

College Code: QA

BRILLIANT INSTITUTE OF ENGINEERING & TECHNOLOGY

(Sponsored by: Brilliant Grammar School Educational Society)

(Approved by AICTE, New Delhi, Affiliated to JNTU-Hyderabad)

Abdullapur (V), Abdullapurmet (M), R.R. Dist – 501505, Telangana, India

Website: www.b-iet.ac.in, e-mail: principal@b-iet.ac.in Contact No.: +919652929786

CO's and PO's For All Courses (A.Y 2023-24)

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PRINCIPAL
BRILLIANT INSTITUTE OF
ENGINEERING AND TECHNOLOGY
Vil &Mdt: Abdullapurmet, R.R.Dist-501505.



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Civil Engineering I & II Sem Course Outcomes For The Academic Year (2023-2024)

S.NO	YEAR/SEM	COURSE NAME	COURSE OUTCOMES
1	II/I	Surveying and Geomatics	CO1: Apply the knowledge to calculate angles, distances and levels
			CO2: Identify data collection methods and prepare field notes
			CO3: Understand the working principles of survey instruments,
			CO4: Measurement errors and corrective measures
			CO5: Interpret survey data and compute areas and volumes, levels by different type of equipment and relate the knowledge to the modern equipment and methodologies
2	II/I	Engineering Geology	CO1: Site characterization and how to collect, analyze, and report geologic data using standards in engineering practice
			CO2: Understand weathering process and mass movement
			CO3: Identify geological structures and process for rock mass quality
			CO4: The fundamentals of the engineering properties of Earth materials and fluids.
			CO5: Rock mass characterization and the mechanics of planar rock slides and topples
3	II/I	Strength of materials-I	CO1: Describe the concepts and principles, understand the theory of elasticity including strain/displacement and Hooke's law relationships;
			CO2: Perform calculations, related to the strength of structured and mechanical components.
			CO3: Recognize various types loads applied on structural components of simple framing geometries and understand the nature of internal stresses that will develop within the components.
			CO4: To evaluate the strains and deformation that will result due to the elastic stresses developed within the materials for simple types of loading
			CO5: Analyze various situations involving structural members subjected to plane stresses by application of Mohr's circle of stress; Frame an idea to design a system, component, or process
4	II/I	Probability and	CO1: Formulate and solve problems involving random variables and apply statistical methods for analysing



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		Statics	<p>experimental data.</p> <p>CO2: Be able to use statistical concepts to analyse and interpret engineering data</p> <p>CO3: Equipping Students with essential tools for statistical analysis at the graduate level</p> <p>CO4: Understand concepts of discrete probability, conditional probability, and independence and be able to apply these concepts to engineering applications.</p> <p>CO5: Providing students with a formal treatment of probability theory</p>
5	II/I	Fluid Mechanics	<p>CO1: Understand the broad principles of fluid statics, kinematics and dynamics</p> <p>CO2: Understand definitions of the basic terms used in fluid mechanics and characteristics of fluids and its flow</p> <p>CO3: Understand classifications of fluid flow</p> <p>CO4: Be able to apply the continuity, momentum and energy principles</p> <p>CO5: Compute hydrostatic and hydrodynamic forces.</p>
6	II/I	Surveying Lab	<p>CO1: Apply the principle of surveying for civil Engineering Applications</p> <p>CO2: Calculation of areas, Drawing plans and contour maps using different measuring equipment at field level</p> <p>CO3: Write a technical laboratory report</p> <p>CO4: Determine distance between two inaccessible points with compass</p> <p>CO5: Perform reduced level and distances using tachometric survey.</p>
7	II/I	Strength of materials Lab	<p>CO1: Configure & Operate a data acquisition system using various testing machines of solid materials</p> <p>CO2: Compute and Analyze engineering values (e.g. stress or strain) from laboratory measurements.</p> <p>CO3: Write a technical laboratory report</p> <p>CO4: Determine hardness of metals</p> <p>CO5: Conduct flexural and torsion test to determine elastic constants</p>
8	II/I	Engineering geology Lab	<p>CO1: Understands the method and ways of investigations required for Civil Engg projects</p> <p>CO2: Identify the various rocks, minerals depending on geological classifications</p> <p>CO3: Will able to learn to couple geologic expertise with the engineering properties of rock</p> <p>CO4: Unconsolidated materials in the characterization of geologic sites for civil work projects</p> <p>CO5: Write a technical laboratory report</p>



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9	II/II	Basic Electrical and Electronics Engineering	CO1: To analyze and solve electrical circuits using network laws and theorems.
			CO2: To understand and analyze basic Electric and Magnetic circuits
			CO3: To study the working principles of Electrical Machines
			CO4: To introduce components of Low Voltage Electrical Installations
			CO5: To identify and characterize diodes and various types of transistors.
10	II/II	Basic Mechanical Engineering for Civil Engineers	CO1: To understand the mechanical equipment for the usage at civil engineering systems,
			CO2: To familiarize with the general principles and requirement for refrigeration, manufacturing,
			CO3: To realize the techniques employed to construct civil engineering systems.
			CO4: To understand and analyze basic electrical and agnetic circuits
			CO5: To study the working principles of electrical machines.
11	II/II	Building Materials, Construction and Planning	CO1: Define the Basic terminology that is used in the industry
			CO2: Categorize different building materials, properties and their uses
			CO3: Understand the Prevention of damage measures and good workmanship
			CO4: Explain different building services
			CO5: Explain different building plan services
12	II/II	Strength of Materials-II	CO1: Describe the concepts and principles, understand the theory of elasticity, and perform calculations, relative to the strength of structures and mechanical components in particular to torsion and direct compression;
			CO2: To evaluate the strains and deformation that will result due to the elastic stresses developed within the materials for simple types of loading
			CO3: Analyze strength and stability of structural members subjected to Direct, and Direct and Bending stresses;
			CO4: Understand and evaluate the shear center and unsymmetrical bending.
			CO5: Frame an idea to design a system, component, or process
13	II/II	Hydraulics and Hydraulic	CO1: Apply their knowledge of fluid mechanics in addressing problems in open channels and hydraulic machinery.



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		Machinery	<p>CO2: Understand and solve problems in uniform, gradually and rapidly varied flows in open channel in steady state conditions.</p> <p>CO3: Apply dimensional analysis and to differentiate the model, prototype and similitude conditions for practical problems.</p> <p>CO4: Get the knowledge on different hydraulic machinery devices and its principles that will be utilized in hydropower development and for other practical usages</p> <p>CO5: Students able to know the performance of single stage an multistage pumps.</p>
14	II/II	Structural Analysis-I	<p>CO1: An ability to apply knowledge of mathematics, science, and engineering</p> <p>CO2: Analyse the statically indeterminate bars and continuous beams</p> <p>CO3: Draw strength behaviour of members for static and dynamic loading.</p> <p>CO4: Calculate the stiffness parameters in beams and pin jointed trusses.</p> <p>CO5: Understand the indeterminacy aspects to consider for a total structural system.</p>
15	II/II	Computer Aided Civil Engineering Drawing	<p>CO1: Use the Autocad commands for drawing 2D & 3D building drawings required for different civil engg applications.</p> <p>CO2: Plan and draw Civil Engineering Buildings as per aspect and orientation.</p> <p>CO3: Presenting drawings as per user requirements and preparation of technical report</p> <p>CO4: Identifying software drafting tools</p> <p>CO5: Describing the history and development of AutoCAD in the drafting profession.</p>
16	II/II	Basic Electrical and Electronics Engineering Lab	<p>CO1: To analyze and solve electrical circuits using network laws and theorems.</p> <p>CO2: To understand and analyze basic Electric and Magnetic circuits</p> <p>CO3: To study the working principles of Electrical Machines</p> <p>CO4: To introduce components of Low Voltage Electrical Installations</p> <p>CO5: To identify and characterize diodes and various types of transistors.</p>
17	II/II	Hydraulics and	<p>CO1: Describe the basic measurement techniques of fluid mechanics and its appropriate application.</p>



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		Hydraulic Machinery Lab	<p>CO2: Interpret the results obtained in the laboratory for various experiments.</p> <p>CO3: Discover the practical working of Hydraulic machines- different types of Turbines, Pumps, and other miscellaneous hydraulics machines.</p> <p>CO4: Compare the results of analytical models introduced in lecture to the actual behavior of real fluid flows and draw correct and sustainable conclusions.</p> <p>CO5: Write a technical laboratory report</p>
18	II/II	Gender Sensitization Lab	<p>CO1: Students will have developed a better understanding of important issues related to gender in contemporary India.</p> <p>CO2: 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.</p> <p>CO3: Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.</p> <p>CO4: Students will acquire insight into the gendered division of labour and its relation to politics and economics.</p> <p>CO5: Men and women students and professionals will be better equipped to work and live together as equals.</p>
19	III/I	Structural Analysis-II	<p>CO1: Analyze the two hinged arches.</p> <p>CO2: Solve statically indeterminate beams and portal frames using classical methods</p> <p>CO3: Sketch the shear force and bending moment diagrams for indeterminate structures.</p> <p>CO4: Formulate the stiffness matrix and analyze the beams by matrix methods</p> <p>CO5: Analyze to know the influence lines for indeterminate structures</p>
20	III/I	Geotechnical Engineering	<p>CO1: Characterize and classify the soils</p> <p>CO2: Able to estimate seepage, stresses under various loading conditions and compaction characteristics</p> <p>CO3: Able to analyse the compressibility of the soils</p> <p>CO4: Able to understand the strength of soils under various drainage conditions</p> <p>CO5: Able to know the failure mechanism and the shear strength of soils</p>
21	III/I	Structural Engineering-I (RCC)	<p>CO1: Compare and Design the singly reinforced, doubly reinforced and flanged sections.</p> <p>CO2: Design the axially loaded, uniaxial and biaxial bending columns.</p>



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			<p>CO3: Classify the footings and Design the isolated square, rectangular and circular footings</p> <p>CO4: Distinguish and Design the one-way and two-way slabs.</p> <p>CO5: Students able to know the design of of footings for different foundations</p>
22	III/I	Transportation Engineering	<p>CO1: An ability to apply the knowledge of mathematics, science and engineering in the areas of traffic engineering, highway development and maintenance</p> <p>CO2: An ability to design, conduct experiments to assess the suitability of the highway materials like soil, bitumen, aggregates and a variety of bituminous mixtures. Also the students will develop the ability to interpret the results and assess the suitability of these materials for construction of highways.</p> <p>CO3: An ability to design flexible and rigid highway pavements for varying traffic compositions as well as soil subgrade and environmental conditions using the standards stipulated by Indian Roads Congress.</p> <p>CO4: An ability to evaluate the structural and functional conditions of in-service highway pavements and provide solution in the form of routine maintenance measures or designed overlays using Indian Roads congress guidelines.</p> <p>CO5: An ability to assess the issues related to road traffic and provide engineering solutions supported with an understanding of road user psychological and behavioural patterns.</p>
23	III/I	Concrete Technology	<p>CO1: Determine the properties of concrete ingredients i.e. cement, sand, coarse aggregate by conducting different tests. Recognize the effects of the rheology and early age properties of concrete on its long-term behavior.</p> <p>CO2: Apply the use of various chemical admixtures and mineral additives to design cement-based materials with tailor-made properties</p> <p>CO3: Use advanced laboratory techniques to characterize cement-based materials.</p> <p>CO4: Perform mix design and engineering properties of special concretes such as high-performance concrete, self-compacting concrete, and fibre reinforced concrete.</p> <p>CO5: Recognize the effects of rheology and early age properties of concrete on its long term behaviour</p>
24	III/I	Theory of	<p>CO1: The more fundamental elasticity model of deformation should replace elementary strength of material analysis.</p>



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		Elasticity	<p>CO2: Able to understand theory, formulate and to present solutions to a wide class of problems in 2D and 3D</p> <p>CO3: Acquire the foundation for advanced study in areas of solid mechanics</p> <p>CO4: To know relationship between forces applied to an object and the resulting deformations.</p> <p>CO5: To know the characterization of material behaviour</p>
25	III/I	Rock Mechanics	<p>CO1: Able to determine the required rock properties and classify rock mass</p> <p>CO2: Determination of bearing capacity of rocks,</p> <p>CO3: Checking the stability of slopes, and design underground and open excavation.</p> <p>CO4: The students will be able to predict strength of rock mass with respect to various Civil Engineering application</p> <p>CO5: To understand the applications of rock mechanics to infrastructure projects.</p>
26	III/I	Engineering Economics and Accountancy	<p>CO1: To perform and evaluate present and future worth of the alternate projects and to appraise projects by using traditional and DCF Methods.</p> <p>CO2: To carry out cost benefit analysis of projects and to calculate BEP of different alternative projects.</p> <p>CO3: Engineering economics allows those in industry to make strategic decisions for their companies.</p> <p>CO4: The course enables students to acquire the ability to use modern and classical engineering methodologies pertaining to cost analysis, break-even point calculation, engineering economic analysis etc.</p> <p>CO5: Engineering Economy furnishes several patterns of analysis to determine rate of return, annual costs and payout periods.</p>
27	III/I	Highway Engineering and Concrete Technology Lab	<p>CO1: Categorize the test on materials used Civil Engineering Building & Pavement constructions</p> <p>CO2: To perform the tests on concrete for it characterization.</p> <p>CO3: To Design Concrete Mix Proportioning by Using Indian Standard Method.</p> <p>CO4: Examine the tests performed for Bitumen mixes.</p> <p>CO5: To prepare a laboratory report</p>
28	III/I	Geotechnical Engineering Lab	<p>CO1: At the end of the course, the student will be able to Classify and evaluate the behavior of the soils subjected to various loads.</p> <p>CO2: Able to analyse the compressibility of the soils</p>



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			<p>CO3: Able to understand the strength of soils under various drainage conditions</p> <p>CO4: Able to know the failure mechanism and the shear strength of soils</p> <p>CO5: To understand the Characterization and classification the soils</p>
29	III/II	Hydrology and Water Resource Engineering	<p>CO1: Understand the different concepts and terms used in engineering hydrology</p> <p>CO2: To identify and explain various formulae used in estimation of surface and Ground water hydrology components</p> <p>CO3: Demonstrate their knowledge to connect hydrology to the field requirement</p> <p>CO4: To know the properties like permeability, transmissivity etc.</p> <p>CO5: Identify geological formations capable of storing and transporting ground water</p>
30	III/II	Environmental Engineering	<p>CO1: Assess characteristics of water and wastewater and their impacts</p> <p>CO2: Estimate quantities of water and waste water and plan conveyance components</p> <p>CO3: Design components of water and waste water treatment plants</p> <p>CO4: Be conversant with issues of air pollution and control</p> <p>CO5: To understand the concept of various unit operations and design of water treatment systems.</p>
31	III/II	Foundation Engineering	<p>CO1: understand the principles and methods of Geotechnical Exploration</p> <p>CO2: decide the suitability of soils and check the stability of slopes</p> <p>CO3: calculate lateral earth pressures and check the stability of retaining walls</p> <p>CO4: analyse and design the shallow and deep foundations</p> <p>CO5: Student will able to analyse and design of well foundations</p>
32	III/II	Structural Engineering-II (Steel)	<p>CO1: Analyze the tension members, compression members.</p> <p>CO2: Design the tension members, compression members and column bases and joints and connections</p> <p>CO3: Analyze and Design the beams including built-up sections and beam and connections.</p> <p>CO4: Identify and Design the various components of welded plate girder including stiffeners</p> <p>CO5: Analyze and design of roof trusses</p>
33	III/II	Prestressed	<p>CO1: Acquire the knowledge of evolution of process of</p>



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		Concrete	<p>prestressing.</p> <p>CO2: Acquire the knowledge of various prestressing techniques.</p> <p>CO3: Develop skills in analysis design of prestressed structural elements as per the IS codal provisions</p> <p>CO4: To develop transformation of stresses in pretensioned members</p> <p>CO5: Students will able to know the composite beams and deflections</p>
34	III/II	Elements of Earthquake Engineering	<p>CO1: Explain and derive fundamental equations in structural dynamics</p> <p>CO2: Discuss and explain causes and Theories on earthquake, seismic waves, measurement of earthquakes</p> <p>CO3: Evaluate base shear using IS methods</p> <p>CO4: Design and Detail the reinforcement for earthquake forces</p> <p>CO5: To understand earthquake damage, as well as structures that were not damaged, that engineers learn how to design and build more reliable structures.</p>
35	III/II	Advanced Structural Analysis	<p>CO1: Analyze the multistory building frames by various approximate methods.</p> <p>CO2: Solve the continuous beams, portal frames by matrix methods of analysis.</p> <p>CO3: Analyze and design of large frames with or without shear walls</p> <p>CO4: To understand a wise distribution of internal forces, moments, stresses, strains and displacements over the whole or part of a structure.</p> <p>CO5: It provides a basis for structural design</p>
36	III/II	Environmental Engineering Lab	<p>CO1: Understand about the equipment used to conduct the test procedures, Perform the experiments in the lab</p> <p>CO2: Examine and Estimate water, waste water, air and soil Quality</p> <p>CO3: Compare the water, air quality standards with prescribed standards set by the local governments</p> <p>CO4: Develop a report on the quality aspect of the environment</p> <p>CO5: Perform the experiments in lab</p>
37	III/II	Computer Aided Design Lab	<p>CO1: Model the geometry of real-world structure</p> <p>CO2: Represent the physical model of structural element/structure</p> <p>CO3: Perform analysis</p> <p>CO4: Interpret from the Post processing results</p> <p>CO5: Design the structural elements and a system as per IS</p>



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			Codes
38	III/II	Environmental Science	CO1: 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
			CO2: Get about knowledge about the ecosystem diversity its values
			CO3: Get about knowledge about the different types of resources like land, water, mineral etc.
			CO4: Get the information about ecosystem and also about its functions
			CO5: Gain the knowledge about different types of pollutions and their control technologies.
39	IV-I	Estimation, Costing and Project Management	CO1: understand the technical specifications for various works to be performed for a project and how they impact the cost of a structure.
			CO2: quantify the worth of a structure by evaluating quantities of constituents, derive their cost rates and build up the overall cost of the structure.
			CO3: understand how competitive bidding works and how to submit a competitive bid proposal.
			CO4: An idea of how to optimize construction projects based on costs
			CO5: An idea how construction projects are administered with respect to contract structures and issues.
40	IV-I	Remoting Sensing & GIS	CO1: Describe different concepts and terms used in Remote Sensing and its data
			CO2: Understand the Data conversion and Process in different coordinate systems of GIS interface
			CO3: Evaluate the accuracy of Data and implementing a GIS
			CO4: Understand the applicability of RS and GIS for various applications.
			CO5: To know how the electromagnetic spectrum interacts with the terrestrial environment
41	IV-I	Ground Improvement and Techniques	CO1: Know the necessity of ground improvement
			CO2: Understand the various ground improvement techniques available
			CO3: Select & design suitable ground improvement technique for existing soil conditions in the field
			CO4: Explain the various grouting techniques and its applications for improving load bearing of beneath soils.
			CO5: Apply the methods of physical, chemical, mechanical and hydraulic for obtaining void less soils



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42	IV-I	Advance Structural Design	CO1: Enhance the capabilities to design the special structural elements as per Indian standard code of practice.
			CO2: Analyze, design, draw and detailing of critical structural components with a level of accuracy
			CO3: To understand the structure for capable of resisting all applied loads without failure during its intended life.
			CO4: Identify the collapse mechanisms of reinforced concrete slabs and steel frames.
			CO5: To understand the design and analysis of plastically reinforced concrete slabs
43	IV-I	Irrigation and Hydraulic Structures	CO1: Know types of water retaining structures for multiple purposes and its key parameters considered for planning and designing
			CO2: Understand details in any Irrigation System and its requirements
			CO3: Know, Analyze and Design of a irrigation system components
			CO4: Understand design concepts of embankment dams, concrete dams and spillways etc.
			CO5: Understand design concepts of diversion headwork's, canal regulation and cross drainage works
44	IV-I	Pipeline Engineering	CO1: Get an understanding of the key steps in a pipeline's lifecycle: design, construction, installation, asset management and maintenance.
			CO2: Understand design and construct pipe systems for transporting a variety of substances such as gas and oil.
			CO3: Understand the stages include pre-engineering, conceptual engineering, detailed engineering, fabrication, construction, operation, and abandonment.
			CO4: To revolve around creating processes and designs, as well as maintenance and operations duties in a variety of different disciplines
			CO5: To know the quality, speed, dependability, flexibility and cost.
45	IV-I	Ground Water Hydrology	CO1: Identify different fundamental equations and concepts as applied in the Groundwater studies
			CO2: Discuss and derive differential equation governing groundwater flow in three dimensions
			CO3: To solve groundwater mathematical equations and analyze pumping tests in steady and nonsteady flow cases
			CO4: Distinguish and understand the saline water intrusion problem in costal aquifers
			CO5: Conjunctive use of ground water along with other fresh water sources



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46	IV-I	Professional Practice, Law & Ethics	CO1: The students will understand the importance of professional practice, Law and Ethics in their personal lives and professional careers.
			CO2: The students will learn the rights and responsibilities as an employee, team member and a global citizen.
			CO3: Professional ethics are principles that govern the behaviour of a person or group in a business environment.
			CO4: professional ethics provide rules on how a person should act towards other people and institutions in such an environment.
			CO5: It describes activities which will help you apply your knowledge to your industry, job role or workplace.
47	IV-II	Solid Waste Management	CO1: Identify the physical and chemical composition of solid wastes
			CO2: Analyze the functional elements for solid waste management.
			CO3: Understand the techniques and methods used in transformation, conservation, and recovery of materials from solid wastes.
			CO4: Identify and design waste disposal systems
			CO5: Analyze the functional elements for liquid waste management.
48	IV-II	Environmental Impact Assessment	CO1: Identify the environmental attributes to be considered for the EIA study
			CO2: Formulate objectives of the EIA studies
			CO3: Identify the methodology to prepare rapid EIA
			CO4: Prepare EIA reports and environmental management plans
			CO5: To assess the significant effects of a project or development proposal on the environment.
49	IV-II	Air Pollution	CO1: Identify sampling and analysis techniques for air quality assessment
			CO2: Describe the plume behavior for atmospheric stability conditions
			CO3: Apply plume dispersion modelling and assess the concentrations
			CO4: Design air pollution controlling devices
			CO5: It is to prevent adverse responses by all receptor categories exposed to the atmosphere
50	IV-II	Airport, Railways and	CO1: An ability to design of runways and taxiways.
			CO2: An ability to design the infrastructure for large and small airports



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		Waterways	CO3: An ability to design various crossings and signals in Railway Projects. CO4: An ability plan the harbors and ports projects including the infrastructure required for new ports and harbors. CO5: Introduce component of railway tracks, train resistance, crossing, signaling, high speed tracks and Metro Rail.
51	IV-II	Finite element methods for Civil Engineering	CO1: At the end of the course the student will able to Anlyse simple structual elements using Finite Element approach CO2: Develop element characteristic equation and generation of global equation CO3: To understand the modeling of complex geometrical and irregular shapes CO4: Understand the concepts behind formulation methods in FEM. CO5: Identify the application and characteristics of FEA elements such as bars, beams, plane and iso-parametric elements.


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Electrical Engineering I & II Sem Course Outcomes For The Academic Year (2023-2024)

S.NO.	YEAR /SEM	COURSE NAME	COURSE OUTCOMES
1	II/I	Engineering Mechanics	CO1: Determine resultant of forces acting on a body and analyse equilibrium of a body subjected to a system of forces
			CO2: Solve problem of bodies subjected to friction.
			CO3: Find the location of centroid and calculate moment of inertia of a given section..
			CO4: Understand the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory motion and rigid body motion.
			CO5: Solve problems using work energy equations for translation, fixed axis rotation and plane motion and solve problems of vibration..
2	II/I	Electrical Circuit Analysis	CO1: At the end of this course, students will demonstrate the ability to
			CO2: Apply network theorems for the analysis of electrical circuits
			CO3: Obtain the transient and steady-state response of electrical circuits.
			CO4: Analyze circuits in the sinusoidal steady-state (single-phase and three-phase).
			CO5: Analyze two port circuit behavior.
3	II/I	Analog Electronics	CO1: Know the characteristics, utilization of various components
			CO2: Understand the biasing techniques
			CO3: Design and analyze various rectifiers, small signal amplifier circuits
			CO4: Design sinusoidal and non-sinusoidal oscillators.
			CO5: A thorough understanding, functioning of OP-AMP, design OP-AMP based circuits with linear integrated circuits.
4	II/I	Electrical Machines -I	CO1: Identify different parts of a DC machine & understand its operation
			CO2: Carry out different testing methods to predetermine the efficiency of DC machines
			CO3: Understand different excitation and starting methods of DC machines
			CO4: Control the voltage and speed of a DC machines
			CO5: Analyze single phase and three phase transformers circuits.
5	II/I	Electromagnetic Fields	CO1: To understand the basic laws of electromagnetism.
			CO2: To obtain the electric and magnetic fields for simple configurations under static conditions.
			CO3: To analyze time varying electric and magnetic fields
			CO4: To understand Maxwell's equation in different forms and different



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			media
			CO5: To understand the propagation of EM waves.
6	II/I	Electrical Machines Lab – I	CO1: Start and control the Different DC Machines.
			CO2: Assess the performance of different machines using different testing methods
			CO3: Identify different conditions required to be satisfied for self - excitation of DC Generators.
			CO4: Separate iron losses of DC machines into different components
			CO5: speed control of DC shunt motor (Predetermination of efficiencies)
7	II/I	Analog Electronics Lab	CO1: Know the characteristics, utilization of various components.
			CO2: Understand the biasing techniques
			CO3: Design and analyze various rectifiers, small signal amplifier circuits.
			CO4: Design sinusoidal and non-sinusoidal oscillators.
			CO5: A thorough understanding, functioning of OP-AMP, design OP-AMP based circuits with linear integrated circuits..
8	II/I	Electrical Circuits Lab	CO1: Analyze complex DC and AC linear circuits
			CO2: Apply concepts of electrical circuits across engineering
			CO3: Evaluate response in a given network by using theorems
			CO4: Two port network parameters – Z – Y parameters, Analytical verification
			CO5: Separation of Self and Mutual inductance in a Coupled Circuit.
9	II/I	Gender sensitization lab	CO1: Students will have developed a better understanding of important issues related to gender in contemporary India.
			CO2: Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
			CO3: Students will acquire insight into the gendered division of labour and its relation to politics and economics
			CO4: Men and women students and professionals will be better equipped to work and live together as equals
			CO5: Students will develop a sense of appreciation of women in all walks of life
10	II/II	Laplace Transforms, Numerical Methods And Complex Variables	CO1: Use the Laplace transforms techniques for solving ODE's
			CO2: Find the root of a given equation.
			CO3: Find the numerical solutions for a given ODE's
			CO4: Analyze the complex function with reference to their analyticity, integration using Cauchy's integral and residue theorems
			CO5: Taylor's and Laurent's series expansions of complex function
11	II/II	Electrical	CO1: Understand the concepts of rotating magnetic fields.



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		Machines – II	<p>CO2 Understand the operation of ac machines.</p> <p>CO3: Analyze performance characteristics of ac machines.</p> <p>CO4: Mathematical analysis for power developed</p> <p>CO5: Analyze performance Special Machines:</p>
12	II/II	Digital Electronics	<p>CO1: Understand working of logic families and logic gates.</p> <p>CO2: Design and implement Combinational and Sequential logic circuits</p> <p>CO3: Understand the process of Analog to Digital conversion and Digital to Analog conversion.</p> <p>CO4: Be able to use PLDs to implement the given logical problem</p> <p>CO5: Ability to Memory organization and operation, expanding memory size, classification and characteristics of memories, sequentia.</p>
13	II/II	Control Systems	<p>CO1: Understand the modeling of linear-time-invariant systems using transfer function and statespace represent</p> <p>CO2: Understand the concept of stability and its assessment for linear-time invariant systems.</p> <p>CO3: Design simple feedback controllers.</p> <p>CO4: Understanding and gaining Application of Proportional, Integral and Derivative Controllers, Lead and Lag compensation in designs</p> <p>CO5: Understanding and studying State space model. Diagonalization of State Matrix. Solution of state equations. Eigen values and Stability Analysis</p>
14	II/II	Power System - I	<p>CO1: Understand the concepts of power systems</p> <p>CO2: Understand the operation of conventional generating stations and renewable sources of electrical power.</p> <p>CO3: Evaluate the power tariff methods.</p> <p>CO4: Determine the electrical circuit parameters of transmission lines</p> <p>CO5: Understand the layout of substation and underground cables and corona..</p>
15	II/II	Digital Electronics Lab	<p>CO1: Understand working of logic families and logic gates</p> <p>CO2: Design and implement Combinational and Sequential logic circuits</p> <p>CO3: Understand the process of Analog to Digital conversion and Digital to Analog conversion</p> <p>CO4: Understand the process of Analog to Digital conversion and Digital to Analog conversion</p> <p>CO5: implement synchronous state machines using flip-flops.</p>
16	II/II	Electrical Machines Lab – II	<p>CO1: Assess the performance of different machines using different testing methods</p> <p>CO2: To convert the Phase from three phase to two phase and vice versa</p> <p>CO3: Compensate the changes in terminal voltages of synchronous</p>



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			generator after estimating the change by different methods
			CO4: Control the active and reactive power flows in synchronous machines
			CO5: : Start different machines and control the speed and power factor.
17	II/II	Control Systems Lab	CO1: How to improve the system performance by selecting a suitable controller and/or a compensator for a specific application
			CO2: Apply various time domain and frequency domain techniques to assess the system performance
			CO3: Apply various control strategies to different applications (example: Power systems, electrical drives etc)
			CO4: Test system controllability using state space representation and applications of state space representation to various systems
			CO5: Test system observability using state space representation and applications of state space representation to various systems
18	III/I	Power Electronics	CO1: Understand the differences between signal level and power level devices.
			CO2: Analyze controlled rectifier circuits.
			CO3: Analyze the operation of DC-DC choppers..
			CO4: Analyze the operation of voltage source inverters.
			CO5: Analyze the operation Cyclo-converter.
19	III/I	Power System – II	CO1 Analyze transmission line performance
			CO2: Apply load compensation techniques to control reactive power.
			CO3: Understand the application of per unit quantities.
			CO4: Design over voltage protection and insulation coordination
			CO5: Determine the fault currents for symmetrical and unbalanced faults
20	III/I	Measurements And Instrumentation	CO1: Understand different types of measuring instruments, their construction, operation and characteristics
			CO2: Identify the instruments suitable for typical measurements cloud can be programmed and deployed.
			CO3: Apply the knowledge about transducers and instrument transformers to use them effectively
			CO4: Apply the knowledge of smart and digital metering for industrial applications
			CO5: Apply the knowledge Introduction to Smart and Digital Metering
21	III/I	Business Economics And Financial Analysis	CO1: The students will understand the various Forms of Business and the impact of economic variables on the Business.
			CO2: The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt.
			CO3: The Students can study the firm's financial position by analyzing the Financial Statements of a Company.



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			CO4: To learn the basic Business types, impact of the Economy on Business and Firms specifically
			CO5: To analyze the Business from the Financial Perspective
22	III/I	Power System Simulation Lab	CO1: Perform various transmission line calculations.
			CO2: Understand Different circuits time constants
			CO3: Analyze the experimental data and draw the conclusions.
			CO4: Ability to Time constant calculation of RLCcircuit
			CO5: Ability to understand Calculation of R, L, C, Zs of 3-phase Transmission Line
23	III/I	Power Electronics Lab	CO1: Understand the operating principles of various power electronic converters.
			CO2: Use power electronic simulation packages& hardware to develop the power converters
			CO3: Analyze and choose the appropriate converters for various applications
			CO4: Students able to Single Phase Cyclo-converter with R and RL loads
			CO5: Analyze aSimulation of Buck chopper
24	III/I	Measurements And Instrumentation Lab	CO1: to choose instruments
			CO2: test any instrument
			CO3: find the accuracy of any instrument by performing experiment
			CO4: calibrate PMMC instrument using D.C potentiometer
			CO5: Ability to Resistance strain gauge
25	III/I	Advanced Communication Skills Lab	Co1: Writing project/research reports/technical reports.
			CO2: Gathering ideas and information to organize ideas relevantly and coherently
			CO3: Ability to Making oral presentations..
			CO4: Gain practical knowledge Transferring information from non-verbal to verbal texts and vice-versa..
			CO5: Able to understand Taking part in social and professional communication.
26	III/II	Power Semiconductor Drives	Co1: Identify the drawbacks of speed control of motor by conventional methods.
			CO2: Differentiate Phase controlled and chopper-controlled DC drives speed-torque characteristics merits and demerits
			CO3: Understand Ac motor drive speed–torque characteristics using different control strategies its merits and demerits
			CO4: Describe Slip power recovery schemes.
			CO5: Describe variable frequency control - Cyclo converter, PWM based VSI & CSI
27	III/II	SIGNALS AND	CO1 Differentiate various signal functions



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		SYSTEMS	<p>CO2: Represent any arbitrary signal in time and frequency domain.</p> <p>CO3: Understand the characteristics of linear time invariant systems</p> <p>CO4: Analyze the signals with different transform technique</p> <p>CO5: Gain the knowledge on Sampling theorem</p>
28	III/II	Microprocessors & Microcontrollers	<p>CO1: Understands the internal architecture, organization and assembly language programming of 8086 processors..</p> <p>CO2: Understands the internal architecture, organization and assembly language programming of 8051/controllers</p> <p>CO3: Understands the interfacing techniques to 8086 and 8051 based systems..</p> <p>CO4: Understands the internal architecture of ARM processors and basic concepts of advanced ARM processors..</p> <p>CO5: Able to Advanced ARM Processors</p>
29	III/II	Power System Operation And Control	<p>CO1: Understand operation and control of power systems..</p> <p>CO2: Analyze various functions of Energy Management System (EMS) functions</p> <p>CO3: Analyze whether the machine is in stable or unstable position</p> <p>CO4: Understand power system deregulation and restructuring</p> <p>CO5: Understand Computer Control of Power Systems</p>
30	III/II	Power System Protection	<p>CO1: Compare and contrast electromagnetic, static and microprocessor-based relays</p> <p>CO2: Apply technology to protect power system components</p> <p>CO3: Select relay settings of over current and distance relays.</p> <p>CO4: Analyze quenching mechanisms used in air, oil and vacuum circuit breakers</p> <p>CO5: Implementing Circuit Breakers</p>
31	III/II	POWER SYSTEM LAB	<p>CO1: Perform various load flow techniques</p> <p>CO2: Understand Different protection methods.</p> <p>CO3: Analyze the experimental data and draw the conclusions</p> <p>CO4: Finding the sequence impedances of 3-Φ synchronous machine</p> <p>CO5: To the Load Flow Analysis using Fast Decoupled (FD) Method.</p>
32	III/II	Microprocessors & Microcontrollers Lab	<p>CO1: . Time delay Generation Using Timers of 8051.</p> <p>CO2: Serial Communication from / to 8051 to / from I/O devices</p> <p>CO3: Sequence Generator Using Serial Interface in 8051.</p> <p>CO4: Triangular Wave Generator through DAC interfaces to 8051.</p> <p>CO5: Assembly Language Programs to Perform Arithmetic (Both Signed and Unsigned) 16 Bit Data Operations</p>
33	III/II	SIGNALS AND SYSTEMS LAB	<p>CO1: . Understand the concepts of continuous time and discrete time systems</p>



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			<p>CO2: Analyse systems in complex frequency domain.</p> <p>CO3: Understand sampling theorem and its implications</p> <p>CO4: m to convolve two discrete time sequences. (Plot all the sequences). Verify the result by analytical calculation.</p> <p>CO5: Generate a discrete time sequence by sampling a continuous time signal. Show that with sampling rates less than Nyquist rate, aliasing occurs while reconstructing the signal.</p>
34	III/II	Environmental Science	<p>CO1: 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</p> <p>CO2: Understanding the environmental policies and regulations</p> <p>CO3: Understanding the impacts of developmental activities and mitigation measures</p> <p>CO4: Understanding the importance of ecological balance for sustainable development</p> <p>CO5: Understanding the impacts of developmental activities and mitigation measures</p>
35	IV/I	Digital Signal Processing	<p>CO1: Understand the LTI system characteristics and Multirate signal processing</p> <p>CO2: Understand the inter-relationship between DFT and various transforms.</p> <p>CO3: Design a digital filter for a given specification.</p> <p>CO4: Understand the significance of various filter structures and effects of round off errors</p> <p>CO5: Understand the Realization of Digital Filters & Finite Word Length Effects</p>
36	IV/I	Electrical And Hybrid Vehicles	<p>CO1: Understand the models to describe hybrid vehicles and their performance..</p> <p>CO2: Understand the different possible ways of energy storage.</p> <p>CO3: Understand the different strategies related to energy storage systems.</p> <p>CO4: Understanding Energy Storage Requirements in Hybrid and Electric Vehicles, Battery based energy storage and its analysis</p> <p>CO5: Design and develop energy management strategies used in hybrid and electric vehicles</p>
37	IV/I	Hvdc Transmission	<p>CO1: Compare EHV AC and HVDC system and to describe various types of DC links</p> <p>CO2: Analyze Graetz circuit for rectifier and inverter mode of operation</p> <p>CO3: Describe various methods for the control of HVDC systems and to</p>



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			perform power flow analysis in AC/DC systems
			CO4: Describe various protection methods for HVDC systems and classify Harmonics and design different types of filters
			CO5: Able to Generation of Harmonics, Characteristics harmonics, calculation of AC Harmonics
38	IV/I	Fundamentals Of Management For Engineers	CO1: The students understand the significance of Management in their Profession
			CO2: The various Management Functions like Planning, Organizing, Staffing, Leading, Motivation and Control aspects are learnt in this course.
			CO3: The students can explore the Management Practices in their domain area
			CO4: Leadership, Power and Authority, Leadership Styles; Behavioral Leadership, Situational Leadership, Leadership Skills, Leader as Mentor and Coach, Leadership during adversity and Crisis;
			CO5: Characteristics of Effective Controls, Establishing control systems, Control frequency and Methods.
39	IV/I	Principles of Entrepreneurship	CO1: It enables students to learn the basics of Entrepreneurship
			CO2: entrepreneurial development which will help them to provide vision for their own Start-up.
			CO3: Management of MSMEs and Sick Enterprises
			CO4: Managing Marketing and Growth of Enterprises
			CO5: Strategic Growth in Entrepreneurship, The Valuation Challenge in Entrepreneurship,
40	IV/I	Electrical & Electronics Design Lab	CO1: Get practical knowledge related to electrical
			CO2: Fabricate basic electrical circuit elements/networks
			CO3: Trouble shoot the electrical circuits
			CO4: Design filter circuit for application
			CO5: Get hardware skills such as soldering, winding etc
41	IV/II	Electrical Distribution Systems	CO1: distinguish between transmission, and distribution line and design the feeders.
			CO2: compute power loss and voltage drop of the feeders –
			CO3: design protection of distribution systems
			CO4: understand the importance of voltage control and power factor improvement
			CO5: Study of Voltage Control: Importance of voltage contro
42	IV/II	Power Quality And Facts	CO1: Know the severity of power quality problems in distribution system
			CO2: Understand the concept of voltage sag transformation from up-stream (higher voltages) to down-stream (lower voltage)
			CO3: Concept of improving the power quality to sensitive load by various mitigating custom power devices



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			CO4: Choose proper controller for the specific application based on system requirements
			CO5: Understand various systems thoroughly and their requirements.
43	IV/II	Non- Conventional Sources Of Energy	CO1: Identify renewable energy sources and their utilization. Understand the basic concepts of solar radiation and analyze the working of solar and thermal systems.
			CO2: Understand principles of energy conversion from alternate sources including wind, geothermal, ocean, biomass, biogas and hydrogen.
			CO3: Understand the concepts and applications of fuel cells, thermoelectric convertor and MHD generator
			CO4: Identify methods of energy storage for specific applications.
			CO5: Studying Need for DEC, Carnot cycle, limitations, Principles of DEC
44	IV/II	Project work	CO1: Student able to analyze the problem
			CO2: Student will able to function effectively on teams to accomplish a common goal
			CO3: Students will be use current techniques.
			CO4: Students will able to design and development principles
			CO5: Students will able to learn new things


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Website: www.b-iet.ac.in, e-mail: principal@b-iet.ac.in Contact No.: +919652929786**Mechanical Engineering I & II Sem Course Outcomes For The Academic Year (2023-2024)**

S.NO.	YEAR/SEM	COURSE NAME	COURSE OUTCOMES
1	II/I	Probability and Statistics & Complex Variables	CO1: Formulate and solve problems involving random variables and apply statistical methods for analysing experimental data.
			CO2: Analyse the complex function with reference to their analyticity, integration using Cauchy's integral and residue theorems.
			CO3: Taylor's and Laurent's series expansions of complex function.
			CO4: The ability to construct and express the Probability Distributions and Density functions.
			CO5: Understand the basic terms of Probability and solve problems involving random variables.
2	II/I	Mechanics of Solids	CO1: Understand the basics of instructions sets and their impact on processor design.
			CO2: Apply knowledge of materials and structural elements to the analysis of simple structures;
			CO3: Undertake problem identification, formulation and solution using a range of analytical methods;
			CO4: 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.
			CO5: Expectation and capacity to undertake lifelong learning
3	II/I	Material Science and Metallurgy	CO1: Ability to relate properties to microstructure
			CO2: Understand various crystal structures and relationship to properties
			CO3: Ability to select metals and alloys for industrial applications
			CO4: Understanding metals and their use in industries
			CO5: Understanding heat treatment procedures and the change of properties
4	II/I	Production Technology	CO1: Understand the idea for selecting materials for patterns.
			CO2: Know Types and allowances of patterns used in casting and analyze the components of moulds.



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			<p>CO3: Design core, core print and gating system in metal casting processes</p> <p>CO4: Understand the arc, gas, solid state and resistance welding processes.</p> <p>CO5: Develop process-maps for metal forming processes using plasticity principles.</p>
5	II/I	Thermodynamics	<p>CO1: Use thermodynamic terminology correctly</p> <p>CO2: Solve problems using the properties and relationships of thermodynamic fluids.</p> <p>CO3: Derive and discuss the first and second laws of thermodynamics</p> <p>CO4: Analyse basic thermodynamic cycles.</p> <p>CO5: Students must have understanding of thermodynamic fundamentals before studying their application in applied thermodynamics.</p>
6	II/I	Production Technology Lab	<p>CO1: Students must have understanding of thermodynamic fundamentals before studying their application in applied thermodynamics.</p> <p>CO2: At the end of the lab learn preparation of various jobs using various manufacturing process</p> <p>CO3: The student will be trained to implement similar features in preparation of jobs can be extended to implement in the preparation of complicated jobs</p> <p>CO4: Understanding the properties of moulding sands and pattern making</p> <p>CO5: . Evaluate the quality of welded joints</p>
7	II/I	Machine Drawing Practice	<p>CO1: Conventional representation of materials, common machine elements and parts such as screws, nuts, bolts, keys, gears, webs, ribs.</p> <p>CO2: Types of sections – selection of section planes and drawing of sections and auxiliary sectional views. Parts not usually sectioned</p> <p>CO3: Methods of dimensioning, general rules for sizes and placement of dimensions for holes, centers, curved and tapered features.</p> <p>CO4: Title boxes, their size, location and details - common abbreviations and their liberal usage</p> <p>CO5: Types of Drawings – working drawings for machine parts.</p>
8	II/I	Material Science and Mechanics of	<p>CO1: The Primary focus of the Metallurgy and Material science program is to provide undergraduates with a</p>



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		Solids Lab	<p>fundamental knowledge based associated materials properties, and their selection and application.</p> <p>CO2: 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.</p> <p>CO3: Analyze the behavior of the solid bodies subjected to various types of loading.</p> <p>CO4: Apply knowledge of materials and structural elements to the analysis of simple structures</p> <p>CO5: Undertake problem identification, formulation and solution using a range of analytical methods</p>
9	II/I	Constitution of India	<p>CO1: Meaning of the constitution law and constitutionalism</p> <p>CO2: Historical perspective of the Constitution of India</p> <p>CO3: Salient features and characteristics of the Constitution of India</p> <p>CO4: The Directive Principles of State Policy – Its importance and implementation</p> <p>CO5: Scheme of the Fundamental Right to Equality</p>
10	II/II	Basic Electrical and Electronics Engineering	<p>CO1: To analyze and solve electrical circuits using network laws and theorems.</p> <p>CO2: To understand and analyze basic Electric and Magnetic circuits</p> <p>CO3: To study the working principles of Electrical Machines</p> <p>CO4: To introduce components of Low Voltage Electrical Installations</p> <p>CO5: To identify and characterize diodes and various types of transistors.</p>
11	II/II	Kinematics of Machinery	<p>CO1: Distinguish kinematic and kinetic motion.</p> <p>CO2: Identify the basic relations between distance, time, velocity, and acceleration.</p> <p>CO3: Apply vector mechanics as a tool for solving kinematic problems.</p> <p>CO4: Create a schematic drawing of a real-world mechanism.</p>



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			CO5: . Determine the degrees-of-freedom (mobility) of a mechanism
12	II/II	Thermal Engineering - I	CO1: have knowledge of advanced features of fluid mechanics, thermodynamics, heat and momentum transfer pertaining to thermo-fluid problem,
			CO2: Understand the significance of course content for thermo-fluid problems
			CO3: Apply knowledge in analysis and interpretation of thermo-fluid problem
			CO4: Analyze and evaluate an existing thermal system and recommend their ideas
			CO5: Analyze energy systems with Exergy and irreversibility concepts.
13	II/II	Fluid Mechanics and Hydraulic Machines	CO1: Able to explain the effect of fluid properties on a flow system.
			CO2: Able to identify type of fluid flow patterns and describe continuity equation.
			CO3: To analyze a variety of practical fluid flow and measuring devices and utilize Fluid Mechanics principles in design.
			CO4: To select and analyze an appropriate turbine with reference to given situation in power plants
			CO5: To estimate performance parameters of a given Centrifugal and Reciprocating pump.
14	II/II	Instrumentation and Control Systems	CO1: To identify various elements and their purpose in typical instruments, to identify various errors that would occur in instruments.
			CO2: Analysis of errors so as to determine correction factors for each instrument.
			CO3: To understand static and dynamic characteristics of instrument and should be able to determine loading response time.
			CO4: For given range of displacement should be able to specify transducer, its accurate and loading time of that transducer.
			CO5: After undergoing the course the student can select appropriate device for the measurement of parameters like temperature, pressure, speed, stress, humidity, flow velocity etc., and justify its use through characteristics and performance.
15	II/II	Basic Electrical and	CO1: . To analyze and solve electrical circuits using



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		Electronics Engineering Lab	<p>network laws and theorems.</p> <p>CO2: To understand and analyze basic Electric and Magnetic circuits</p> <p>CO3: To study the working principles of Electrical Machines</p> <p>CO4: To introduce components of Low Voltage Electrical Installations</p> <p>CO5: To identify and characterize diodes and various types of transistors.</p>
16	II/II	Fluid Mechanics and Hydraulic Machines Lab	<p>CO1: Able to explain the effect of fluid properties on a flow system.</p> <p>CO2: Able to identify type of fluid flow patterns and describe continuity equation</p> <p>CO3: To analyze a variety of practical fluid flow and measuring devices and utilize fluid mechanics principles in design.</p> <p>CO4: To select and analyze an appropriate turbine with reference to given situation in power plants.</p> <p>CO5: To estimate performance parameters of a given Centrifugal and Reciprocating pump.</p>
17	II/II	Instrumentation and Control Systems Lab	<p>CO1: Draw the conventional representation of different materials used in engineering practice like wood, glass, metal etc., and the limits and tolerances.</p> <p>CO2: Learn indication of form and position tolerances on drawings, types of run out, total run out and their indication</p> <p>CO3: . Improve visualization ability of surface roughness and its indications with respect to the material surface</p> <p>CO4: Apply the drawing techniques to draw various part drawings and assembly, indicate tolerances, roughness etc</p> <p>CO5: Outline the basic principles and performance characteristics of measurement</p>
18	II/II	Gender Sensitization Lab	<p>CO1: Students will have developed a better understanding of important issues related to gender in contemporary India.</p> <p>CO2: 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.</p> <p>CO3: Students will attain a finer grasp of how gender</p>



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			discrimination works in our society and how to counter it.
			CO4: Students will acquire insight into the gendered division of labour and its relation to politics and economics.
			CO5: Men and women students and professionals will be better equipped to work and live together as equals.
19	III/I	Dynamics of Machinery	CO1: Analyze stabilization of sea vehicles, aircrafts and automobile vehicles.
			CO2: Compute frictional losses, torque transmission of mechanical systems.
			CO3: Analyze dynamic force analysis of slider crank mechanism and design of flywheel
			CO4: Understand how to determine the natural frequencies of continuous systems starting from the general equation of displacement.
			CO5: Understand balancing of reciprocating and rotary masses.
20	III/I	Design of Machine Members-I	CO1: Apply the design procedure to engineering problems, including the consideration of technical and manufacturing constraints.
			CO2: Select suitable materials and significance of tolerances and fits in critical design applications.
			CO3: Utilize design data hand book and design the elements for strength, stiffness and fatigue.
			CO4: Identify the loads, the machine members subjected and calculate static and dynamic stresses to ensure safe design.
			CO5: The student acquires the knowledge about the principles of design, material selection, component behavior subjected to loads, and criteria of failure
21	III/I	Metrology & Machine Tools	CO1: Identify techniques to minimize the errors in measurement.
			CO2: Identify methods and devices for measurement of length, angle, gear & thread parameters, surface roughness and geometric features of parts.
			CO3: Understand working of lathe, shaper, planer, drilling, milling and grinding machines.
			CO4: Comprehend speed and feed mechanisms of machine tools.



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			CO5: Estimate machining times for machining operations on machine tools
22	III/I	Business Economics & Financial Analysis	CO1: Understand microeconomic factors in related to demand analysis and its forecasting
			CO2: Apply the theory of production function and Cost concepts to determine the Break Even Analysis.
			CO3: Remember different market structures, pricing strategies and different forms business organization
			CO4: Determine the investment decisions of organizations by applying capital budgeting methods and Strategies
			CO5: Interpret the financial statement by using Fundamental accounting concepts and Ratio analysis
23	III/I	Thermal Engineering-II	CO1: Develop state – space diagrams based on the schematic diagrams of process flow of steam and gas turbine plants
			CO2: Apply the laws of Thermodynamics to analyze thermodynamic cycles
			CO3: Differentiate between vapour power cycles and gas power cycles
			CO4: Infer from property charts and tables and to apply the data for the evaluation of performance parameters of the steam and gas turbine plants
			CO5: Understand the functionality of major components of steam and gas turbine plants and to do the analysis of these components
24	III/I	Operations Research	CO1: Solve linear programming problems using appropriate techniques and optimization solvers, interpret the results obtained.
			CO2: Determine optimal strategy for Minimization of Cost of shipping of products from source to Destination/ Maximization of profits of shipping products using various methods, Finding initial basic feasible and optimal solution of the Transportation problems
			CO3: Optimize the allocation of resources to Demand points in the best possible way using various techniques and minimize the cost or time of completion of number of jobs by number of persons.
			CO4: Model competitive real-world phenomena using concepts from game theory. Analyse pure and mixed strategy games
			CO5: Formulate Network models for service and



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			manufacturing systems, and apply operations research techniques and algorithms to solve these Network problems
25	III/I	Thermal Engineering Lab	CO1: Appreciate the practical ways to find calorific values of fuel
			CO2: Understand the various components and mechanisms of I. C. Engines. Appreciate the Mechanism of ports /Valves functioning in 2-stroke petrol /Diesel engine
			CO3: 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
			CO4: Understand the method of evaluating the co efficient of performance of refrigerator
			CO5: Understand the method of finding the thermal conductivity of material
26	III/I	Metrology & Machine Tools Lab	CO1: Perform plain turning, step turning and Grooving on a circular rod
			CO2: Perform the step turning and taper turning on a circular rod
			CO3: Drill a hole and perform tapping once given work piece.
			CO4: Slotting operation on a given specimen
			CO5: Surface finish of given work piece
27	III/I	Kinematics & Dynamics Lab	CO1: Understand types of motion
			CO2: Analyze forces and torques of components in linkages
			CO3: Understand static and dynamic balance
			CO4: Understand forward and inverse kinematics of open-loop mechanisms
			CO5: Distinguish kinematic and kinetic motion.
28	III/I	Intellectual Property Rights	CO1: Identify different types of Intellectual Properties (IPs), the right of ownership, scope of protection as well as the ways to create and to extract value from IP.
			CO2: Recognize the crucial role of IP in organizations of different industrial sectors for the purposes of product and technology development.
			CO3: Identify activities and constitute IP infringements and the remedies available to the IP owner and describe the precautions steps to be taken to prevent infringement of proprietary rights in products and technology



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			development.
			CO4: Be able to anticipate and subject to critical analysis arguments relating to the development and reform of intellectual property right institutions and their likely impact on creativity and innovation.
			CO5: Be able to demonstrate a capacity to identify, apply and assess ownership rights and marketing protection under intellectual property law as applicable to information, ideas, new products and product marketing
29	III/II	Design of Machine Members-II	CO1: To understand and apply principles of gear design to spur gears and industrial spur gear boxes.
			CO2: To become proficient in Design of Helical and Bevel Gear
			CO3: To develop capability to analyze Rolling contact bearing and its selection from manufacturer's Catalogue.
			CO4: To learn a skill to design worm gear box for various industrial applications.
			CO5: To inculcate an ability to design belt drives and selection of belt, rope and chain drives.
30	III/II	Heat Transfer	CO1: Understand the basic modes of heat transfer
			CO2: Compute one dimensional steady state heat transfer with and without heat generation
			CO3: Understand and analyze heat transfer through extended surfaces
			CO4: Understand one dimensional transient conduction heat transfer
			CO5: Understand concepts of continuity, momentum and energy equations
31	III/II	CAD & CAM	CO1: Describe basic structure of CAD workstation, Memory types, input/output devices and display devices and computer graphics
			CO2: Acquire the knowledge of geometric modeling and Execute the steps required in CAD software for developing 2D and 3D models and perform transformations
			CO3: Explain fundamental and advanced features of CNC machines
			CO4: Illustrate Group Technology, CAQC and CIM concepts
			CO5:] Create accurate and precise geometry of complex engineering systems and use the geometric models in different engineering applications [k].



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32	III/II	Unconventional Machining Processes	CO1: Compare non-traditional machining, classification, material applications in material removal process
			CO2: Summarize the principle and processes of abrasive jet machining
			CO3: Understand the principles, processes and applications of thermal metal removal processes.
			CO4: Identify the principles, processes and applications of EBM.
			CO5: . Understand the principles, processes and applications of Plasma Machining.
33	III/II	NON-CONVENTIONAL ENERGY SOURCES	CO1: Demonstrate the generation of electricity from various Non-Conventional sources of energy, have a working knowledge on types of fuel cells.
			CO2: Estimate the solar energy, Utilization of it, Principles involved in solar energy collection and conversion of it to electricity generation.
			CO3: Explore the concepts involved in wind energy conversion system by studying its components, types and performance.
			CO4: Illustrate ocean energy and explain the operational methods of their utilization.
			CO5: Acquire the knowledge on Geothermal energy.
34	III/II	Finite Element Methods	CO1: Implement numerical methods to solve mechanics of solids problems.
			CO2: Formulate and Solve axially loaded bar Problems.
			CO3: Formulate and analyze truss and beam problems.
			CO4: Implement the formulation techniques to solve two-dimensional problems using triangle and quadrilateral elements.
			CO5: Formulate and solve Axi-symmetric and heat transfer problems.
35	III/II	Heat Transfer Lab	CO1: Perform steady state conduction experiments to estimate thermal conductivity of different materials
			CO2: Perform transient heat conduction experiment
			CO3: Estimate heat transfer coefficients in forced convection, free convection, condensation and correlate with theoretical values
			CO4: Obtain variation of temperature along the length of the pin fin under forced and free convection
			CO5: Perform radiation experiments: Determine surface emissivity of a test plate and Stefan Boltzmann's constant



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			and compare with theoretical value
36	III/II	CAD & CAM Lab	CO1: Execute steps required for modeling 3D objects by using protrusion, cut, sweep, extrude commands
			CO2: Convert 3D solid models into 2D drawing-different views, sections
			CO3: Use isometric views and dimensioning of part models
			CO4: Machine simple components on CNC machines
			CO5: Use CAM software to generate NC code
37	III/II	Advanced Communication Skills lab	CO1: Acquire vocabulary and use it contextually
			CO2: Listen and speak effectively
			CO3: Develop proficiency in academic reading and writing
			CO4: Increase possibilities of job prospects
			CO5: Communicate confidently in formal and informal contexts
38	III/II	Environmental Science	CO1: Understand core concepts and methods from ecological and physical sciences and their application in environmental problem-solving.
			CO2: Appreciate key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
			CO3: Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
			CO4: Appreciate that one can apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.
			CO5: Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.



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39	IV/I	Refrigeration & Air Conditioning	CO1: Illustrate the fundamental principles and applications of refrigeration and air conditioning system
			CO2: Obtain cooling capacity and coefficient of performance by conducting test on vapour compression refrigeration systems
			CO3: Present the properties, applications and environmental issues of different refrigerants
			CO4: Calculate cooling load for air conditioning systems used for various
			CO5: Operate and analyze the refrigeration and air conditioning systems.
40	IV/I	Additive Manufacturing	CO1: Describe various CAD issues for 3D printing and rapid prototyping and related operations for STL model manipulation.
			CO2: Formulate and solve typical problems on reverse engineering for surface reconstruction from physical prototype models through digitizing and spline-based surface fitting.
			CO3: Formulate and solve typical problems on reverse engineering for surface reconstruction from digitized mesh models through topological modelling and subdivision surface fitting.
			CO4: Explain and summarize the principles and key characteristics of additive manufacturing technologies and commonly used 3D printing and additive manufacturing systems.
			CO5: Explain and summarize typical rapid tooling processes for quick batch production of plastic and metal parts.
41	IV/I	Renewable Energy Sources	CO1: Understand the need of energy conversion and the various methods of energy storage
			CO2: Explain the field applications of solar energy
			CO3: Identify Winds energy as alternate form of energy and to know how it can be tapped
			CO4: Explain bio gas generation and its impact on environment
			CO5: Understand the Geothermal & Tidal energy, its mechanism of production and its applications
42	IV/I	Fluid Power Systems	CO1: Identify hydraulic and pneumatics components.
			CO2: Understand the Properties of fluids, Fluids for hydraulic systems



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			<p>CO3: governing laws. distribution of fluid power, Design and analysis of typical hydraulic circuits.</p> <p>CO4: Design hydraulic circuits</p> <p>CO5: Learn to select materials</p>
43	IV/I	Industrial Oriented Mini Project/ Summer Internship.	<p>CO1: Learn and adopt the engineer's role and responsibilities with ethics.</p> <p>CO2: Get exposure to the industrial environment for professional activities.</p> <p>CO3: Get possible opportunities to learn, understand and sharpen the technical skills required for technical advancement.</p> <p>CO4: Develop managerial skills required for professional career.</p> <p>CO5: Attain skill for writing technical report and prepare poster for presentation.</p>
44	IV/I	Seminar	<p>CO1: Establish motivation for any topic of interest and develop a thought process for technical presentation</p> <p>CO2: Organize a detailed literature survey and build a document with respect to technical publications.</p> <p>CO3: Analysis and comprehension of proof-of-concept and related data.</p> <p>CO4: Effective presentation and improve soft skills.</p> <p>CO5: Make use of new and recent technology (e.g. Latex) for creating technical reports</p>
45	IV/I	Project Stage - I	<p>CO1: Identify and analyze the problem.</p> <p>CO2: Formulate the problem statement by applying the technical knowledge and skills.</p> <p>CO3: Design hardware and software to solve the identified problems.</p> <p>CO4: Utilize the team work to solve problems and make proper decisions.</p> <p>CO5: Develop an optimized solution for problem within available resources and time.</p>
46	IV/II	Composite Materials	<p>CO1: Explain the mechanical behavior of layered composites compared to isotropic materials.</p> <p>CO2: Knowledge of the crystal structures of a wide range of ceramic materials and glasses.</p> <p>CO3: Able to explain how common fibers are produced and how the properties of the fibers are related to the internal structure.</p>



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			<p>CO4: Able to select matrices for composite materials in different applications.</p> <p>CO5: Able to describe key processing methods for fabricating composites.</p>
47	VI/II	Industrial Management	<p>CO1: Able to apply principles of management</p> <p>CO2: Able to design the organization structure</p> <p>CO3: Able to apply techniques for plant location, design plant layout and value analysis</p> <p>CO4: Able to carry out work study to find the best method for doing the work and establish standard time for a given method</p> <p>CO5: Able to apply various quality control techniques and sampling plans</p>
48	VI/II	Fundamentals Of Robotics	<p>CO1: Demonstrate knowledge of industrial robots, characteristics, end effectors and actuators.</p> <p>CO2: Apply spatial transformation to obtain forward and inverse kinematics</p> <p>CO3: Solve robot dynamics problems, generate joint trajectory for path planning</p> <p>CO4: Describe working principle of various sensors and program different operations</p> <p>CO5: Appreciate applications of robots in industry.</p>
49	VI/II	Project Stage - II	<p>CO1: Identify and analyze the problem</p> <p>CO2: Formulate the problem statement by applying the technical knowledge and skills.</p> <p>CO3: Design hardware and software to solve the identified problems.</p> <p>CO4: Utilize the team work to solve problems and make proper decisions.</p> <p>CO5: Develop an optimized solution for problem within available resources and time.</p>


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Electronics and Communication Engineering I & II Sem Course Outcomes For The Academic Year (2023-2024)

S.No	Year/Sem	Course name	Course Outcomes
1	II-I	Electronic devices and circuits	CO1: Know the characteristics of various components
			CO2: Understand the utilization of components
			CO3: Understand the biasing techniques
			CO4: Design and analyze small signal amplifier circuits
			CO5: Understand the utilization of special purpose devices
2	II-I	Network analysis and transmission lines	CO1: Gain the knowledge on basic RLC circuits behavior
			CO2: Analyze the Steady state and transient analysis of RLC Circuits
			CO3: Know the characteristics of two port network parameters
			CO4: Analyze the transmission line parameters and configurations
			CO5: Analyze the transmission line parameters and configuration
3	II-I	Digital system design	CO1: Understand the numerical information in different forms and Boolean Algebra theorems.
			CO2: Postulates of Boolean algebra and to minimize combinational functions
			CO3: Design and analyze combinational and sequential circuits.
			CO4: Known about the logic families and realization of logic gates.
			CO5: Known about the logic families and realization of logic gates
4	II-I	Signals and systems	CO1: Differentiate various signal functions
			CO2: Represent any arbitrary signal in time and frequency domain.
			CO3: Understand the characteristics of linear time invariant systems.
			CO4: Analyze the signals with different transform technique



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			CO5:Analyze discrete time signals and systems by using appropriate mathematical tool
5	II-I	Probability theory and stochastic processes	CO1:Understand the concepts of Random Process and its Characteristics. CO2:Understand the response of linear time Invariant system for a Random Processes CO3:Determine the Spectral and temporal characteristics of Random Signals. CO4:Understand the concepts of Noise in Communication systems. CO5:Create mathematical models for practical design problems and determine theoretical solutions to the created models
6	II-I	Electronic devices and circuits lab	CO1:Know the characteristics of various components CO2:Understand the utilization of components CO3:Understand the biasing techniques CO4:Design and analyze small signal amplifier circuits CO5:Understand the construction,operation and characterstics of MOSFET
7	II-I	Digital system design lab	CO1:Understand the numerical information in different forms and Boolean Algebra theorems. CO2:Postulates of Boolean algebra and to minimize combinational functions. CO3:Design and analyze combinational and sequential circuits. CO4:Known about the logic families and realization of logic gates CO5:Design complex digital systems at several level of abstractions;behavioral and structural,synthesis and rapid system prototyping
8	II-I	Basic simulation lab	CO1:Differentiate various signal functions. CO2:Represent any arbitrary signal in time and frequency domain. CO3:Understand the characteristics of linear time invariant systems. CO4:Analyze the signals with different transform technique CO5:To verify sampling theorem



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9	II-II	Laplace transforms, numerical methods and complex variables	CO1:Use the Laplace transforms techniques for solving ODE's
			CO2:Find the root of a given equation.
			CO3:Estimate the value for the given data using interpolation
			CO4:Analyze the complex function with reference to their analyticity, integration using Cauchy's integral and residue theorems
			CO5:Taylor's and Laurent's series expansions of complex Function
10	II-II	Electromagnetic fields and waves	CO1:Get the knowledge of Basic Laws, Concepts and proofs related to Electrostatic Fields and Magneto static Fields.
			CO2:Distinguish between the static and time-varying fields, establish the corresponding sets of Maxwell's Equations and Boundary Conditions
			CO3:Analyze the Wave Equations for good conductors, good dielectrics and evaluate the UPW Characteristics for several practical media of interest
			CO4:To analyze completely the rectangular waveguides, their mode characteristics, and Design waveguides for solving practical problems
			CO5:Apply Maxwell's equations to solutions of problems relating to transmission lines and uniform plane wave propagation
11	II-II	Analog and digital communications	CO1:Analyze and design of various continuous wave and angle modulation and demodulation techniques
			CO2:Understand the effect of noise present in continuous wave and angle modulation techniques
			CO3:Attain the knowledge about AM , FM Transmitters and Receivers
			CO4:Analyze and design the various Pulse Modulation Techniques
			CO5:Understand the concepts of Digital Modulation Techniques and Baseband transmission
12	II-II	Linear ic applications	CO1: A thorough understanding of operational amplifiers with linear integrated circuits
			CO2:Attain the knowledge of functional diagrams and applications of IC 555 and IC 565



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			CO3:Acquire the knowledge about the Data converters.
			CO4:Classify various active filter configurations based on frequency response and construct using 741 op-amp
			Co5:Analyze and design non linear application like multiplier,comprator and etc,using OP-AMP
13	II-II	Electronic circuit analysis	CO1:Design the multistage amplifiers and understand the concepts of High Frequency Analysis of Transistors
			CO2:Utilize the Concepts of negative feedback to improve the stability of amplifiers and positive feedback to generate sustained oscillations
			CO3:Design and realize different classes of Power Amplifiers and tuned amplifiers useable for audio and Radio applications
			CO4:Design Multivibrators and sweep circuits for various applications
			CO5:To study various modulation techniques
14	II-II	Analog and digital communications lab	CO1:Analyze and design of various continuous wave and angle modulation and demodulation techniques
			CO2:Understand the effect of noise present in continuous wave and angle modulation techniques.
			CO3:Attain the knowledge about AM, FM Transmitters and Receivers.
			CO4:Analyze and design the various Pulse Modulation Techniques
			CO5:Understand the concepts of Digital Modulation Techniques and Baseband transmission
15	II-II	Ic applications lab	CO1:A thorough understanding of operational amplifiers with linear integrated circuits.
			CO2:Attain the knowledge of functional diagrams and applications of IC 555 and IC 565 techniques
			CO3:Acquire the knowledge about the Data converters
			CO4:Design and analyse oscillators using op-amp



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			CO5:Design and analyse multivibrators circuits using op-amp
16	II-II	Electroniccircuit analysis lab	CO1:Design the multistage amplifiers and understand the concepts of High Frequency Analysis of Transistors.
			CO2:Utilize the Concepts of negative feedback to improve the stability of amplifiers and positive feedback to generate sustained oscillations
			CO3:Design and realize different classes of Power Amplifiers and tuned amplifiers useable for audio and Radio applications
			CO4:Design Multivibrators and sweep circuits for various applications
			CO5:Discriminate the design and simulate RC phase shift oscillator circuits
17	III-I	Microprocessors and microcontrollers	CO1:Understands the internal architecture, organization and assembly language programming of 8086 processors.
			CO2:Understands the internal architecture, organization and assembly language programming of 8051/controllers
			CO3:Understands the interfacing techniques to 8086 and 8051 based systems
			CO4:Understands the internal architecture of ARM processors and basic concepts of advanced ARM processors
			CO5:Design electrical circuitry to the Microprocessors I/O ports
18	III-I	Data communications and networks	CO1:Know the Categories and functions of various Data communication Networks
			CO2:Design and analyze various error detection techniques
			CO3:Demonstrate the mechanism of routing the data in network layer
			CO4:Know the significance of various Flow control and Congestion control Mechanisms
			CO5:Know the Functioning of various Application layer Protocols
19	III-I	Control systems	CO1:Understand the modeling of linear-time-invariant systems using transfer function and state space representations.



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			CO2:Understand the concept of stability and its assessment for linear-time invariant systems
			CO3:Design simple feedback controllers
			CO4:Employ time domain analysis to predict and diagnose transient performance parameters of the system for standard input functions
			CO5:Formulate different types of analysis in frequency domain to explain the natureof stability system
20	III-I	Business economics and financial analysis	CO1:The students will understand the various Forms of Business and the impact of economic variables on the Business
			CO2:The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt
			CO3:The Students can study the firm's financial position by analysing the Financial Statements of a Company
			CO4:Build up decision making skill under uncertain business climate
			CO5: To interpret the basics of financial accounting and relevance of accounting principles
21	III-I	Electronic measurements and instrumentation	CO1:Measure electrical parameters with different meters and understand the basic definition of measuring parameters
			CO2:Use various types of signal generators, signal analyzers for generating and analyzing various real-time signals
			CO3:Operate an Oscilloscope to measure various signals
			CO4:Measure various physical parameters by appropriately selecting the transducers.
			CO5:Apply complete knowledge of various electronic measurement transducers to measure the physical quantitives
22	III-I	Antennas and propagation	CO1:Characterize the antennas based on frequency, configure the geometry and establish the radiation patterns of VHF, UHF and Microwave antennas and also antenna arrays.
			CO2:Specify the requirements for microwave measurements and arrange a setup to carry out the



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			antenna far zone pattern and gain measurements in the laboratory
			CO3: Classify the different wave propagation mechanisms, determine the characteristic features of different wave propagations, and estimate the parameters involved
			CO4:
			CO5
23	III-I	Data communications and networks lab	CO1: Know the Categories and functions of various Data communication Networks.
			CO2: Design and analyze various error detection techniques
			CO3: Demonstrate the mechanism of routing the data in network layer
			CO4: Know the significance of various Flow control and Congestion control Mechanisms
			CO5: Know the Functioning of various Application layer Protocols
24	III-I	Microprocessors & microcontrollers lab	CO1: Understands the internal architecture, organization and assembly language programming of 8086 processors
			CO2: Understands the internal architecture, organization and assembly language programming of 8051/controllers
			CO3: Understands the interfacing techniques to 8086 and 8051 based systems
			CO4: Understands the internal architecture of ARM processors and basic concepts of advanced ARM processors
			CO5: Develop testing and experimental procedure on Microcontroller analyze their operation under different cases
25	III-I	Advanced communication skills lab	CO1: Acquire the vocabulary and use it contextually
			CO2: Listen and speak effectively, confidently in



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			formal and informal contexts
			CO3:Developing proficiency in academic reading and writing
			CO4:Increase the possibilities of job prospects
			CO5:Activity analysis for mock interview and group discussions
26	III-II	Digital signal processing	CO1: Understand the LTI system characteristics and Multirate signal processing
			CO2:Understand the inter-relationship between DFT and various transforms
			CO3:Design a digital filter for a given specification.
			CO4:Understand the significance of various filter structures and effects of round off errors.
			CO5:Understand the fast computation of DFT and appreciate the FFT processing
27	III-II	Vlsi design	CO1:Acquire qualitative knowledge about the fabrication process of integrated circuits using MOS transistors
			CO2:Draw the layout of any logic circuit which helps to understand and estimate parasitic effect of any logic circuit
			CO3:Design building blocks of data path systems, memories and simple logic circuits using PLA, PAL, FPGA and CPLD.
			CO4:Understand different types of faults that can occur in a system and learn the concept of testing and adding extra hardware to improve testability of system
			CO5:Design simple logic circuit using PLA,PAL,FPGA and CPLD
28	III-II	Mobile communications and networks	CO1:To provide the student with an understanding of the cellular concept, frequency reuse, handoff strategies
			CO2:To provide the student with an understanding of Co-channel and Non-Co-Channel interferences.
			CO3:To give the student an understanding of cell coverage for signal and traffic, diversity techniques



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			and channel assignment
			CO4: To give the student an understanding types of handoff
			CO5: To understand challenges and application of Adhoc wireless Networks.
29	III-II	Disaster preparedness & planning management	CO1: The application of Disaster Concepts to Management
			CO2: Analyzing Relationship between Development and Disasters
			CO3: Ability to understand Categories of Disasters and
			CO4: To understand Impacts of Disasters Key Skills
			CO5: Realization of the responsibilities to society
30	III-II	Digital signal processing lab	CO1: Understand the LTI system characteristics and Multirate signal processing.
			CO2: Understand the inter-relationship between DFT and various transforms
			CO3: Design a digital filter for a given specification..
			CO4: Understand the significance of various filter structures and effects of round off errors.
			CO5: Analyse and observe frequency response characteristics of digital IIR filters using window techniques
31	III-II	E – CAD Lab	CO1: Acquire qualitative knowledge about the fabrication process of integrated circuits using MOS transistors
			CO2: Draw the layout of any logic circuit which helps to understand and estimate parasitic effect of any logic circuit
			CO3: Design building blocks of data path systems, memories and simple logic circuits using PLA, PAL, FPGA and CPLD.
			CO4: Understand different types of faults that can occur in a system and learn the concept of testing and adding extra hardware to improve testability of system



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			CO5: Write verilog and VHDL code for different combinational logic circuits
32	III-II	Scripting language lab	Ability to understand the differences between Scripting languages and programming languages
			Able to gain some fluency programming in Ruby, Perl, TCL
			To implement the concepts of Ruby objects in C
			CO4: To gain more knowledge of Data structures and packages and Perl programming Security issues
			CO5: Design and test programs to solve mathematical problems
33	IV-I	Microwave and optical communications	CO1: Known power generation at microwave frequencies and derive the performance characteristics
			CO2: Realize the need for solid state microwave sources and understand the principles of solid state devices.
			CO3: Distinguish between the different types of waveguide and ferrite components, and select proper components for engineering applications
			CO4: Understand the utility of S-parameters in microwave component design and learn the measurement procedure of various microwave parameters
			CO5: Understand the mechanism of light propagation through Optical Fibres
34	IV-I	Digital image processing	CO1: Explore the fundamental relations between pixels and utility of 2-D transforms in image processor
			CO2: Understand the enhancement, segmentation and restoration processes on an image.
			CO3: Implement the various Morphological operations on an image.
			CO4: Understand the need of compression and evaluation of basic compression algorithms.



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			CO5:Understand the fast computation of DFT and appreciate the FFT processing
35	IV-I	Database management systems	CO1:Gain knowledge of fundamentals of DBMS, database design and normal forms
			CO2:Master the basics of SQL for retrieval and management of data.
			CO3:Be acquainted with the basics of transaction processing and concurrency control
			CO4:Familiarity with database storage structures and access techniques
			CO5:To understand the concepts of Data on External storage
36	IV-I	Professional Practice, Law & Ethics	CO1:The students will understand the importance of professional practice Law and Ethics in their personal lives and professional careers
			CO2:The students will learn their rights and responsibilities as an employee, team member and a global citizen
			CO3:Awareness of professional rights and responsibilities of engineer, safety and risk benefit analysis of engineer
			CO4:Acquiring knowledge of various roles of engineer in applying ethical principals at various professional levels
			CO5:Professional ethical values and contemporary issues
37	IV-I	Principles of Entrepreneurship	CO1:Understand the concept of Entrepreneurship
			CO2: The students will understand the importance of Financing and Managing the new ventures
			CO3: The student will get awareness of schemes and functions of directorate of industries
			CO4: To gain more knowledge on Production and marketing management
			CO5:Understand all the concepts of Indian Act's
38	IV-I	Microwave and Optical Communications Lab	CO1: Known power generation at microwave frequencies and derive the performance



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			<p>characteristics</p> <p>CO2: Realize the need for solid state microwave sources and understand the principles of solid state devices.</p> <p>CO3: Distinguish between the different types of waveguide and ferrite components, and select proper components for engineering applications</p> <p>CO4: Understand the utility of S-parameters in microwave component design and learn the measurement procedure of various microwave parameters</p> <p>CO5: Understand the mechanism of light propagation through Optical Fibers</p>
39	IV-I	Industrial oriented mini project/ summer internship	<p>CO 1: Students will be able to practice acquired Knowledge within the chosen area of technology for project development</p> <p>CO2: Identify, discuss and justify the technical aspects of the chosen project with a comprehensive and systematic approach</p> <p>CO3: Reproduce, improve and refine technical aspects for engineering projects</p> <p>CO4: Work as an individual or in a team in development of technical projects</p> <p>CO5: Communicate and report effectively project related activities and findings</p>
40	IV-I	Seminar	<p>CO1: Establish motivation for any topic of interest and develop a thought process for technical presentation</p> <p>CO2: Organize a detailed literature survey and build a document with respect to technical publications.</p> <p>CO3: Analysis and comprehension of proof of concept and related data.</p> <p>CO4: Effective presentation and improve soft skills</p> <p>CO5: Make use of new and recent technology (e.g. Latex) for creating technical reports</p>
41	IV-I	Project stage-1	<p>CO1: Demonstrate a sound technical knowledge of their selected project topic</p>



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			CO2:Undertake problem identification, formulation and solution
			CO3:Design engineering solutions to complex problems utilizing a systems approach
			CO4:Conduct an engineering project
			CO5:Communicate with engineers and the community at large in written and oral forms
42	IV-II	Satellite communication	CO1:Understand basic concepts and frequency allocations for satellite communication, orbital mechanics and launch vehicles.
			CO2:Envision the satellite sub systems and design satellite links for specified C/N.
			CO3:Understand the various multiple access techniques for satellite communication systems and earth station technologies.
			CO4:Known the concepts of LEO, GEO Stationary Satellite Systems and satellite navigation
			CO5:To understand the concepts of satellite navigation and GPS.
43	IV-II	Low power VLSI Design	CO1:Understand the need of Low power circuit design
			CO2:Attain the knowledge of architectural approaches
			CO3:Analyze and design Low-Voltage Low-Power combinational circuits
			CO4:Known the design of Low-Voltage Low-Power Memories
			CO5:To understand the concepts of low power memories
44	IV-II	Non conventional sources of energy	CO1:Identify renewable energy sources and their utilization. Understand the basic concepts of solar radiation and analyze the working of solar and thermal systems
			CO2:Understand principles of energy conversion from alternate sources including wind, geothermal, ocean, biomass, biogas and hydrogen.
			CO3:Understand the concepts and applications of fuel cells, thermoelectric convertor and MHD generator.
			CO4:Identify methods of energy storage for specific applications



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			CO5:Understand the concept of Direct Energy Conversion
45	IV-II	Project stage 2	CO1:Identify problem, conduct relevant literature survey and formalize it.
			CO2:Analyze & design efficient, cost-effective and eco-friendly solutions using relevant tools (if necessary) and processes
			CO3:Implement the design and demonstrate the functionality of developed model
			CO4:Evaluate the results to derive the conclusion and provide scope for future enhancement
			CO5:Conduct an Engineering project


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Website: www.b-iet.ac.in, e-mail: principal@b-iet.ac.in Contact No.: +919652929786**Computer Science Engineering I & II Sem Course Outcomes For The Academic Year (2023-2024)**

S.NO	YEAR/SEM	COURSE NAME	COURSE OUTCOMES
1	II/I	Data structures	CO1: Ability to select the data structures that efficiently model the information in a problem
			CO2: Ability to assess efficiency trade-offs among different data structure implementations or combinations
			CO3: Implement and know the application of algorithms for sorting and pattern matching.
			CO4: Design programs using a variety of data structures, including hash tables, binary and general tree structures, search trees, tries, heaps, graphs, and AVL-trees.
			CO5: Understanding the concepts of various algorithms -Brute force, the Boyer –Moore algorithm, the Knuth-Morris-Pratt algorithm.
2	II/I	Computer organization and Architecture	CO1: Understand the basics of instructions sets and their impact on processor design.
			CO2: Demonstrate an understanding of the design of the functional units of a digital computer system
			CO3: Evaluate cost performance and design trade-offs in designing and constructing a computer processor including memory
			CO4: Design a pipeline for consistent execution of instructions with minimum hazards
			CO5: Recognize and manipulate representations of numbers stored in digital computers
3	II/I	Object oriented programming using c++	CO1: Able to develop programs with reusability
			CO2: Develop programs for file handling
			CO3: Handle exceptions in programming
			CO4: Develop applications for a range of problems using object-oriented programming techniques
			CO5: Implementing and executing the Exception Handling and studying the Benefits of it
4	II/I	Analog and digital electronics	CO1: Know the characteristics of various components
			CO2: Understand the utilization of components
			CO3: Design and analyze small signal amplifier circuits

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			<p>5C04: Learn Postulates of Boolean algebra and to minimize combinational functions</p> <p>C075: Design and analyze combinational and sequential circuits</p>
4	II/I	Computer oriented statistical methods	<p>CO1: Apply the concepts of probability and distributions to some case studies</p> <p>CO2: Correlate the material of one unit to the material in other units</p> <p>CO3: Resolve the potential misconceptions and hazards in each topic of study</p> <p>CO4: Studying & applying the concepts of Estimation & Tests of Hypotheses and Statistical Hypotheses</p> <p>CO5: Understanding the concepts of Stochastic Processes and Markov Chains</p>
5	II/I	Analog and digital electronics lab	<p>CO1: Know the characteristics of various components</p> <p>CO2: Understand the utilization of components</p> <p>CO3: Design and analyze small signal amplifier circuits</p> <p>CO4: Postulates of Boolean algebra and to minimize combinational functions</p> <p>CO5: Design and analyze combinational and sequential circuits</p>
6	II/I	Ds lab	<p>CO1: 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</p> <p>CO2: Ability to Implement searching algorithms.</p> <p>CO3: Ability to Implement sorting algorithms.</p> <p>CO4: Ability to Implement the tree traversal methods.</p> <p>CO5: Ability to Implement the graph traversal methods.</p>
7	II/I	C++ lab	<p>CO1: Able to develop programs with reusability Develop programs for file handling</p> <p>CO2: Handle exceptions in programming</p> <p>CO3: Develop applications for a range of problems using object-oriented programming techniques</p> <p>CO4: ability to develop programs I/O operations & scope level programs.</p>



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			CO5: Ability to develop programs on the principles of virtual functions and polymorphism
8	II/I	Gender sensitization lab	CO1: Students will have developed a better understanding of important issues related to gender in contemporary India.
			CO2: Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
			CO3: Students will acquire insight into the gendered division of labour and its relation to politics and economics
			CO4: Men and women students and professionals will be better equipped to work and live together as equals
			CO5: Students will develop a sense of appreciation of women in all walks of life
9	II/II	Discrete mathematics	CO1: Ability to understand and construct precise mathematical proofs
			CO2: Ability to use logic and set theory to formulate precise statements
			CO3: Ability to analyze and solve counting problems on finite and discrete structures
			CO4: Ability to describe and manipulate sequences
			CO5: Ability to apply graph theory in solving computing problems
10	II/II	Operating systems	CO1: Will be able to control access to a computer and the files that may be shared
			CO2: Demonstrate the knowledge of the components of computer and their respective roles in computing.
			CO3: Ability to recognize and resolve user problems with standard operating environments.
			CO4: Gain practical knowledge of how programming languages, operating systems, and architectures interact and how to use each effectively.
			CO5: Able to understand basic Unix commands, system call interface for process management, interprocess communication and I/O in Unix
11	II/II	Business economics & financial analysis	CO1: The students will understand the various Forms of Business and the impact of economic variables on the Business.



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			<p>CO2: The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt.</p> <p>CO3: The Students can study the firm's financial position by analyzing the Financial Statements of a Company.</p> <p>CO4: To learn the basic Business types, impact of the Economy on Business and Firms specifically</p> <p>CO5: To analyze the Business from the Financial Perspective.</p>
12	II/II	Database management systems	<p>CO1: Gain knowledge of fundamentals of DBMS, database design and normal forms</p> <p>CO2: Master the basics of SQL for retrieval and management of data.</p> <p>CO3: Be acquainted with the basics of transaction processing and concurrency control</p> <p>CO4: Familiarity with database storage structures and access techniques</p> <p>CO5: Gain the knowledge on Index on external storage.</p>
13	II/II	Java programming	<p>CO1: Able to solve real world problems using OOP techniques.</p> <p>CO2: Able to understand the use of abstract classes</p> <p>CO3: Able to solve problems using java collection framework and I/o classes.</p> <p>CO4: Able to develop multithreaded applications with synchronization.</p> <p>CO5: Able to develop applets for web applications</p>
14	II/II	Os lab	<p>CO1: se Outcomes: Simulate and implement operating system concepts such as scheduling, deadlock management, file management and memory management.</p> <p>CO2: Able to implement C programs using Unix system calls</p> <p>CO3: Understanding of the design aspects of operating system concepts through simulation</p> <p>CO4: Implement the Unix commands, system call interface for process management</p> <p>CO5: Implementing memory management techniques</p>
15	II/II	Dbms lab	<p>CO1: Applying the concepts of Relational and Er</p>



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			<p>model</p> <p>CO2: Design database schema for a given application and apply normalization</p> <p>CO3: Acquire skills in using SQL commands for data definition and data manipulation.</p> <p>CO4: Develop solutions for database applications using procedures, cursors and triggers</p> <p>CO5: Implementing the Queries using Aggregate functions, GROUP BY, HAVING etc</p>
16	II/II	Java lab	<p>CO1: Able to write programs for solving real world problems using java collection frame work.</p> <p>CO2: Able to write programs using abstract classes.</p> <p>CO3: Able to write multithreaded programs.</p> <p>CO4: Able to write GUI programs using swing controls in Java.</p> <p>CO5: To make the student expert in implementing the applying the skills of java concepts in developing applications of java.</p>
17	III/I	Computer networks	<p>CO1: Gain the knowledge of the basic computer network technology</p> <p>CO2: Gain the knowledge of the functions of each layer in the OSI and TCP/IP reference model.</p> <p>CO3: Obtain the skills of subnetting and routing mechanisms.</p> <p>CO4: Familiarity with the essential protocols of computer networks, and how they can be applied in network design and implementation.</p> <p>CO5: Studying and understanding about various protocols implementation and usage over network.</p>
18	III/I	Software engineering	<p>CO1: 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).</p> <p>CO2: 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.</p> <p>CO3: Will have experience and/or awareness of testing problems and will be able to develop a simple testing report</p>



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			<p>CO4: Applying the knowledge of various Testing Strategies and Product metrics</p> <p>CO5: Ability to applying and understanding the knowledge over metrics, risk management & Quality Management</p>
19	III/I	Web technologies	<p>CO1: gain knowledge of client-side scripting, validation of forms and AJAX programming</p> <p>CO2: understand server-side scripting with PHP language</p> <p>CO3: understand what is XML and how to parse and use XML Data with Java</p> <p>CO4: Implement and develop the programs using JSP</p> <p>CO5: Ability to develop the applications at client side scripting using java script.</p>
20	III/I	Principles of programming languages	<p>CO1: Acquire the skills for expressing syntax and semantics in formal notation</p> <p>CO2: Identify and apply a suitable programming paradigm for a given computing application</p> <p>CO3: Gain knowledge of and able to compare the features of various programming languages</p> <p>CO4: Understanding and gaining the knowledge over event handling in C++ , Java & concepts of c#</p> <p>CO5: Understanding and studying fundamentals of Functional Programming Languages LISP, Logic Programming Language prolog and scripting languages python.</p>
21	III/I	Formal languages & automata theory	<p>CO1: Able to understand the concept of abstract machines and their power to recognize the languages</p> <p>CO2: Able to employ finite state machines for modeling and solving computing problems.</p> <p>CO3: Able to design context free grammars for formal languages</p> <p>CO4: Able to distinguish between decidability and undesirability.</p> <p>CO5: Able to gain proficiency with mathematical tools and formal methods.</p>
22	III/I	Informational retrieval systems	<p>CO1: Ability to apply IR principles to locate relevant information large collections of data</p> <p>CO2: Ability to design different document clustering</p>



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			algorithms
			CO3: Implement retrieval systems for web search tasks.
			CO4: Design an Information Retrieval System for web search tasks
			CO5: To understand the data/file structures those are necessary to design, and implement information retrieval (IR) systems.
23	III/I	Software engineering lab	CO1: Ability to translate end-user requirements into system and software requirements
			CO2: Ability to generate a high-level design of the system from the software requirements
			CO3: Will have experience and/or awareness of testing problems and will be able to develop a simple testing report
			CO4: Study and usage of any Design phase CASE tool
			CO5: Develop test cases for various white box and black box testing techniques.
24	III/I	Computer networks & web technologies lab	CO1: Implement data link layer farming methods
			CO2: Analyze error detection and error correction codes
			CO3: Implement and analyze routing and congestion issues in network design
			CO4: Implement Encoding and Decoding techniques used in presentation layer
			CO5: To be able to work with different network tools
25	III/II	Constitution of india	CO1: . Meaning of the constitution law and constitutionalism
			CO2: Historical perspective of the Constitution of India
			CO3: Salient features and characteristics of the Constitution of India
			CO4: Scheme of the fundamental rights
			CO5: The scheme of the Fundamental Duties and its legal status
26	III/II	Machine learning	CO1: . Understand the concepts of computational intelligence like machine learning
			CO2: Ability to get the skill to apply machine learning techniques to address the real time problems in different areas



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			<p>CO3: Understand the Neural Networks and its usage in machine learning application</p> <p>CO4: Studying and understanding various algorithms usage over real time applications like robo designing, automation vehicle etc</p> <p>CO5: Understanding key concepts and applying the same for developing reinforcement application.</p>
27	III/II	Compiler design	<p>CO1: Demonstrate the ability to design a compiler given a set of language features</p> <p>CO2: Demonstrate the the knowledge of patterns, tokens & regular expressions for lexical analysis</p> <p>CO3: . Acquire skills in using lex tool & yacc tool for developing a scanner and parser.</p> <p>CO4: Design and implement LL and LR parsers</p> <p>CO5: Design algorithms to generate machine code.</p>
28	III/II	Design and analysis of algorithms	<p>CO1: Ability to analyze the performance of algorithms</p> <p>CO2: Ability to choose appropriate data structures and algorithm design methods for a specified application</p> <p>CO3: Ability to understand how the choice of data structures and the algorithm design methods impact the performance of programs</p> <p>CO4: understanding and applying the knowledge of solving Greedy method concepts</p> <p>CO5: Applying the knowledge to solve the Branch and Bound & NP-Hard and NP-Complete problems</p>
29	III/II	Software testing methodologies	<p>CO1: Design and develop the best test strategies in accordance to the development model.</p> <p>CO2: To develop skills in software test automation and management using latest tools.</p> <p>CO3: To gain the knowledge of the concepts in software testing such as testing process, criteria, strategies, and methodologies.</p> <p>CO4: Understanding the knowledge of good and bad graph states and testing tips.</p> <p>CO5: Design and develop the best test strategies in accordance to the development model.</p>
30	III/II	MachineLearning lab	<p>CO1: understand complexity of Machine Learning algorithms and their limitations</p>



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			<p>CO2: understand modern notions in data analysis-oriented computing;</p> <p>CO3: be capable of confidently applying common Machine Learning algorithms in practice and implementing their own</p> <p>CO4: Be capable of performing experiments in Machine Learning using real-world data.</p> <p>CO5: Able to understand and apply the knowledge performing experiments in Machine Learning algorithms using real-world data.</p>
31	III/II	Cd lab	<p>CO1: Design and develop interactive and dynamic web applications using HTML, CSS, JavaScript and XML</p> <p>CO2: Apply client-server principles to develop scalable and enterprise web applications.</p> <p>CO3: Ability to design, develop, and implement a compiler for any language</p> <p>CO4: Able to use lex and yacc tools for developing a scanner and a parser.</p> <p>CO5: Able to design and implement LL and LR parsers.</p>
32	III/II	Es lab	<p>CO1: 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</p> <p>CO2: Understanding the environmental policies and regulations</p> <p>CO3: Understanding the impacts of developmental activities and mitigation measures</p> <p>CO4: Understanding the importance of ecological balance for sustainable development</p> <p>CO5: Understanding the impacts of developmental activities and mitigation measures</p>
33	IV/I	Cryptography & network security	<p>CO1: Student will be able to understand basic cryptographic algorithms, message and web authentication and security issues.</p> <p>CO2: Ability to identify information system requirements for both of them such as client and server.</p> <p>CO3: Ability to understand the current legal issues towards information security.</p> <p>CO4: Understanding and applying the knowledge</p>



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			<p>about various protocols implementation and its services along with wireless networks.</p> <p>CO5: Studying and understanding about IP Security, IP architecture and writing case studies of few applications.</p>
34	IV/I	Data mining	<p>CO1: Apply preprocessing methods for any given raw data</p> <p>CO2: Extract interesting patterns from large amounts of data.</p> <p>CO3: Discover the role played by data mining in various fields.</p> <p>CO4: Choose and employ suitable data mining algorithms to build analytical applications</p> <p>CO5: Evaluate the accuracy of supervised and unsupervised models and algorithms.</p>
35	IV/I	Cloud computing	<p>CO1: Ability to understand various service delivery models of a cloud computing architecture.</p> <p>CO2: Ability to understand the ways in which the cloud can be programmed and deployed.</p> <p>CO3: Understanding cloud service providers.</p> <p>CO4: Studying and applying knowledge over IaaS, PaaS and SaaS services and models.</p> <p>CO5: Gain the knowledge of various Cloud Service Providers like Amazon, google, Microsoft, IBM, SAP etc</p>
36	IV/I	Software process & project management	<p>CO1: Gain knowledge of software economics, phases in the life cycle of software development, project organization, project control and process instrumentation</p> <p>CO2: Analyze the major and minor milestones, artifacts and metrics from management and technical perspective</p> <p>CO3: Design and develop software product using conventional and modern principles of software project management</p> <p>CO4: To acquire managerial skills for software project development</p> <p>CO5: Ability to write the Case studies on software Project Management Practices</p>
37	IV/I	Cryptography & network security lab	<p>CO1: Student will be able to understand basic Cryptographic algorithms, message and web</p>



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			authentication and security issues.
			CO2: Ability to identify information system requirements for both of them such as client and server.
			CO3: Ability to understand the current legal issues towards information security.
			CO4: Ability to understand the data protection and securing the data over database and network by the implementation protocols and algorithms.
			CO5: Ability to understand the current legal issues towards information security over applying the techniques to secure the information.
38	IV/I	Industrial oriented mini project	CO1: Students able to understand and implement the SDLC.
			CO2: Students able to apply their knowledge over designing of chosen project
			CO3: Students able to implement the code on project using Chosen technology
			CO4: Students able to do testing the application at various levels and with various testing strategies.
			CO5: Students will learn & gain the knowledge in Mini Project.
39	IV/II	Organizational behavior	CO1: The outcome of the course is to provide the students with the conceptual framework and the theories underlying Organizational Behavior.
			CO2: Understanding and applying the concepts of Cognitive Processes-II: Personality and Attitudes – Personality as a continuum –
			CO3: Understanding and applying the knowledge on Dynamics of OB-I: Communication – types
			CO4: able to apply the knowledge and concepts of Dynamics of OB –III Power and Politics
			CO5: Study of Job design and Goal setting for High performance- Quality of Work Life Socio technical Design
40	IV/II	Real time systems	CO1: Able describe how a real-time operating system kernel is implemented
			CO2: Able explain how tasks are managed.
			CO3: Explain how the real-time operating system



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			implements time management
			C04: Discuss how tasks can communicate using semaphores, mailboxes, and queues.
			C05: Be able to implement a real-time system on an embedded processor.
41	IV/II	Web services and service oriented architecture	C01: Basic details of WSDL,UDDI,SOAP
			C02: Implement WS client and server with interoperable systems
			C03: To learn basic concepts of SOA.
			C04: Understand the Discovering Web Services & its architecture.
			C05: Studying and applying knowledge about understanding the Services Security
42	IV/II	Project work	C01: Student able to analyze the problem
			C02: Student will able to function effectively on teams to accomplish a common goal
			C03: Students will be use current techniques.
			C04: Students will able to design and development principles
			C05: Students will able to learn new things

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CSM I & II Sem Course Outcomes For The Academic Year 2023-2024

S.NO.	YEAR /SEM	COURSE NAME	Course Outcomes
1	II/I	Discrete Mathematics	CO1: Ability to understand and construct precise mathematical proofs.
			CO2: Ability to use logic and set theory to formulate precise statements
			CO3: Ability to analyze and solve counting problems on finite and discrete structures
			CO4: Ability to describe and manipulate sequences
			CO5: Ability to apply graph theory in solving computing problems
2	II/I	DATA STRUCTURES	CO1: Ability to select the data structures that efficiently model the information in a problem.
			CO2: Ability to assess efficiency trade-offs among different data structure implementations or combinations.
			CO3: Implement and know the application of algorithms for sorting and pattern matching.
			CO4: Design programs using a variety of data structures, including hash tables, binary and general tree structures, search trees, tries, heaps, graphs, and AVL-trees.
3	II/I	MATHEMATICAL AND STATISTICAL FOUNDATION	CO1: Apply the number theory concepts to cryptography domain
			CO2: Apply the concepts of probability and distributions to some case studies
			CO3: Correlate the material of one unit to the material in other units
			CO4: Resolve the potential misconceptions and hazards in each



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		NS	topic of study.
4	II/I	COMPUTER ORGANIZATION AND ARCHITECTURE	CO1: Understand the basics of instructions sets and their impact on processor design.
			CO2: Demonstrate an understanding of the design of the functional units of a digital computer system
			CO3: Evaluate cost performance and design trade-offs in designing and constructing a computer processor including memory.
			CO4: Design a pipeline for consistent execution of instructions with minimum hazards.
			CO5: Recognize and manipulate representations of numbers stored in digital computers
5	II/I	PYTHON PROGRAMMING	CO1: Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
			CO2: Demonstrate proficiency in handling Strings and File Systems
			CO3: Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
			CO4: Interpret the concepts of Object-Oriented Programming as used in Python.
			CO5: Implement exemplary applications related to Network Programming, Web Services and Databases in Python.
6	II/I	BUSINESS ECONOMICS AND FINANCIAL ANALYSIS	CO1: The students will understand the various Forms of Business and the impact of economic variables on the Business.
			CO2: The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt.
			CO3: The Students can study the firm's financial position by analysing the Financial Statements of a Company.
7	II/I	DATA STRUCTURE	CO1: Ability to develop C programs for computing and real-life applications using basic elements like control statements, arrays,



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		SLAB	functions, pointers and strings, and data structures like stacks, queues and linked lists.
8	II/II	FORMAL LANGUAGES AND AUTOMATA THEORY	CO1: Able to understand the concept of abstract machines and their power to recognize the languages
			CO2: Able to employ finite state machines for modeling and solving computing problems.
			CO3: Able to design context free grammars for formal languages
			CO4: Able to distinguish between decidability and undecidability.
			CO5: Able to gain proficiency with mathematical tools and formal methods.
9	II/II	SOFTWARE ENGINEERING	CO1: 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).
			CO2: 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.
			CO3: Will have experience and/or awareness of testing problems and will be able to develop a simple testing report
10	II/II	OPERATING SYSTEMS	CO1: Introduce operating system concepts (i.e., processes, threads, scheduling, synchronization, deadlocks, memory management, file and I/O subsystems and protection)
			CO2: Introduce the issues to be considered in the design and development of operating system
			CO3: Introduce basic Unix commands, system call interface for process management, interprocess communication and I/O in Unix



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11	II/II	DATABASE MANAGEMENT SYSTEMS	CO1: Gain knowledge of fundamentals of DBMS, database design and normal forms
			CO2: Master the basics of SQL for retrieval and management of data.
			CO3: Be acquainted with the basics of transaction processing and concurrency control.
			CO4: Familiarity with database storage structures and access techniques
12	II/II	OBJECT ORIENTED PROGRAMMING USING JAVA	CO1: Able to solve real world problems using OOP techniques.
			CO2: Able to understand the use of abstract classes
			CO3: Able to solve problems using java collection framework and I/o classes.
			CO4: Able to develop multithreaded applications with synchronization.
			CO5: Able to develop applets for web applications
			CO6: Able to design GUI based applications
13	II/II	OBJECT ORIENTED PROGRAMMING USING JAVA	CO1: Able to solve real world problems using OOP techniques.
			CO2: Able to understand the use of abstract classes
			CO3: Able to solve problems using java collection framework and I/o classes.
			CO4: Able to develop multithreaded applications with synchronization.
			CO5: Able to develop applets for web applications
			CO6: Able to design GUI based applications
14	II/II	DBMS LAB	CO1: Gain knowledge of fundamentals of DBMS, database design and normal forms
			CO2: Master the basics of SQL for retrieval and management of data.
			CO3: Be acquainted with the basics of transaction processing and



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			concurrency control.
15	II/II	JAVA LAB	CO1:Able to write programs for solving real world problems using java collection frame work
			CO2: Able to write programs using abstract classes.
			CO3: Able to write multithreaded programs
			CO4: Able to write GUI programs using swing controls in Java.
16	II/II	OS LAB	CO1:Simulate and implement operating system concepts s
			CO2: Able to implement C programs using Unix system calls


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CSC I & II Sem Course Outcomes For The Academic Year 2023-2024

S. No	YEAR/S EM	COURSE NAME	COURSE OUTCOMES
1	II/I	Data Structures	CO1: Ability to select the data structures that efficiently model the information in a problem
			CO2: Ability to assess efficiency trade-offs among different data structure implementations or combinations
			CO3: Implement and know the application of algorithms for sorting and pattern matching.
			CO4: Design programs using a variety of data structures, including hash tables, binary and general tree structures, search trees, tries, heaps, graphs, and AVL-trees.
			CO5: Understanding the concepts of various algorithms -Brute force, the Boyer –Moore algorithm, the Knuth-Morris-Pratt algorithm.
2	II/I	Computer Organization and Architecture	CO1: Understand the basics of instructions sets and their impact on processor design.
			CO2: Demonstrate an understanding of the design of the functional units of a digital computer system
			CO3: Evaluate cost performance and design trade-offs in designing and constructing a computer processor including memory
			CO4: Design a pipeline for consistent execution of instructions with minimum hazards
			CO5: Recognize and manipulate representations of numbers stored in digital computers
3	II/I	Analog and Digital Electronics	CO1: Know the characteristics of various components
			CO2: Understand the utilization of components
			CO3: Design and analyze small signal amplifier circuits
			CO4: Learn Postulates of Boolean algebra and to minimize combinational functions
			CO5: Design and analyze combinational and sequential circuits
4	II/I	PYTHON Programming	CO1:ExaminePythonsyntaxandsemanticsandbefluentintheuseofPythonflowcontrolandfunctions.
			CO2:DemonstrateproficiencyinhandlingStringsandFileSystems
			CO3:Create,runandmanipulatePythonProgramsusingcoredatastructureslikeLists,Dictionariesand use RegularExpressions.
			CO4:InterprettheconceptsofObject-OrientedProgramming asused inPython



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			CO5: Implement exemplary applications related to Network Programming, Web Services and Databases in Python.
5	II/I	Mathematical and Statistical Foundation	CO1: Apply the number theory concepts to cryptography domain
			CO2: Apply the concepts of probability and distribution to some case studies
			CO3: Apply the concepts of probability and distribution to some case studies
			CO4: Correlate the material of one unit to the material in other units
			CO5: Resolve the potential misconceptions and hazards in each topic of study.
6	II/I	Analog and Digital Electronics Lab	CO1: Know the characteristics of various components
			CO2: Understand the utilization of components
			CO3: Design and analyze small signal amplifier circuits
			CO4: Postulates of Boolean algebra and to minimize combinational functions
			CO5: Design and analyze combinational and sequential circuits
7	II/I	Data Structures LAB	CO1: 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
			CO2: Ability to Implement searching algorithms.
			CO3: Ability to Implement sorting algorithms.
			CO4: Ability to Implement the tree traversal methods.
			CO5: Ability to Implement the graph traversal methods.
8	II/I	PYTHON LAB	CO1: Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
			CO2: Demonstrate proficiency in handling Strings and File Systems
			CO3: Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
			CO4: Interpret the concepts of Object-Oriented Programming as used in Python.
			CO5: Implement exemplary applications related to Network Programming, Web Services and Databases in Python.
9	II/I	Gender Sensitization Lab	CO1: Students will have developed a better understanding of important issues related to gender in contemporary India.
			CO2: Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
			CO3: Students will acquire insight into the gendered division of labour



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			and its relation to politics and economics
			CO4: Men and women students and professionals will be better equipped to work and live together as equals
			CO5: Students will develop a sense of appreciation of women in all walks of life
10	II/II	Discrete Mathematics	CO1: Ability to understand and construct precise mathematical proofs
			CO2: Ability to use logic and set theory to formulate precise statements
			CO3: Ability to analyze and solve counting problems on finite and discrete structures
			CO4: Ability to describe and manipulate sequences
			CO5: Ability to apply graph theory in solving computing problems
11	II/II	Business Economics & Financial Analysis	CO1: The students will understand the various Forms of Business and the impact of economic variables on the Business.
			CO2: The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt.
			CO3: The Students can study the firm's financial position by analyzing the Financial Statements of a Company.
			CO4: To learn the basic Business types, impact of the Economy on Business and Firms specifically
			CO5: To analyze the Business from the Financial Perspective.
12	II/II	Operating Systems	CO1: Will be able to control access to a computer and the files that may be shared
			CO2: Demonstrate the knowledge of the components of computer and their respective roles in computing.
			CO3: Ability to recognize and resolve user problems with standard operating environments.
			CO4: Gain practical knowledge of how programming languages, operating systems, and architectures interact and how to use each effectively.
			CO5: Ability to develop the applications at client side scripting using java script.
13	II/II	Computer Networks	CO1: Gain the knowledge of the basic computer network technology
			CO2: Gain the knowledge of the functions of each layer in the OSI and TCP/IP reference model.
			CO3: Obtain the skills of subnetting and routing mechanisms.
			CO4: Familiarity with the essential protocols of computer networks, and how they can be applied in network design and implementation.
			CO5: Studying and understanding about various protocols implementation and usage over network.
14	II/II	OOPS	CO1: Able to solve real world problems using OOP techniques.



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		Using Java	CO2: Able to understand the use of abstract classes CO3: Able to solve problems using java collection framework and I/o classes. CO4: Able to develop multithreaded applications with synchronization. CO5: Able to develop applets for web applications
15	II/II	Operating Systems lab	CO1: se Outcomes: Simulate and implement operating system concepts such as scheduling, deadlock management, file management and memory management. CO2: Able to implement C programs using Unix system calls CO3: Understanding of the design aspects of operating system concepts through simulation CO4: Implement the Unix commands, system call interface for process management CO5: Implementing memory management techniques
16	II/II	Computer Networks Lab	CO1: Implement data link layer farming methods CO2: Analyze error detection and error correction codes CO3: Implement and analyze routing and congestion issues in network design CO4: Implement Encoding and Decoding techniques used in presentation layer CO5: To be able to work with different network tools
17	II/II	OOPS Using Java lab	CO1: Able to write programs for solving real world problems using java collection frame work. CO2: Able to write programs using abstract classes. CO3: Able to write multithreaded programs. CO4: Able to write GUI programs using swing controls in Java. CO5: To make the student expert in implementing the applying the skills of java concepts in developing applications of java.
18	II/II	Constitution of india	CO1: . Meaning of the constitution law and constitutionalism CO2: Historical perspective of the Constitution of India CO3: Salient features and characteristics of the Constitution of India CO4: Scheme of the fundamental rights CO5: The scheme of the Fundamental Duties and its legal status


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Website: www.b-iet.ac.in, e-mail: principal@b-iet.ac.in Contact No.: +919652929786**Humanity and Science Engineering I & II Sem Course Outcomes For The Academic Year (2023-2024)**

S.NO	YEAR/SEM	COURSE NAME	COURSE OUTCOMES
1	I/I	English	CO1: Use English Language effectively in spoken and written forms.
			CO2: Comprehend the given texts and respond appropriately.
			CO3: Communicate confidently in various contexts and different cultures.
			CO4: Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
			CO5: Students Acquires basic proficiency in English Vocabulary, Grammar, Reading, Writing including reading and listening comprehension, writing and speaking skills.
2	I/I	Mathematics - i	CO1: Identify the matrix representation of a set of linear equations and to analyze the solution of the system of equations.
			CO2: Calculate the Eigen values and Eigen vectors.
			CO3: Analyze the nature of sequence and series.
			CO4: Evaluate the improper integrals using Beta and Gamma functions.
			CO5: Solve the extreme values of functions of two or three variables with/ without constraints.
3	I/I	Chemistry	CO1: The knowledge of atomic, molecular and electronic changes, band theory related to conductivity.
			CO2: The required principles and concepts of electrochemistry, corrosion and in understanding the problem of water and its treatments.
			CO3: The required skills to get clear concepts on basic spectroscopy and application to medical and other fields.
			CO4: The knowledge of configurationally and conformational analysis of molecules and reaction mechanisms.
			CO5: To impart the knowledge of stereochemistry and synthetic aspects useful for understanding reaction pathways.
4	I/I	Basic electrical	CO1: To analyze and solve electrical circuits using



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		engineering	<p>network laws and theorems.</p> <p>CO2: To understand and analyze basic Electric and Magnetic circuits.</p> <p>CO3: To study the working principles of Electrical Machines.</p> <p>CO4: To introduce components of Low Voltage Electrical Installations.</p> <p>CO5: To introduce the concept of power, power factor and its improvement.</p>
5	I/I	Engineering workshop	<p>CO1: Applying & gain the knowledge over understanding / practice on machine tools and their operations</p> <p>CO3: Practice on manufacturing of components using workshop trades including plumbing, fitting, Carpentry, foundry, house wiring and welding.</p> <p>CO2: Applying the knowledge over various tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling</p> <p>CO4: Apply basic electrical engineering knowledge for house wiring practice.</p> <p>CO5: Understanding Power tools in construction and Wood Working as Plumbing, Machine Shop, Metal Cutting.</p>
6	I/I	English language and communication skills lab	<p>CO1: Better understanding of nuances of English language through audio- visual experience and group activities.</p> <p>CO2: students able to mark stress, recognize & use the right intonation in sentences, Listening for general content, Listening to fill up information, Intensive listening, Listening for specific information etc</p> <p>CO1: Better understanding of nuances of English language through speaking activities in various contexts.</p> <p>CO4: students able to express themselves fluently and appropriately in social and professional Contexts Oral practice: Just A Minute (JAM) Sessions, Describing objects/situations/people, Role play.</p> <p>CO5: <i>Understand:</i> Listening for Specific Details, <i>Practice:</i> Listening Comprehension Tests.</p>
7	I/I	Engineering chemistry lab	<p>CO1: Determination of parameters like hardness and chloride content in water.</p> <p>CO2: Estimation of rate constant of a reaction from concentration – time relationships.</p> <p>CO3: Determination of physical properties like</p>



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			adsorption and viscosity. CO4: Calculation of Rf values of some organic molecules by TLC technique. CO5: The measurement of physical properties like adsorption and viscosity.
8	I/I	Basic electrical engineering lab	CO1: Get an exposure to basic electrical laws. CO2: Understand the response of different types of electrical circuits to different excitations. CO3: Understand the measurement, calculation and relation between the basic electrical parameters. CO4: Understand the basic characteristics of transformers and electrical machines. CO5: To analyze the performance characteristics of DC and AC electrical machines
10	I/II	Programming for problem solving	CO1: To write algorithms and to draw flowcharts for solving problems. CO2: Convert the algorithms/flowcharts to C programs. CO3: To code and test a given logic in the C programming language. CO4: To decompose a problem into functions and to develop modular reusable code. CO5: Students able to understand the use of arrays, pointers, strings and structures to write C programs.
			CO6: applying the knowledge of programming skills at Searching and sorting problems.
11	I/II	Applied physics	CO1: Students would be able to learn the fundamental CO2: Students able to gain the knowledge of fundamentals of Semiconductor physics, Optoelectronics, Lasers and fiber optics enable the students to apply to various systems like communications, solar cell, photo cells and so on. CO3: Students able to understand the Design, characterization and study of properties of material help the students to prepare new materials for various engineering applications. CO4: The course also helps the students to be exposed to the phenomena of electromagnetism and also to have exposure on magnetic materials and dielectric materials.
12	I/II	MathematicsII	CO1: Identify whether the given differentialequation of first order is exact or not. CO2: Solve higher differential equation and applythe concept of differential equation to real world



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			problems. CO3: Evaluate the multiple integrals and apply the concept to find areas, volumes, Centre of mass and Gravity for cubes, sphere and rectangular parallelepiped. CO4: Evaluate the line, surface and volume integrals and converting them from one to another. CO5: Apply Gauss, Greens and Stokes theorems.
13	I/II	Engineering graphics	CO1: Preparing working drawings to communicate the ideas and information. CO2: Read, understand and interpret engineering drawings. CO3: To provide basic concepts in engineering drawing. CO4: To impart knowledge about standard principles of orthographic projection of objects. CO5: To draw sectional views and pictorial views of solids.
14	I/II	Programming for problem solving lab	CO1: Preparing working drawings to communicate the ideas and information. CO2: Read, understand and interpret engineering drawings. CO3: To provide basic concepts in engineering drawing. CO4: To impart knowledge about standard principles of orthographic projection of objects. CO5: To draw sectional views and pictorial views of solids.
15	I/II	Environmental science	CO1: Preparing working drawings to communicate the ideas and information. CO2: Read, understand and interpret engineering drawings. CO3: To provide basic concepts in engineering drawing. CO4: To impart knowledge about standard principles of orthographic projection of objects. CO5: To draw sectional views and pictorial views of solids.
16	I/II	Programming for problem solving lab	CO1: students able to understand the writing algorithms for simple problems & Translating algorithms to a working and correct program. CO2: students able to learn, Identify and correct logical errors encountered during execution, Correct syntax errors as reported by the compilers. CO3: students understand Represent and manipulate



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			data with arrays, strings and structures. CO4: Students able learn Use pointers of different types. CO5: applying knowledge understanding of file operations Create read and write to and from simple text and binary files.
17	I/II	Applied physics lab	CO1: students able to Know the determination of the P CO2: applying and learning the Appreciate quantum physics in semiconductor devices and optoelectronics. CO3: students Gain the knowledge of applications of dielectric constant. CO4 : Understand the variation of magnetic field and behavior of hysteresis curve. CO5: Students able to get knowledge of Carried out data analysis.


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MBA Course outcomes for the Academic year 2023-2024

S.NO.	YEAR /SEM	COURSE NAME	COURSE OUTCOMES
1	I-I	Management Organizational Behaviour	CO1: To understand the various attitude and personalities and perceptions and leadership and motivation and apply in organizational situations
			CO2: To evaluate the management and contribution of management thinkers
			CO3: To apply the relevance of environmental scanning ,planning and to take decisions
			CO4: To interpret the individual and interpersonal behavior process for team building and group behavior development
			CO5: To analyze the organizing and controlling
2	I-I	Business Economics	CO1: To understand and learn the basics of economic principles in business
			CO2: To illustrate determinants of supply and demand and Demand Analysis and Forecasting
			CO3: To develop production and cost estimates
			CO4: To analyze the market structure
			CO5: To develop the pricing strategies
3	I-I	Financial	CO1: To understand the basic concepts of financial accounting



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		Accounting Analysis	<p>CO2:To summarize preparation of financial statement</p> <p>CO3: To develop the inventory valuation</p> <p>CO4: To analyze the accounting process</p> <p>CO5: To understand the interpretation of accounting concepts</p>
4	I-I	Research & Statistical Analysis	<p>CO1: To understand and learn basics of Research, Process of Research and elements of research Proposal</p> <p>CO2:To apply the various simple and advanced statistical tools</p> <p>CO3: To analyze the features and good research design</p> <p>CO4: To apply the principals of research methodology for various projects</p> <p>CO5: To understand the time series analysis and report writing</p>
5	I-I	Legal and Business Environment	<p>CO1: To understand all important legal provisions pertaining to Business Laws</p> <p>CO2:To Known the business laws related to incorporating a company</p> <p>CO3: To understand all important legal regulatory frame work in India</p> <p>CO4: To analyze the Law of Contract</p> <p>CO5: To develop the negotiable instruments</p>
6	I-I	BUSINESS ETHICS AND CORPORATE	<p>CO1:Undestands the importance of business ethics in the changing environment.</p> <p>CO2:Identify the professional ethics in various functions of organisation.</p> <p>CO3: Understands the corporate governance including corporate</p>



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		GOVERNANCE	governance codes and committees
			CO4: Analyse the role of the board in building the competitive advantage of a company.
			CO5: Explains the corporate social responsibility as a strategy for sustainable development
7	I-I	Business Communication Lab	CO1: To provide an overview of Prerequisites to Business Communication. .
			CO2: To provide an outline to effective Organizational Communication.
			CO3: To impart the correct practices of the strategies of Effective Business writing.
			CO4: TO Discuss the importance of ethical communication Ethics in Business Communication
			CO5: TO Evaluate and practice methods of analysis to assess the quality and reliability of a source
8	I-I	Statistical Data Analysis Lab	CO1: To understand the importance of project management
			CO2: To apply the project planning and execution and implementation
			CO3: To develop the significance of teams in projects
			CO4: To analyze the project evaluation techniques
			CO5: To evaluate the organizational behavior in project management
9	I-II	Human Resource Management	CO1: Explain Nature of HRM, Scope, Functions and Objectives, HRM Policies and practices.



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		nt	CO2: Understand SHRM Model
			CO3: Design Human Resource Planning
			CO4: Implement Recruitment & Selection through different sources & tests
			CO5: Make Career Planning
10	I-II	Marketing Managem nt	CO1: Explain New Product Development & Product Life Cycle
			CO2: Explain Factors influencing pricing decisions
			CO3: Differentiate Product Vs. Brand
			CO4: Illustrate Selecting pricing method, Selecting final price.
			CO5: Explain Wholesaling, Retailing, Franchising, Direct marketing ,Ecommerce Marketing Practices
11	I-II	Financial Managem nt	CO1: Explain the basic concept of financial management.
			CO2: Apply the tools from financial management this would facilitate the decision making i.e. Capital Budgeting, Ratio Analysis
			CO3: develop analytical skills this would facilitate the decision making in business situations
			CO4: Explain and use of financial analysis techniques i.e. Fund Flow, Cash Flow.
			CO5: Estimate working capital requirement of Business concern
12	I-II	QUANTIT ATIVE ANALYSIS FOR BUSINESS DECISION S	CO1: Explain Importance of Decision Sciences & Role of quantitative techniques In decision making
			CO2: Solve numerical on Assignment Models including special cases in Assignment models.
			CO3: Solve numerical on Transportation Models by North West Corner method, Least Cost method, VAM method and Optimal Solution by using MODI Method
			CO4: Solve numerical on Linear Programming problems by graphical



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			method
			CO5: Solve numerical on Markov Chains & Simulation Techniques
13	I-II	Logistics Supply Chain Managem ent	CO1: Explain the importance, scope and functions of Operations and Supply Chain Management in Present Scenario
			CO2: Explain the term Quality and can related different dimensions of Quality affecting customer satisfaction.
			CO3: Explain different operations processes , and identify different types of process-product matrix
			CO4: Prepare a service blue print for given service providing organization
			CO5: Demonstrate the Production Planning and Control and its functions for effective and efficient operations management
14	I-II	ENTREPR ENEURSH IP	CO1: understand the nature of entrepreneurship
			CO2: understand the function of the entrepreneur in the successful, commercial application of innovations
			CO3: confirm an entrepreneurial business idea
			CO4: identify personal attributes that enable best use of entrepreneurial opportunities
			CO5: understand the function of the entrepreneur in the successful
15	I-II	Rural Marketing	CO1: understand the rural marketing Vs urban marketing
			CO2: explain the rural economy and environment
			CO3: Determine social and cultural aspects in rural india
			CO4: what kind of innovations in rural marketing
			CO5: write about the rural market mapping -corporate social responsibility



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16	II-I	Strategic Investment & Financing Decisions	CO1: Understand the risk, uncertainty, risk analysis in investment decisions, risk adjusted rate of return and certainty equivalents.
			CO2: .Enumerate the investment decisions under capital constraints like capital rationing, portfolio risk and diversified projects.
			CO3: Explain the concept of multiple internal rate of return, Modified internal rate of return, pure, simple and mixed investments
			CO4: Determine the Lorie savage paradox, adjusted net present value and know the impact of inflation on capital budgeting decisions.
			CO5: Discuss the concepts of lease financing, leasing Vs. Operating risk, borrowing vs. procuring, hire purchase and installment purchase decisions
17	II-I	PRODUCT ION OPERATIONS MANAGEMENT	CO1: Gaining knowledge about managing production processes
			CO2: How to run operations effectively.
			CO3: Better understanding of modern production techniques
			CO4: Better understanding of quality management
			CO5: You will learn about practical applications of operations management to plan for the future
18	II-I	Managem ent Informatio n system	CO1: Acquire on job the skills, knowledge, attitudes, and perceptions along with the experience needed to constitute a professional identity.
			CO2: .Get actual supervised professional experiences.
			CO3: Get insight into the working of the real organizations
			CO4: Develop perspective about business organizations in their totality
			CO5: Explore career opportunities in their areas of interest.



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19	II-I	DATA ANALYTICS	CO1: Data will be collected around the business case after careful evaluation of the business case in a particular domain.
			CO2: A Database with the data collected in the above step will be created using SQL.
			CO3: Connect the SQL database with Tableau/ Python/ R and extracting this data into environments
			CO4: Preparation of reports based on the business objective and context
			CO5: Building the dashboard using Tableau/ Power BI
20	II-I	Risk Management & Financial Derivatives	CO1: Be able to describe standard derivative contracts, their properties and functionality
			CO2: Be able to understand and apply scientific methods for valuation of options and other derivatives, in continuous and discrete time.
			CO3: Be able to interpret and apply risk measures that are commonly used in risk management.
			CO4: Be able to reflect over and critically survey different assumptions and principles behind derivatives pricing and risk management.
			CO5: Demonstrate an understanding of pricing forwards, futures and options contracts
21	II-I	Security Analysis Portfolio Management	CO1: Explored to different avenues of investment.
			CO2: Equipped with the knowledge of security analysis.
			CO3: apply the concept of portfolio management for the better investment
			CO4: invest in less risk and more return securities
			CO5: Encourage students to apply stock and option valuation models in portfolio management



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22	II-I	Financial Institutions Markets & Services	CO1: Understand the role and function of the financial system in reference to the macro economy
			CO2: Demonstrate an awareness of the current structure and regulation of the Indian financial services sector
			CO3: Evaluate and create strategies to promote financial products and services.
			CO4: To enrich student's understanding of the fundamental concepts and working of financial service institutions
			CO5: To equip students with the knowledge and skills necessary to become employable in the financial service industry
23	II-I	Strategic Management Accounting	CO1: Explain how management accounting information is used in strategic decision making.
			CO2: Illustrate the process of strategy formulation, communication, implementation and control within an organization.
			CO3: Explain how to integrate conventional and contemporary management accounting techniques into a strategic management accounting framework
			CO4: Solve practical and applied problems by using research papers and case study analysis
			CO5: Identify and evaluate the business strategies of contemporary organisations, based on an understanding of their internal and external environments;
24	II-I	PERFORMANCE MANAGEMENT SYSTEMS	CO1: Setting and defining goals to fulfill company objectives
			CO2: Setting the right expectations for managers and employees
			CO3: Effective communication between individuals and teams
			CO4: Determining individual training and performance plans
			CO5: Determining individual training and performance plans



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25	II-I	Learning & Development	CO1: To develop an understanding of the evolution of training & development from a tactical to a strategic function
			CO2: .To provide an insight into what motivates adults to learn and the most appropriate methodologies to impart training
			CO3: To understand the concept of training audit & training evaluation
			CO4: To learn how design a training module and execute it
			CO5: To understand various strategies used by organizations to measure performance & reward for the same
26	II-I	Management of Industrial Relations	CO1: Students should able to elaborate the concept of Industrial Relations
			CO2: The students should able to illustrate the role of trade union in the industrial setup
			CO3: Students should able to outline the important causes & impact of industrial disputes.
			CO4: Students should able to elaborate Industrial Dispute settlement procedures.
			CO5: Student should be able to summarize the important provisions of Wage Legislations, in reference to Payment of Wages Act 1936, Minimum Wages Act 1948 & Payment of Bonus Act 1965
27	II-I	Digital Marketing	CO1:Develop the applications of digital marketing in the globalized market
			CO2:Explain Channels of Digital Marketing
			CO3: Identify the digital marketing plan
			CO4: create Search engine marketing
			CO5: Analyze the Online Advertising
28	II-I	Customer	CO1:what is the need of CRM



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		Relationship Management	CO2:Determin the building customer relations
			CO3:Review of CRM process
			CO4:write about CRM structures
			CO5: Develop the Planning and Implementation of CRM
29	II-I	Advertising and Sales Management	CO1:write about Visualization of Advertising Layout
			CO2:Identify the evaluation of advertising effectiveness
			CO3: Understand the process of sales management
			CO4: describe the sales promotion
			CO5: Evaluate the need for distribution channels and managing them.
30	II-I	Consumer Behaviour	CO1: Demonstrate how knowledge of consumer behaviour can be applied to marketing.
			CO2:Identify and explain factors which influence consumer behavior
			CO3: Relate internal dynamics such as personality, perception, learning motivation and attitude to the choices consumers make.
			CO4: Use appropriate research approaches including sampling, data collection and questionnaire design for specific marketing situations
			CO5: In a team, work effectively to prepare a research report on consumer behaviour issues within a specific context.
31	II-I	Summer Internship	CO1: Acquire on job the skills, knowledge, attitudes, and perceptions along with the experience needed to constitute a professional identity
			CO2: Get actual supervised professional experiences
			CO3: Get insight into the working of the real organizations



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			CO4: Develop perspective about business organizations in their totality
			CO5: Explore career opportunities in their areas of interest
32	II-II	International Marketing	CO1: Explain the Global Marketing Management
			CO2: Understand the concept of Environment of global markets
			CO3: Analyze Assessing Global Market Opportunities
			CO4: Developing and Implementing Global Marketing Strategies
			CO5: Select the E-Marketing channels organization & controlling of the global marketing programme
33	II-II	Strategic Management	CO1: Explain the importance, scope and concept of Strategy and Strategic Management Process
			CO2: Differentiate between Tactics, Strategies and Planning and importance of each component in Strategic Management
			CO3: Prepare Vision, Mission statements and define goals, objectives for Organization
			CO4: Identify Critical Success Factors. Key Performance Indicators and Key Result Areas for any given service sector
			CO5: Demonstrate the importance of external environmental analysis as well prepare PESTLE Analysis and ETOP model for decision making
34	II-II	International Human Resource Management	CO1: Describe the role of the HR Manager in an International context
			CO2: Describe Human Resource activities in an International Context
			CO3: List and explain the differences between domestic and international HRM
			CO4: Explain the importance of cultural sensitivity in an international assignment
			CO5: Critically appraise the impact of cultural and contextual factors in



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			shaping human resource practices in MNCs
35	II-II	Leadership and Change Management	CO1: Can explain how the particular context of public organizations influences change management and leadership.
			CO2: Is able to apply the key concepts of this course in a systematic analysis of an organizational change process in a public organization
			CO3: Has developed the ability to stay informed about current leadership developments and trends through online resources and networks
			CO4: Can describe the characteristics of central change management approaches and leadership theories
			CO5: Is able to formulate and effectively communicate a change vision in an organizational setting.
36	II-II	Talent and Knowledge Management	CO1: Evaluate the potential and appropriateness of talent development strategies, policies and methods with reference to relevant contextual factors.
			CO2: .Assess the role and influence the politics of knowledge management policy and practice in a range of contexts
			CO3: Express the nature of knowledge management alternative views of knowledge, types of knowledge and concept of location of knowledge
			CO4: Examine the purpose of developing a talent management information strategy and the role of leaders in talent management
			CO5: Express the nature of knowledge management alternative views of knowledge, types of knowledge and concept of location of knowledge
37	II-II	Services Marketing	CO1: Identify Marketing Management of companies offering Services
			CO2: describe the Characteristics of services
			CO3: understand consumer behaviour in services
			CO4: Collect align service design and standards
			CO5: Correlate the delivering service and managing services promises.
38	II-II	Internation	CO1: Understand international capital and foreign exchange market



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		al Financial Management	CO2: Identify and appraise investment opportunities in the international environment.
			CO3: Identify risk relating to exchange rate fluctuations and develop strategies to deal with them
			CO4: Develop strategies to deal with other types of country risks associated with foreign operations
			CO5: Express well considered opinion on issues relating to international financial management.


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Civil Dept Program Outcomes

Phone: +91-80084-92559

Email: civil.hod@b-iet.ac.in

● **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, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

● **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.

● **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

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EEE Dept Program Outcomes

Email: eee.moodle@b-iet.ac.in

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 analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **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.
- **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

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Mechanical Dept Program Outcomes

- **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, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **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.
- **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.

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ECE Dept Program Outcomes

Email: ece.mco@b-iet.ac.in

● **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, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

● **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.

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● **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.

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CSE Dept Program Outcomes

Email: cse.mou@b-iet.ac.in

- **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, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **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.
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The screenshot shows a web browser window with the URL b-iet.ac.in/programs/pgc/mba/pos. The page title is "MBA Dept Program Outcomes". The navigation menu includes Home, About Us, Programs Offered, Facilities, Academics, Exam Branch, Statutory Committees, Administration, Placements, R & D, RTI, IQAC, NAAC, and Feedback. The main content area lists five program outcomes:

- 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, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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- 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.

On the right side, there are two boxes: "Important Email IDs" and "Important Phone Numbers".

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The taskbar at the bottom shows several open documents: 2.6.1 (1).pdf, SOFT SKILL.docx, ICT 2020-21 (1) (2).docx, ICT 2020-21 (1) (1).docx, and ICT 2021-22 (1).docx. The system tray shows the time as 3:43 PM on 3/23/2023.


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