

- Know the characteristics of various components.
- Understand the utilization of components.
- Design and analyze small signal amplifier circuits.
- Postulates of Boolean algebra and to minimize combinational functions
- Design and analyze combinational and sequential circuits
- Known about the logic families and realization of logic gates.

GURU NANAK INSTITUTE OF TECHNOLOGY

CS307PC: DATA STRUCTURES LAB

Course Outcomes:

- Ability to develop C programs for computing and real-life applications using basic elements like control statements, arrays, functions, pointers and strings, and data structures like stacks, queues and linked lists.
- Ability to Implement searching and sorting algorithms

CS309PC: C++ PROGRAMMING LAB

Course Outcomes

- Ability to develop applications for a range of problems using object-oriented programming techniques.

MC309: GENDER SENSITIZATION LAB

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature, and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

II YEAR II SEMESTER

CS401PC: DISCRETE MATHEMATICS

Course Outcomes:

- Ability to understand and construct precise mathematical proofs
- Ability to use logic and set theory to formulate precise statements
- Ability to analyze and solve counting problems on finite and discrete structures
- Ability to describe and manipulate sequences
- Ability to apply graph theory in solving computing problems

SM402MS: BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

Course Outcomes:

- 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 analysing the Financial Statements of a Company.

CS403PC: OPERATING SYSTEMS

Course Outcomes:

- Will be able to control access to a computer and the files that may be shared Demonstrate the knowledge of the components of computer and their respective roles in computing.
- Ability to recognize and resolve user problems with standard operating environments.
- Gain practical knowledge of how programming languages, operating systems, and architectures interact and how to use each effectively.

GURU NANAK INSTITUTE OF TECHNOLOGY

CS404PC: DATABASE MANAGEMENT SYSTEMS

Course Outcomes:

- Gain knowledge of fundamentals of DBMS, database design and normal forms
- Master the basics of SQL for retrieval and management of data.
- Be acquainted with the basics of transaction processing and concurrency control.
- Familiarity with database storage structures and access techniques

CS405PC: JAVA PROGRAMMING

Course Outcomes:

- Able to solve real world problems using OOP techniques.
- Able to understand the use of abstract classes.
- 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

CS406PC: OPERATING SYSTEMS LAB

Course Outcomes:

- Simulate and implement operating system concepts such as scheduling, deadlock management, file management and memory management.
- Able to implement C programs using Unix system calls

CS407PC: DATABASE MANAGEMENT SYSTEMS LAB

Course Outcomes:

- Design database schema for a given application and apply normalization
- Acquire skills in using SQL commands for data definition and data manipulation.
- Develop solutions for database applications using procedures, cursors, and triggers

CS408PC: JAVA PROGRAMMING LAB

Course Outcomes:

- Able to write programs for solving real world problems using java collection frame work.
- Able to write programs using abstract classes.
- Able to write multithreaded programs.
- Able to write GUI programs using swing controls in Java.

III YEAR I SEMESTER

CS501PC: FORMAL LANGUAGES AND AUTOMATA THEORY

Course Outcomes

- Able to understand the concept of abstract machines and their power to recognize the languages.
- Able to employ finite state machines for modeling and solving computing problems.
- Able to design context free grammars for formal languages.
- Able to distinguish between decidability and undecidability.
- Able to gain proficiency with mathematical tools and formal methods.

CS502PC: SOFTWARE ENGINEERING

Course Outcomes

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

GURU NANAK INSTITUTE OF TECHNOLOGY

CS503PC: COMPUTER NETWORKS

Course Outcomes

- Gain the knowledge of the basic computer network technology.
- Gain the knowledge of the functions of each layer in the OSI and TCP/IP reference model.
- Obtain the skills of subnetting and routing mechanisms.
- Familiarity with the essential protocols of computer networks, and how they can be applied in network design and implementation.

CS504PC: WEB TECHNOLOGIES

Course Outcomes

- Gain knowledge of client-side scripting, validation of forms and AJAX programming
- understand server-side scripting with PHP language
- understand what is XML and how to parse and use **XML** Data with Java
- To introduce Server-side programming with Java Servlets and JSP

CS515PE: PRINCIPLES OF PROGRAMMING LANGUAGES

Course Outcomes

- Acquire the skills for expressing syntax and semantics in formal notation
- Identify and apply a suitable programming paradigm for a given computing application
- Gain knowledge of and able to compare the features of various programming languages

CS524PE: DISTRIBUTED DATABASES

Course Outcomes:

- Understand theoretical and practical aspects of distributed database systems.
- Study and identify various issues related to the development of distributed database system.
- Understand the design aspects of object-oriented database system and related development.

CS505PC: SOFTWARE ENGINEERING LAB

Course Outcomes

- Ability to translate end-user requirements into system and software requirements
- Ability to generate a high-level design of the system from the software requirements
- Will have experience and/or awareness of testing problems and will be able to develop a simple testing report

CS506PC: COMPUTER NETWORKS AND WEB TECHNOLOGIES LAB

Course Outcomes

- Implement data link layer framing methods
- Analyze error detection and error correction codes.
- Implement and analyze routing and congestion issues in network design.
- Implement Encoding and Decoding techniques used in presentation layer
- To be able to work with different network tools

III YEAR II SEMESTER

CS601PC: MACHINE LEARNING

Course Outcomes

- Understand the concepts of computational intelligence like machine learning
- Ability to get the skill to apply machine learning techniques to address the real time problems in different areas
- Understand the Neural Networks and its usage in machine learning application.

GURU NANAK INSTITUTE OF TECHNOLOGY

CS602PC: COMPILER DESIGN

Course Outcomes:

- Demonstrate the ability to design a compiler given a set of language features.
- Demonstrate the the knowledge of patterns, tokens & regular expressions for lexical analysis.
- Acquire skills in using lex tool & yacc tool for develeoping a scanner and parser.
- Design and implement LL and LR parsers
- Design algorithms to do code optimization in order to improve the performance of a program in terms of space and time complexity.
- Design algorithms to generate machine code.

CS603PC: DESIGN AND ANALYSIS OF ALGORITHMS

Course Outcomes

- Ability to analyze the performance of algorithms
- Ability to choose appropriate data structures and algorithm design methods for a specified application
- Ability to understand how the choice of data structures and the algorithm design methods impact the performance of programs

CS615PE: SOFTWARE TESTING METHODOLOGIES

Course Outcomes:

- Design and develop the best test strategies in accordance to the development model.

EC600OE: FUNDAMENTALS OF INTERNET OF THINGS

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

- Known basic protocols in sensor networks.
- Program and configure Arduino boards for various designs.
- Python programming and interfacing for Raspberry Pi.
- Design IoT applications in different domains.

CS604PC: MACHINE LEARNING LAB

Course Outcomes: After the completion of the course the student can able to:

- understand complexity of Machine Learning algorithms and their limitations;
- understand modern notions in data analysis-oriented computing;
- be capable of confidently applying common Machine Learning algorithms in practice and implementing their own;
- Be capable of performing experiments in Machine Learning using real-world data.

CS605PC: COMPILER DESIGN LAB

Course Outcomes

- Design and develop interactive and dynamic web applications using HTML, CSS, JavaScript and XML
- Apply client-server principles to develop scalable and enterprise web applications.
- Ability to design, develop, and implement a compiler for any language.
- Able to use lex and yacc tools for developing a scanner and a parser.
- Able to design and implement LL and LR parsers.

CS625PE: SOFTWARE TESTING METHODOLOGIES LAB

Course Outcome:

- Design and develop the best test strategies in accordance to the development model.

MC609: ENVIRONMENTAL SCIENCE

Course Outcomes: 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.

GURU NANAK INSTITUTE OF TECHNOLOGY

IV YEAR I SEMESTER

CS701PC: DATA MINING

Course Outcomes:

- Ability to perform the preprocessing of data and apply mining techniques on it.
- Ability to identify the association rules, classification and clusters in large data sets.
- Ability to solve real world problems in business and scientific information using data mining
- Ability to classify web pages, extracting knowledge from the web

CS702PC: PRINCIPLES OF PROGRAMMING LANGUAGES

Course Outcomes:

- Ability to express syntax and semantics in formal notation.
- Ability to apply suitable programming paradigm for the application.
- Ability to compare the features of various programming languages.
- Able to understand the programming paradigms of modern programming languages.
- Able to understand the concepts of ADT and OOP.
- Ability to program in different language paradigms and evaluate their relative benefits.

CS721PE: PYTHON PROGRAMMING

Course Outcomes: The students should be able to:

- Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
- Demonstrate proficiency in handling Strings and File Systems.
- Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
- Interpret the concepts of Object-Oriented Programming as used in Python.
- Implement exemplary applications related to Network Programming, Web Services and Databases in Python.

CS734PE: SOFTWARE PROCESS AND PROJECT MANAGEMENT

Course Outcomes:

- Gain knowledge of software economics, phases in the life cycle of software development, project organization, project control and process instrumentation
- Analyze the major and minor milestones, artifacts and metrics from management and technical perspective Design and develop software product using conventional and modern principles of software project management.

CS742PE: CLOUD COMPUTING

Course Outcomes:

- Ability to understand various service delivery models of a cloud computing architecture.
- Ability to understand the ways in which the cloud can be programmed and deployed.
- Understanding cloud service providers.

CS703PC: DATA MINING LAB

Course Outcomes:

- Ability to add mining algorithms as a component to the exiting tools
- Ability to apply mining techniques for realistic data.

CS751PC: PYTHON PROGRAMMING LAB

Course Outcomes:

- Student should be able to understand the basic concepts scripting and the contributions of scripting language
- Ability to explore python especially the object oriented concepts, and the built in objects of Python.
- Ability to create practical and contemporary applications such as TCP/IP network programming, Web applications, discrete event simulations.

GURU NANAK INSTITUTE OF TECHNOLOGY

IV YEAR II SEMESTER

CS863PE: COMPUTER FORENSICS

Course Outcomes:

- Students will understand the usage of computers in forensic, and how to use various forensic tools for a wide variety of investigations.
- It gives an opportunity to students to continue their zeal in research in computer forensics.

EE833OE: ORGANIZATIONAL BEHAVIOUR

Course Outcomes: Upon the completion of the subject, the student will be able to

- Analyse the behaviour of individuals and groups in organizations in terms of the key factors that influence organizational behaviour.
- Assess the potential effects of organizational level factors (such as structure, culture and change) on organizational behaviour.
- Critically evaluate the potential effects of important developments in the external environment (such as globalization and advances in technology) on organizational behaviour.
- Analyse organizational behavioural issues in the context of organizational behaviour theories, models and concepts.

Anthony Raju
HOD-CSE

GURU NANAK INSTITUTE OF TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

PROGRAM EDUCATIONAL OBJECTIVES

PEO 1: Graduates shall have the ability to apply knowledge across the Branches and in emerging areas of CE/ME/EEE/ECE/CSE/IT for higher studies, research, employability and handle the realistic problems.

PEO 2: Graduates shall have good communication skills, to possess ethical conduct, sense of responsibility to serve the society, and protect the environment.

PEO 3: Graduates shall have strong foundation in academic excellence, soft skills, managerial skills, leadership qualities and understand the need for lifelong learning for a successful professional career.

PROGRAM SPECIFIC OBJECTIVES

PSO 1: To demonstrate basic knowledge in the areas such as Software Engineering, Data communication and Networking, Data base management, Web Technology and Operating Systems for building IT applications

PSO 2: To analyze common business functions and identify, design and develop appropriate information technology solutions and integrate into the user environment

PSO 3: The ability to develop software projects using standard practices and suitable programming environment and to apply knowledge in exploring and adopting latest technologies.

GURU NANAK INSTITUTE OF TECHNOLOGY

PROGRAMME OUTCOMES:

Engineering Graduates will be able to:

- Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics natural science, and engineering sciences.
- Design / development of solutions:** Design solutions for complex engineering problems and design system components or process that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, society and environmental consideration.
- 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.
- 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.
- 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.
- 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.
- Ethics:** Apply ethics principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 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.
- 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 an team, to manage projects and in multidisciplinary environments.
- 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.

GURU NANAK INSTITUTE OF TECHNOLOGY

B.TECH II Year I Semester

CS301ES: ANALOG AND DIGITAL ELECTRONICS

COURSE OUTCOMES

- Know the characteristics of various components.
- Understand the utilization of components.
- Design and analyze small signal amplifier circuits.
- Learn Postulates of Boolean algebra and to minimize combinational functions
- Design and analyze combinational and sequential circuits
- Know about the logic families and realization of logic gates.

CS302PC: DATA STRUCTURES

COURSE OUTCOMES

- Ability to select the data structures that efficiently model the information in a problem.
- Ability to assess efficiency trade-offs among different data structure implementations or combinations.
- Implement and know the application of algorithms for sorting and pattern matching.
- Design programs using a variety of data structures, including hash tables, binary and general tree structures, search trees, tries, heaps, graphs, and AVL-trees.

MA303BS: COMPUTER ORIENTED STATISTICAL METHODS

COURSE OUTCOMES

- Know the characteristics of various components.
- Understand the utilization of components.
- Design and analyze small signal amplifier circuits.
- Learn Postulates of Boolean algebra and to minimize combinational functions
- Design and analyze combinational and sequential circuits
- Know about the logic families and realization of logic gates.

IT304PC: COMPUTER ORGANIZATION AND MICROPROCESSOR

COURSE OUTCOMES

- Able to understand the basic components and the design of CPU, ALU and Control Unit.
- Ability to understand memory hierarchy and its impact on computer cost/performance.
- Ability to understand the advantage of instruction level parallelism and pipelining for high performance Processor design.
- Ability to understand the instruction set, instruction formats and addressing modes of 8086.
- Ability to write assembly language programs to solve problems.

GURU NANAK INSTITUTE OF TECHNOLOGY

CS305PC: OBJECT ORIENTED PROGRAMMING USING C++ **COURSE OUTCOMES**

- Able to develop programs with reusability
- Develop programs for file handling
- Handle exceptions in programming
- Develop applications for a range of problems using object-oriented programming techniques

CS306ES: ANALOG AND DIGITAL ELECTRONICS LAB

COURSE OUTCOMES

- Know the characteristics of various components.
- Understand the utilization of components.
- Design and analyze small signal amplifier circuits.
- Postulates of Boolean algebra and to minimize combinational functions
- Design and analyze combinational and sequential circuits
- Known about the logic families and realization of logic gates.

CS307PC: DATA STRUCTURES LAB

COURSE OUTCOMES

- Ability to develop C programs for computing and real-life applications using basic elements like control statements, arrays, functions, pointers and strings, and data structures like stacks, queues and linked lists.
- Ability to Implement searching and sorting algorithms

CS309PC: C++ PROGRAMMING LAB

COURSE OUTCOMES

- Ability to develop applications for a range of problems using object-oriented programming Techniques

GURU NANAK INSTITUTE OF TECHNOLOGY

*MC309/*MC409: GENDER SENSITIZATION LAB

COURSE OUTCOMES

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

GURU NANAK INSTITUTE OF TECHNOLOGY

B.TECH II Year II Semester

CS401PC: DISCRETE MATHEMATICS

COURSE OUTCOMES

- Ability to understand and construct precise mathematical proofs
- Ability to use logic and set theory to formulate precise statements
- Ability to analyze and solve counting problems on finite and discrete structures
- Ability to describe and manipulate sequences
- Ability to apply graph theory in solving computing problems

SM402MS/SM305MS: BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

COURSE OUTCOMES

- 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

CS403PC: OPERATING SYSTEMS

COURSE OUTCOMES

- Will be able to control access to a computer and the files that may be shared
- Demonstrate the knowledge of the components of computer and their respective roles in computing.
- Ability to recognize and resolve user problems with standard operating environments.
- Gain practical knowledge of how programming languages, operating systems, and architectures interact and how to use each effectively.

CS404PC: DATABASE MANAGEMENT SYSTEMS

COURSE OUTCOMES

- Gain knowledge of fundamentals of DBMS, database design and normal forms
- Master the basics of SQL for retrieval and management of data.
- Be acquainted with the basics of transaction processing and concurrency control.
- Familiarity with database storage structures and access techniques

GURU NANAK INSTITUTE OF TECHNOLOGY

CS405PC: JAVA PROGRAMMING

COURSE OUTCOMES

- Able to solve real world problems using OOP techniques.
- Able to understand the use of abstract classes.
- 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

CS406PC: OPERATING SYSTEMS LAB

COURSE OUTCOMES

- Simulate and implement operating system concepts such as scheduling, deadlock management, file management and memory management.
- Able to implement C programs using Unix system calls

CS407PC: DATABASE MANAGEMENT SYSTEMS LAB

COURSE OUTCOMES

- Design database schema for a given application and apply normalization
- Acquire skills in using SQL commands for data definition and data manipulation.
- Develop solutions for database applications using procedures, cursors and triggers

CS408PC: JAVA PROGRAMMING LAB

COURSE OUTCOMES

- Able to write programs for solving real world problems using java collection frame work.
- Able to write programs using abstract classes.
- Able to write multithreaded programs.
- Able to write GUI programs using swing controls in Java.

GURU NANAK INSTITUTE OF TECHNOLOGY

B.Tech III Year –I Semester

CS501PC: FORMAL LANGUAGES AND AUTOMATA THEORY

COURSE OUTCOMES

- Able to understand the concept of abstract machines and their power to recognize the languages.
- Able to employ finite state machines for modeling and solving computing problems.
- Able to design context free grammars for formal languages.
- Able to distinguish between decidability and undecidability.
- Able to gain proficiency with mathematical tools and formal methods.

CS502PC: SOFTWARE ENGINEERING

COURSE OUTCOMES

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

IT503PC: DATA COMMUNICATION AND COMPUTER NETWORKS

COURSE OUTCOMES

- Students should be understand and explore the basics of Computer Networks and Various Protocols. He/She will be in a position to understand the World Wide Web concepts.
- Students will be in a position to administrate a network and flow of information further he/she can understand easily the concepts of network security, Mobile and ad hoc networks

IT504PC: WEB PROGRAMMING

COURSE OUTCOMES

- Design web pages.
- Use technologies of Web Programming.
- Apply object-oriented aspects to Scripting.
- Create databases with connectivity using JDBC.
- Build web-based application using sockets.

GURU NANAK INSTITUTE OF TECHNOLOGY

CS515PE: PRINCIPLES OF PROGRAMMING LANGUAGES (Professional Elective - I)

COURSE OUTCOMES

- Acquire the skills for expressing syntax and semantics in formal notation
- Identify and apply a suitable programming paradigm for a given computing application
- Gain knowledge of and able to compare the features of various programming languages

CS522PE: ADVANCED OPERATING SYSTEMS (Professional Elective - II)

COURSE OUTCOMES

- Understand the design approaches of advanced operating systems
- Analyze the design issues of distributed operating systems.
- Evaluate design issues of multi processor operating systems.
- Identify the requirements Distributed File System and Distributed Shared Memory.
- Formulate the solutions to schedule the real time applications.

CS505PC: SOFTWARE ENGINEERING LAB

COURSE OUTCOMES

- Ability to translate end-user requirements into system and software requirements
- Ability to generate a high-level design of the system from the software requirements
- Will have experience and/or awareness of testing problems and will be able to develop a simple testing report

IT506PC: COMPUTER NETWORKS & WEB PROGRAMMING LAB

COURSE OUTCOMES

- Implement data link layer framing methods
- Analyze error detection and error correction codes.
- Implement and analyze routing and congestion issues in network design.
- Implement Encoding and Decoding techniques used in presentation layer
- To be able to work with different network tools

GURU NANAK INSTITUTE OF TECHNOLOGY

B.Tech III Year –II Semester

IT601PC: INTRODUCTION TO EMBEDDED SYSTEMS

COURSE OUTCOMES

- Expected to understand the selection procedure of processors in the embedded domain.
- Design procedure of embedded firm ware.
- Expected to visualize the role of realtime operating systems in embedded systems.
- Expected to evaluate the correlation between task synchronization and latency issues

IT602PC: PRINCIPLES OF COMPILER CONSTRUCTION

COURSE OUTCOMES

- Ability to design, develop, and implement a compiler for any language.
- Able to use lex and yacc tools for developing a scanner and a parser.
- Able to design and implement LL and LR parsers. Able to design algorithms to perform code optimization in order to improve the performance of a program in terms of space and time complexity.
- Ability to design algorithms to generate machine code.

IT603PC: ALGORITHM DESIGN AND ANALYSIS

COURSE OUTCOMES

- Ability to analyze the performance of algorithms
- Ability to choose appropriate data structures and algorithm design methods for a specified application
- Ability to understand how the choice of data structures and the algorithm design methods impact the performance of programs

IT604PC: INTERNET OF THINGS

COURSE OUTCOMES

- Interpret the impact and challenges posed by IoT networks leading to new architectural models. Compare and contrast the deployment of smart objects and the technologies to connect them to network.
- Appraise the role of IoT protocols for efficient network communication.
- Elaborate the need for Data Analytics and Security in IoT.
- Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry.

GURU NANAK INSTITUTE OF TECHNOLOGY

CS614PE: MOBILE APPLICATION DEVELOPMENT (Professional Elective - III) **COURSE OUTCOMES**

- Student understands the working of Android OS Practically.
- Student will be able to develop Android user interfaces
- Student will be able to develop, deploy and maintain the Android Applications.

IT606PC: COMPILER CONSTRUCTION LAB

COURSE OUTCOMES

- Design and develop interactive and dynamic web applications using HTML, CSS, JavaScript and XML
- Apply client-server principles to develop scalable and enterprise web applications.
- Ability to design, develop, and implement a compiler for any language.
- Able to use lex and yacc tools for developing a scanner and a parser.
- Able to design and implement LL and LR parsers.

CS623PE: SCRIPTING LANGUAGES LAB (Professional Elective - III)

COURSE OUTCOMES

- Ability to understand the differences between Scripting languages and programming languages
- Able to gain some fluency programming in Ruby, Perl, TCL

CS624PE: MOBILE APPLICATION DEVELOPMENT LAB (Professional Elective - III)

COURSE OUTCOMES

- Student understands the working of Android OS Practically.
- Student will be able to develop user interfaces.
- Student will be able to develop, deploy and maintain the Android Applications.

***MC609: ENVIRONMENTAL SCIENCE**

COURSE OUTCOMES

- 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

GURU NANAK INSTITUTE OF TECHNOLOGY

IV Year B.Tech. IT I - Sem

IT701PC: INFORMATION SECURITY

COURSE OUTCOMES

- Demonstrate the knowledge of cryptography, network security concepts and applications.
- Ability to apply security principles in system design.

CS702PC: DATA MINING COURSE OUTCOMES

- 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.
- Apply preprocessing methods for any given raw data.
- Extract interesting patterns from large amounts of data.
- Discover the role played by data mining in various fields.
- Choose and employ suitable data mining algorithms to build analytical applications
- Evaluate the accuracy of supervised and unsupervised models and algorithms.

CS714PE: CLOUD COMPUTING (Professional Elective - IV)

COURSE OUTCOMES

- Ability to understand various service delivery models of a cloud computing architecture.
- Ability to understand the ways in which the cloud can be programmed and deployed.
- Understanding cloud service providers.

CS725PE: SOFTWARE PROCESS & PROJECT MANAGEMENT (Professional Elective - V)

COURSE OUTCOMES

- Gain knowledge of software economics, phases in the life cycle of software development, project organization, project control and process instrumentation
- Analyze the major and minor milestones, artifacts and metrics from management and technical perspective
- Design and develop software product using conventional and modern principles of software project management

GURU NANAK INSTITUTE OF TECHNOLOGY

IV Year B.Tech. IT I - Sem

SM801MS: Organizational Behavior

COURSE OUTCOMES

- To understand the conceptual framework of the discipline of OB and its practical applications in the organizational set up.
- To deeply understand the role of individual, groups and structure in achieving organizational goals effectively and efficiently.
- To critically evaluate and analyze various theories and models that contributes in the overall understanding of the discipline.
- To develop creative and innovative ideas that could positively shape the organizations.
- To accept and embrace in working with different people from different cultural and diverse background in the workplace.

CS814PE: HUMAN COMPUTER INTERACTION (Professional Elective - VI)

COURSE OUTCOMES

- Ability to apply HCI and principles to interaction design.
- Ability to design certain tools for blind or PH people.



HOD IT

GURU NANAK INSTITUTE OF TECHNOLOGY

DEPARTMENT OF MBA

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO-1: Students will establish themselves as effective professionals by solving real problems through the use of management science/practices knowledge and with attention to team work, effective communication, critical thinking and problem-solving skills.

PEO-2: Students will develop professional skills that prepare/reinforce them for immediate employment and for life-long learning in advanced areas of management and related fields.

PEO-3: Students will demonstrate their ability to adapt to a rapidly changing environment by having learned and applied new skills and new competencies.

PROGRAMME OUTCOMES (POS)

PO1: Apply knowledge of management theories and practices to solve business problems.

PO2: Foster analytical and critical thinking abilities for data-based decision making.

PO3: Ability to develop Value based Leadership ability.

PO4: Ability to understand, analyze and communicate global, economic, legal, and ethical aspects of business.

PO5: Ability to lead themselves and others in the achievement of organizational goals, contributing effectively to a team environment.

PO6: Adapt and develop research acumen.

PO7: Develop the entrepreneurial skills.

PO8: Choose the best possible investment decisions for an enterprise.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO1: To prepare graduates who will design business solutions for problems across the various functional domain of Management.

PSO2: To prepare graduates who will contribute to the growth and development of the society through their research acumen and entrepreneurial skills.

PSO3: To prepare job ready graduates who are equipped with the requisite interpersonal skills and aptitude.

GURU NANAK INSTITUTE OF TECHNOLOGY

MBA I YEAR I SEMESTER

COURSE OUTCOMES

19MBA01: MANAGEMENT & ORGANIZATIONAL BEHAVIOR

- CO1 Understand Evolution of Management and contribution of Management thinkers
- CO2 Explain the relevance of environmental scanning, planning and to take decisions
- CO3 Understand organizing and controlling
- CO4 Differentiate individual and group behavior
- CO5 Explain Leadership and Motivation

19MBA02: BUSINESS ECONOMICS

- CO1 Understand Economic Principles in Business
- CO2 Forecast Demand and Supply
- CO3 Predict Production and Cost Estimates
- CO4 Analyze Market Structure and Pricing Practices

19MBA03: FINANCIAL ACCOUNTING AND ANALYSIS

- CO1 Understand Principles of Accounting, Accounting Process
- CO2 Compute Inventory Valuation
- CO3 Preparation, Analysis and Interpretation of Financial Statements

19MBA04: RESEARCH METHODOLOGY AND STATISTICAL ANALYSIS

- CO1 Understand conceptual overview of Research
- CO2 Apply, analyze various simple & advanced statistical tools
- CO3 Apply the principles of research methodology for various projects

19MBA05: LEGAL AND BUSINESS ENVIRONMENT

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CO1 Business Laws related to incorporating a company

CO2 Law of contract and Negotiable Instruments

CO3 Regulatory framework in India

19MBA06C: TECHNOLOGY MANAGEMENT

CO1 Understand importance of Technological Innovation

CO2 Understand importance of Research and development in technology management

CO3 Forecasting of Technology

19MBA07 BUSINESS COMMUNICATIONS (LAB)

CO1 Understand the importance of Communication in Business

CO2 Develop writing skills and presentation

CO3 Writing business proposals and letters

CO4 Application of business communication in the self-development process

19MBA08: STATISTICAL DATA ANALYSIS LAB

CO1 Analyse and apply the statistical tools for decision making

CO2 Hypotheses Testing

CO3 Discussion of Results for better decision making

MBA I YEAR II SEMESTER

COURSE OUTCOMES

19MBA08: HUMAN RESOURCE MANAGEMENT

CO1 Understand basic HR concepts

CO2 Explain process of recruitment and selection,

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- CO3 Analyze learning and development
- CO4 Performance Management and Compensation
- CO5 Evaluate employee retention strategies
- CO6 Explain importance of employee welfare and grievances.

19MBA09: MARKETING MANAGEMENT

- CO1 Understand concepts of marketing management
- CO2 Analyze markets and design customer driven strategies
- CO3 Communicate the decisions towards business development with superior customer value.

19MBA10: FINANCIAL MANAGEMENT

- CO1 Understand goals of financial function
- CO2 Understand investment criteria and decision process
- CO3 Illustrate capital structure and Dividend Decisions
- CO4 Understand asset Liability management

19MBA11: QUANTITATIVE ANALYSIS FOR BUSINESS DECISIONS

- CO1 Understand origin and application of OR
- CO2 Understand Linear Programming Method
- CO3 Understand Decision Theory and queuing theory. These concepts help the student in taking decisions for business.

19MBA12: ENTREPRENEURSHIP

- CO1 Understand mindset of the entrepreneurs
- CO2 Identify ventures for launching
- CO3 Develop an idea on the legal framework and
- CO4 Understand strategic perspectives in entrepreneurship

19MBA13D: LOGISTICS SUPPLY CHAIN MANAGEMENT

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- CO1 Understand growing importance of Supply Chain Management
- CO2 Understand SCM Costs and Performance
- CO3 Explain benchmarking in SCM
- CO4 Insight sourcing and transportation
- CO5 Global aspects in SCM

19MBA13C: INTERNATIONAL BUSINESS

- CO1 Understand importance of International Business
- CO2 Explain international Trade theories
- CO3 Explain international Economic environment
- CO4 Highlight strategic and operational issues of IB.

MBA II YEAR I SEMESTER

COURSE OUTCOMES

17MBA15: PRODUCTION AND OPERATIONS MANAGEMENT

- CO1 Understand concepts of Operations management
- CO2 Develop product & process design, analysis
- CO3 Analyze plant location and layout
- CO4 Scheduling and Material Management

17MBA16: MANAGEMENT INFORMATION SYSTEM

- CO1 Understand concepts & applications of Management Information Systems
- CO2 Explain information Systems Planning & Implementations.
- CO3 Understand cyber-crime and information security.

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17MBA17: DATA ANALYTICS

- CO1 Understand importance of Analytics
- CO2 Understanding the analytical tools
- CO3 Application of Analytical tools to solve business problems.

17MBA18M1: DIGITAL MARKETING

- CO1 Applying of digital marketing in the globalized market
- CO2 Illustrate channels of Digital Marketing
- CO3 Explain digital marketing plan
- CO4 Understand search engine marketing
- CO5 Explain online Advertising

17MBA19M2: ADVERTISING AND SALES MANAGEMENT

- CO1 Explain importance of Sales Management, Sales Planning and Budgeting
- CO2 Understand need for distribution channels and managing them.
- CO3 Discuss challenges of advertising
- CO4 Determine factors affecting pricing

17MBA20M3: CONSUMER BEHAVIOR

- CO1 Understand consumer behaviour
- CO2 Explain environmental influences on consumer behavior
- CO3 Explain perception and attitude of consumers
- CO4 Analyze consumer decision making
- CO5 Highlight marketing ethics towards consumers.

17MBA18F1: SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT

- CO1 Understand Indian Investment Environment
- CO2 Explain portfolio Analysis

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- CO3 Interpret bond valuation and management
- CO4 Understand equity valuation of Cash market and derivatives

17MBA19F2: FINANCIAL INSTITUTIONS, MARKETS, AND SERVICES

- CO1 Give introduction to Indian Financial system
- CO2 Identify banking and Non-Banking Institutions
- CO3 Differentiate financial and Securities markets
- CO4 Recognize fund and Fee based services

17MBA20F3: STRATEGIC MANAGEMENT ACCOUNTING

- CO1 Understand fundamentals of Management accounting and Cost accounting
- CO2 Explain cost analysis
- CO3 Illustrate marginal costing
- CO4 Differentiate budget and Budgetary controls.

17MBA18H1: PERFORMANCE MANAGEMENT SYSTEMS

- CO1 Explain significance of Performance Management
- CO2 Understand communication of Performance Management
- CO3 Elucidate performance Management and Development of Employees
- CO4 Explain reward System
- CO5 Highlight other performance related concepts

17MBA19H2: LEARNING AND DEVELOPMENT

- CO1 Explain importance of Learning performance
- CO2 Understand training and Development
- CO3 Understand training Need Analysis
- CO4 Identify training Methods

17MBA20H3: MANAGEMENT OF INDUSTRIAL RELATIONS

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- CO1 Explain importance of Industrial Relations
- CO2 Understand collective Bargaining Mechanism
- CO3 Identify parties and role in Industrial Relations
- CO4 Understand about Legislation aspects

MBA II YEAR II SEMESTER

COURSE OUTCOMES

17MBA21: STRATEGIC MANAGEMENT

- CO1 Understand strategic management concepts
- CO2 Explain tools and Techniques for Strategic analysis
- CO3 Explain strategies for competing in globalized markets
- CO4 Evaluate strategy Evaluation and Control.

17MBA22M4: CUSTOMER RELATIONSHIP MANAGEMENT

- CO1 Understand need of CRM
- CO2 Explain building customer relations
- CO3 Evaluate CRM process
- CO4 Analyze CRM structures
- CO5 Explain planning and Implementation of CRM

17MBA23M5: INTERNATIONAL MARKETING

- CO1 Understand global Marketing Management
- CO2 Understand environment of global markets

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- CO3 Assessing Global Market Opportunities
- CO4 Developing and Implementing Global Marketing Strategies

17MBA24M6: MARKETING OF SERVICES

- CO1 Explain marketing Management of companies offering Services
- CO2 Explain characteristics of services
- CO3 Understand consumer behaviour in services
- CO4 Align service design and standards
- CO5 Delivering service, managing services promises

17MBA22F4: INTERNATIONAL FINANCIAL MANAGEMENT

- CO1 Understand international Financial Management
- CO2 Explain Balance of Payments
- CO3 Evaluate Foreign Exchange Markets
- CO4 Differentiate Asset and liability Management

17MBA23F5: STRATEGIC INVESTMENT AND FINANCING DECISIONS

- CO1 Evaluate Investment Decisions in Risk and uncertainty
- CO2 Explain strategic investment decisions
- CO3 Apply investment Appraisal Techniques
- CO4 Explain Financing Decisions

17MBA24F6: RISK MANAGEMENT

- CO1 Understand concepts of Risk Management
- CO2 Evaluate Risk Management Measurement
- CO3 Understand Risk Management using Forward and Futures
- CO4 Understand Risk Management using Options and Swaps.

17MBA22H4: INTERNATIONAL HUMAN RESOURCE MANAGEMENT

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- CO1 Understand cultural aspects of IHRM
- CO2 Explain role of IHRM in Successful MNC
- CO3 Explain global human Resource Planning
- CO4 Understand training and development of Global employees
- CO5 Evaluate Performance Management of Global employees

17MBA23H5: LEADERSHIP AND CHANGE MANAGEMENT

- CO1 Explain Leadership, Role and function of a Leader
- CO2 Explain leadership theories and styles
- CO3 Understand organizational change concepts
- CO4 Understand perspectives of change
- CO5 Evaluate strategies for Managing change

17MBA24H6: TALENT AND KNOWLEDGE MANAGEMENT

- CO1 Explain Talent Management Process
- CO2 Explain succession and career planning approaches
- CO3 Understand knowledge management aspects
- CO4 Evaluate knowledge management assessment and solutions



HOD MBA

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