



CSMSS

Chhatrapati Shahu Maharaj Shikshan Sanstha's

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Approved by AICTE New Delhi, DTE (Govt. of Maharashtra) and affiliated to Dr. BATU, Lonere (Raigad). **DTE Code: 2533**

DEPARTMENT OF ELECTRICAL ENGINEERING 2023-24

SEME STER	SUBJECT CODE	NAME OF THE	CO	COURSE OUTCOMES
III	BTBS301	ENGINEERIN G MATHEMATI CS – III	CO-1	STUDENTS WILL BE ABLE TO IDENTIFY THE TRANSFORMS OF SPECIAL FUNCTIONS SUCH AS PERIODIC FUNCTIONS, HEAVISIDE-UNIT STEP FUNCTION, AND DIRAC DELTA FUNCTION.
			CO-2	STUDENTS WILL BE ABLE TO APPLY LAPLCE & INVERSE LAPLACE TRANSFORM METHODS TO SOLVE LINEAR DIFFERENTIAL EQUATIONS AND SYSTEMS WITH CONSTANT COEFFICIENTS.
			CO-3	STUDENTS WILL BE ABLE TO APPLY FOURIER TRANSFORMS AND INTEGRAL PROPERTIES, INCLUDING SINE AND COSINE INTEGRALS AND PARSEVAL'S IDENTITY, TO TRANSFORM
			CO-4	STUDENTS WILL BE ABLE TO APPLY TECHNIQUES TO FORM AND SOLVE PARTIAL DIFFERENTIAL EQUATIONS, INCLUDING LINEAR EQUATIONS AND SEPARATION OF VARIABLES FOR HEAT FLOW ANALYSIS.
			CO-5	STUDENTS WILL BE ABLE TO DESCRIBE HOW HARMONIC FUNCTIONS IN CARTESIAN FORM ARE DERIVED AND THEIR RELATIONSHIP WITH ANALYTIC FUNCTIONS.
			CO-6	STUDENTS WILL BE ABLE TO SOLVE THE COMPLEX FUNCTION WITH REFERENCE TO THEIR ANALYTICITY, INTEGRATION USING CAUCHY'S INTEGRAL AND RESIDUE THEOREMS
III	BTEEC302	ENGINE ERING MACHIN E I	CO-1	ACQUIRE KNOWLEDGE ABOUT THE CONSTRUCTIONAL DETAILS, PRINCIPLE OF OPERATION AND APPLICATIONS OF SINGLE PHASE & THREE PHASE TRANSFORMERS..
			CO-2	LEARN TO CALCULATE LOSSES, EFFICIENCY, VOLTAGE REGULATION AND OTHER PARAMETERS OF TRANSFORMERS BY CONDUCTING DIFFERENT ROUTINE & TYPE TESTS.
			CO-3	UNDERSTAND ELECTROMAGNETIC ENERGY CONVERSION PRINCIPLES AND CLASSIFICATION OF ELECTRICAL MACHINES.
			CO-4	ACQUIRE KNOWLEDGE ABOUT THE CONSTRUCTIONAL DETAILS AND PRINCIPLE OF OPERATION OF DC MOTORS & GENERATORS.
			CO-5	ACQUIRE KNOWLEDGE OF EMF EQUATIONS, TORQUE EQUATIONS, CHARACTERISTICS & STARTING METHODS OF DIFFERENT ELECTRICAL DC MACHINES.

			CO-6	ACQUIRE KNOWLEDGE OF CONSTRUCTION DETAILS AND PRINCIPLE OF WORKING OF SPECIAL PURPOSE MACHINES SUCH AS BRUSH LESS DC MOTOR, STEPPER MOTOR, RELUCTANCE MOTOR & VARIABLE RELUCTANCE MOTOR
			CO-1	DEFINE GENERALIZED MEASUREMENT & INSTRUMENTATION SYSTEM WITH THE HELP OF A BLOCK DIAGRAM, ITS PROPERTIES AND FUNDAMENTALS.
III	(BTEEC303)	ELETRONICS AND ELECTRICAL MEASUREM ENT	CO-2	CHOOSE THE SUITABLE METHOD FOR MEASUREMENT OF ACTIVE, REACTIVE POWERS AND ENERGY.
			CO-3	APPLY THE SUITABLE METHOD FOR MEASUREMENT OF RESISTANCE, INDUCTANCE AND CAPACITANCE.
			CO-4	EXPRESS DIGITAL MEASUREMENT OF ELECTRICAL QUANTITIES WITH THE HELP OF BLOCK DIAGRAM
			CO-5	DENTIFY THE TRANSDUCERS AND ITS USE FOR MEASUREMENT OF FORCE, TORQUE, VELOCITY, ACCELERATION
			CO-6	ACQUIRE KNOWLEDGE OF CONSTRUCTION DETAILS AND PRINCIPLE OF WORKING OF SPECIAL PURPOSE MACHINES SUCH AS BRUSH LESS DC MOTOR, STEPPER MOTOR, RELUCTANCE MOTOR & VARIABLE RELUCTANCE MOTOR
III	BTHM304	BASIC HUMAN RIGHT	CO-1	DESCRIBE BASIC CONCEPTS OF HUMAN RIGHTS.
			CO-2	INTERPRET THE HISTORY OF THE DEVELOPMENT OF HUMAN RIGHTS.
			CO-3	EXPLAIN THE INTERRELATIONSHIP OF SOCIETY, RELIGION AND CULTURE.
			CO-4	RELATE TO THE SOCIAL STRUCTURE AND SOCIAL PROBLEMS.
			CO-5	PRACTICE COLLECTIVE ACTIONS FOR THE BETTERMENT OF SOCIETY.
			CO-6	CORRELATE TO THE HUMAN RIGHTS CONSTIOTUTED IN THE CONSTITUTION OF INDIA.
III	(BTES305)	ENGINEERING MATERIAL SCIENCE	CO-1	STUDENT WILL ABLE TO DESCRIBE THE KEY CONCEPTS OF ELECTRICAL CONDUCTION, INCLUDING CRYSTAL STRUCTURES, ATOMIC BONDING, AND FACTORS AFFECTING CONDUCTIVITY IN METALS AND OTHER MATERIALS
			CO-2	STUDENT WILL ABLE TO EXPLAIN THE CHARACTERISTICS AND APPLICATIONS OF DIELECTRIC MATERIALS, INCLUDING POLARIZATION TYPES, DIELECTRIC STRENGTH, AND THE EFFECTS OF TEMPERATURE AND FREQUENCY ON DIELECTRIC PROPERTIES.
			CO-3	STUDENT WILL ABLE TO EXPLAIN KNOWLEDGE OF SEMICONDUCTOR PROPERTIES AND INTEGRATION TECHNIQUES TO ANALYZE AND SOLVE PROBLEMS RELATED TO ELECTRON-HOLE CONCENTRATION CARRIER

			CO-4	STUDENT WILL ABLE TO ANALYZE THE PROPERTIES AND CLASSIFICATION OF MAGNETIC MATERIALS, INCLUDING
			CO-5	STUDENT WILL ABLE TO CLASSIFY THE PROPERTIES AND APPLICATIONS OF REFRACTORY, STRUCTURAL, AND RADIOACTIVE MATERIALS, AND
IV	(BTEEC401)	NETWORK THEORY	CO-1	REVIEW BASIC COMPONENTS OF ELECTRIC NETWORK
			CO-2	DISCUSS NETWORK THEOREMS TO SIMPLIFY COMPLEX NETWORKS.
			CO-3	ILLUSTRATE TRANSIENT ANALYSIS IN ELECTRICAL CIRCUITS AND ANALYZE THE POWER SYSTEM STABILITY.
			CO-4	OPERATE LAPLACE TRANSFORM FOR ELECTRIC NETWORK ANALYSES AND EVALUATE THE PARAMETERS OF TWO PORT NETWORKS
			CO-5	EXAMINE VARIOUS TYPES OF FILTERS.
IV	(BTEEC402)	POWER SYSTEM	CO-1	LIST THE DIFFERENT SOURCES OF ENERGY AND IDENTIFY THE MAJOR ELECTRICAL EQUIPMENT IN GENERATING STATIONS.
			CO-2	CALCULATE THE INDUCTANCE AND CAPACITANCE OF SINGLE-PHASE AND THREE-PHASE LINES.
			CO-3	CONCLUDE THE DISTRIBUTION OF VOLTAGE ACROSS THE INSULATOR STRING AND DETERMINE STRING EFFICIENCY.
			CO-4	EXPLAIN THE CLASSIFICATION AND PERFORMANCE OF TRANSMISSION LINES.
			CO-5	ILLUSTRATE THE DESIGN AND PERFORMANCE OF DC DISTRIBUTION SYSTEMS, INCLUDING ALL TYPES OF DC SYSTEMS.
IV		ELECTRICAL MACHINE 2	CO-1	DEFINE FUNDAMENTAL OF 3-PHASE AND 1-PHASE INDUCTION MACHINES AND SYNCHRONOUS MACHINES.
			CO-2	COMPARE VARIOUS PARAMETERS OF AC ELECTRIC MACHINES
			CO-3	IDENTIFY AND ORGANIZE THE CHARACTERISTICS OF DIFFERENT AC ELECTRICAL MACHINES
			CO-4	DEVELOP THE CIRCUIT MODEL OF AC ELECTRICAL MACHINES
			CO-5	JUSTIFY VARIOUS AC ELECTRICAL MACHINES
			CO6	CONSTRUCT THE CONTROL OPERATIONS AND FORMULATE VARIOUS TESTS ON ELECTRICAL MACHINES
IV			CO-1	STUDENT WILL ABLE TO INTERPRET DIFFERENT ELECTRONICS CIRCUITS.

	ANALOG AND DIGITAL ELECTRONICS	CO-2	STUDENTS WILL BE ABLE TO EXTEND KNOWLEDGE OF WORKING PRINCIPLES OF OP-AMP
		CO-3	STUDENTS WILL BE ABLE TO SHOW BASIC NUMBER SYSTEM.
		CO-4	STUDENTS WILL BE ABLE TO DEMONSTRATE DESIGN AND CHARACTERISTICS OF DIGITAL LOGIC GATES.
		CO-5	STUDENTS WILL BE ABLE TO SUMMARIZE TECHNIQUES USED IN DIGITAL CIRCUITS.
		CO-6	STUDENTS WILL BE ABLE TO DEMONSTRATE USE OF DIGITAL SYSTEMS.
IV	ENGINEERING MATERIAL SCIENCE	CO-1	STUDENT WILL BE ABLE TO DESCRIBE THE KEY CONCEPTS OF ELECTRICAL CONDUCTION, INCLUDING CRYSTAL STRUCTURES, ATOMIC BONDING AND FACTORS AFFECTING CONDUCTIVITY IN METALS AND OTHER.
		CO-2	STUDENT WILL BE ABLE TO EXPLAIN THE CHARACTERISTICS AND APPLICATIONS OF DIELECTRIC MATERIALS, INCLUDING POLARIZATION TYPES, DIELECTRIC STRENGTH, AND THE EFFECTS OF TEMPERATURE AND FREQUENCY ON DIELECTRIC PROPERTIES.
		CO-3	STUDENT WILL BE ABLE TO APPLY KNOWLEDGE OF SEMICONDUCTOR PROPERTIES AND INTEGRATION TECHNIQUES TO ANALYZE AND SOLVE PROBLEMS RELATED TO ELECTRON-HOLE CONCENTRATION, CARRIER MOBILITY, AND APPLICATION IN ELECTRONICS.
		CO-4	STUDENT WILL BE ABLE TO ANALYZE THE PROPERTIES AND CLASSIFICATION OF MAGNETIC MATERIALS, INCLUDING FERROMAGNETISM, MAGNETOSTRICTION, AND THE FACTORS AFFECTING PERMEABILITY AND HYSTERESIS IN VARIOUS APPLICATIONS.
		CO-5	STUDENT WILL BE ABLE TO SUMMARIZE THE PROPERTIES AND APPLICATIONS OF REFRACTORY, STRUCTURAL, AND RADIOACTIVE MATERIALS, AND ASSESS THE EFFECTIVENESS OF NON-DESTRUCTIVE TESTING TECHNIQUES LIKE ULTRASONIC RADIOGRAPHY AND X-RAY DIFFRACTION.
V	POWER SYSTEM ANALYSIS	CO-1	STUDENT WILL BE ABLE TO DEFINE THE SINGLE LINE DIAGRAM FOR THE ELECTRICAL POWER SYSTEM
		CO-2	STUDENT WILL BE ABLE TO EXPLAIN THE SYMMETRICAL COMPONENTS IN A POWER SYSTEM
		CO-3	STUDENT WILL BE ABLE TO SOLVE FOR THE SYMMETRICAL & UNSYMMETRICAL FAULTS IN A POWER SYSTEM
		CO-4	STUDENT WILL BE ABLE TO COMPARE BETWEEN THE DIFFERENT LOAD FLOW ANALYSIS METHODS USED IN A POWER SYSTEM

		CO-5	STUDENT WILL BE ABLE TO DETERMINE THE SHORT CIRCUIT MVA FOR SYMMETRICAL FAULTS FOR DESIGN OF RATING OF CIRCUIT BREAKER.
		CO-6	STUDENT WILL BE ABLE TO EVALUATE THE PER UNIT REACTANCE DIAGRAM FOR GIVEN SYSTEM.
V	MICROPROCESSOR AND MICROCONTROLLER	CO-1	STUDENTS WILL BE ABLE TO EXPLAIN THE ARCHITECTURE OF 8085.
		CO-2	STUDENTS WILL BE ABLE TO EXPLAIN INTERFACING FEATURES OF 8085.
		CO-3	STUDENTS WILL BE ABLE TO USE INTERRUPT FEATURES OF 8085.
		CO-4	STUDENTS WILL BE ABLE TO EXPRESS PROGRAM FOR BASIC APPLICATIONS.
		CO-5	STUDENTS WILL BE ABLE TO EXPLAIN THE ARCHITECTURE AND INTERFACING ALSO INTERRUPT FEATURES OF 8051.
V	POWER ELECTRONICS	CO-1	STUDENTS WILL BE ABLE TO LIST THE CHARACTERISTICS AND OPERATIONS OF POWER SEMICONDUCTOR DEVICES.
		CO-2	STUDENTS WILL BE ABLE TO DESCRIBE THE TURN-ON AND TURN-OFF MECHANISMS FOR POWER SEMICONDUCTOR DEVICES.
		CO-3	STUDENTS WILL BE ABLE TO EXPLAIN THE CONCEPT OF PHASE-CONTROLLED RECTIFICATION AND ITS IMPACT ON POWER FACTOR.
		CO-4	STUDENTS WILL BE ABLE TO DESCRIBE THE OPERATION OF SINGLE-PHASE AND THREE-PHASE CYCLOCONVERTERS.
V	POWER QUALITY ISSUES	CO-1	STUDENTS WILL BE ABLE TO DEFINE DIFFERENT TYPES OF POWER QUALITY ISSUES
		CO-2	STUDENTS WILL BE ABLE TO EXPLAIN TRANSIENT OVER VOLTAGE, DEVICES FOR OVER VOLTAGE PROTECTION.
		CO-3	STUDENTS WILL BE ABLE TO EXPLAIN SOURCES OF HARMONICS, EFFECTS OF HARMONICS DISTORTION, AND STANDARDS OF HARMONICS
		CO-4	STUDENTS WILL BE ABLE TO EXPLAIN DEVICES FOR VOLTAGE REGULATION, UTILITY VOLTAGE REGULATION APPLICATION.
		CO-5	STUDENTS WILL BE ABLE TO EXPLAIN POWER QUALITY MEASURING INSTRUMENTS AND EQUIPMENTS.
V	ELECTRICAL SAFETY	CO-1	STUDENTS WILL BE ABLE TO IDENTIFY AND UTILIZE APPROPRIATE SAFETY EQUIPMENT FOR MITIGATING PRIMARY AND SECONDARY ELECTRICAL HAZARDS
		CO-2	STUDENTS WILL BE ABLE TO DEMONSTRATE THE CORRECT GROUNDING AND BONDING TECHNIQUES FOR DIFFERENT ELECTRICAL SYSTEMS AND APPLY SAFETY METHODS FOR HIGH-VOLTAGE OPERATIONS
		CO-3	STUDENTS WILL BE ABLE TO DEVELOP AND IMPLEMENT AN EFFECTIVE ELECTRICAL SAFETY PROGRAM, INCLUDING ACCIDENT PREVENTION, SAFETY MEETINGS, AND INVESTIGATION PROTOCOLS.

		CO-4	ADMINISTER RELIABILITY-CENTERED MAINTENANCE PRINCIPLES TO DEVELOP MAINTENANCE SCHEDULES AND REQUIREMENTS FOR ELECTRICAL EQUIPMENT.
		CO-5	INTERPRET AND RELATE ELECTRICAL SAFETY STANDARDS AND REGULATIONS WITH VARIOUS REGULATORY BODIES TO ENSURE COMPLIANCE IN ELECTRICAL PRACTICES.
VI	SWITCHGEAR AND PROTECTION	CO-1	Understand the necessity of power system protection, including fault effects, relay requirements, and types of protective devices.
		CO-2	Describe various static and numerical relays, including their operating principles and applications in fault detection and recording..
		CO-3	Explain the function and characteristics of different types of circuit breakers and fuses, including their selection and testing methods.
		CO-4	Analyze the protection schemes for transmission lines, including overcurrent and distance protection methods.
		CO-5	Evaluate the differential protection strategies for alternators and transformers, including the challenges and standards associated with these systems.
VI	ELECTRICAL MACHINE DESIGN	CO-1	TO RECALL THE CONCEPT AND ABILITY TO ANALYZE THE MAGNETIC MATERIALS AND MAGNETIC CIRCUITS IN ELECTRICAL MACHINES.
		CO2	TO IDENTIFY AND DESIGN THE DIFFERENT TYPES OF WINDING.
		CO-3	TO DISTINGUISH THE CHARACTERISTICS AND APPLICATION OF INDUCTION MOTOR STATOR.
		CO-4	TO DISTINGUISH THE CHARACTERISTICS AND APPLICATION OF INDUCTION MOTOR ROTOR
		CO-5	TO ASSESS THE KNOWLEDGE OF FUNDAMENTALS, CONSTRUCTION DETAILS AND CLASSIFICATION OF HEATING, COOLING, VENTILATION.
VI	CONTROL SYSTEM ENGINEERING	CO-1	COMPUTE TRANSFER FUNCTION OF LINEAR TIME INVARIANT SYSTEMS.
		CO-2	DESCRIBE OPERATION OF VARIOUS CONTROL SYSTEM COMPONENTS.
		CO-3	ANALYZE AND EVALUATE LINEAR SYSTEMS IN TIME DOMAIN.
		CO-4	ANALYZE AND EVALUATE OF LINEAR TIME INVARIANT SYSTEMS IN FREQUENCY DOMAIN.
		CO-5	EXPLAIN VARIOUS INDUSTRIAL CONTROLLERS
		CO-1	Student will be able to explain the features of smart grid and concepts of smart metering

VI	SMART GRID TECHNOLOGY	CO-2	Student will be able to describe the architecture of smart grid and its computational techniques.
		CO-3	Student will be able to model and construct smart grid with renewable energy sources.
		CO-4	Student will be able to construct modern communication technologies used in smart grid
		CO-5	Student will be able to formulate solutions for controlling and security of smart grid
VI	POWER PLANT ENGINEERING	CO-1	DESCRIBE CONVENTIONAL AND ALTERNATIVE ENERGY SOURCES, INCLUDING THEIR FUNCTIONS, CONTROL SYSTEMS, AND ECONOMIC CONSIDERATIONS IN POWER SYSTEMS
		CO-2	COMPARE THE ELEMENTS AND OPERATIONAL CIRCUITS OF THERMAL STEAM AND HYDRO POWER PLANTS, INCLUDING SITE SELECTION,
		CO-3	EXPLAIN & EXAMINE THE SELECTION OF SITE AND OPERATION OF NUCLEAR REACTORS, INCLUDING THE FISSION PROCESS, POWER PLANT LAYOUT, AND COMPONENTS, AS WELL AS THE ADVANTAGES
		CO-4	CATEGORIZE DIFFERENT METHODS OF POWER GENERATION, INCLUDING SOLAR, WIND, TIDAL, BIOMASS, GEOTHERMAL, MAGNETO-HYDRO DYNAMIC, MICRO-HYDEL, AND FUEL CELLS.
		CO-5	DESIGN AND INTEGRATE PLANT SELECTION CRITERIA, GENERATOR SIZING, PARALLEL OPERATION, AND GRID MANAGEMENT, WHILE ADDRESSING ECONOMIC CONSIDERATIONS AND MAJOR ELECTRICAL
VII	POWER SYSTEM OPERATION AND CONTROL (BTEEC70 2)	CO-1	DISCUSS THE NEED OF REACTIVE POWER CORRECTION AND VOLTAGE DROP COMPENSATION AND IDENTIFY THE BEST METHODS FOR POWER FACTOR IMPROVEMENT AND VOLTAGE CONTROL.
		CO-2	DEFINE POWER SYSTEM STABILITY WITH ITS APPLIICATIONS AND PROBLEM
		CO-3	EVALUATE THE MATHEMATICAL MODELS OF THE SPEED GOVERNING SYSTEMS, TURBINE AND EXCITATION SYSTEM
		CO-4	DISCRIBE SINGLE AREA LOAD FREQUENCY CONTROL AND TWO AREA LOAD FREQUENCY CONTROL.
		CO-5	DISCUSS THE ECONOMIC OPERATION OF POWER SYSTEM AND IMPORTANCE
		CO-1	ILLUSTRATE THE IMPORTANT CONCEPT OF HIGH VOLTAGE

VII	HIGH VOLTAGE ENGINEERING (BTEEC701)	CO-2	EXPLAIN THE CONDUCTION AND BREAKDOWN GASES
		CO-3	EXPLAIN THE CONDUCTION AND BREAKDOWN IN LIQUID AND SOLID DIELECTRIC.
		CO-4	DESCRIBE THE PHENOMENON OF OVER-VOLTAGE AND CHOOSE APPROPRIATE INSULATION COORDINATION AND EQUIPMENT INSULATION LEVEL.
		CO-5	DETERMINE METHODS FOR GENERATION AND MEASUREMENT OF HIGH VOLTAGES AND CURRENTS (BOTH AC AND DC)
		CO-6	REVIEW THE PERSPECTIVES LAYOUT OF HIGH VOLTAGE LABORATORY & TESTING FACILITIES.
VII	BIO MEDICAL INSTRUMENTATION (BTEEOE704)	CO-1	TO RECALL THE PHYSIOLOGY OF BIOMEDICAL SYSTEM
		CO-2	TO DESCRIBE MEASURE BIOMEDICAL AND PHYSIOLOGICAL INFORMATION
		CO-3	TO RELATE THE APPLICATION OF ELECTRONICS IN DIAGNOSTICS AND THERAPEUTIC AREA
		CO-4	EXPLAIN HUMAN BODY PARAMETER MEASUREMENT SETUPS
		CO-5	TO EVALUATE THE BASIC CONCEPTS OF FORENSIC TECHNIQUES
VII	ENERGY AUDIT AND CONSERVATION (BTEEC703)	CO-1	UNDERSTAND DIFFERENT ENERGY SOURCES AND IMPORTANCE OF ENERGY CONSERVATION, GLOBAL ARMING AND EFFECTS OF GLOBAL
		CO-2	DIFFERENT EFFORTS FOR ENERGY CONSERVATION , AND MECHANISM FOR REDUCTION OF CARBON EMISSION
		CO-3	ENERGY CONSERVATION OPORTUNITIES IN BIOLER, BIOLER EFFICIENCY CALCULATION
		CO-4	ENERGY CONSERVATION OPORTUNITIES 5N ELECTRICAL APPLIANCES AND SYSTEM

		CO-5	NETROK ANALYSIS IN MANAGEMENT, CALCULATION
VII	ELECTRICAL AND HYBRID ELECTRICAL VEHICLES (BTEEOE705)	CO-1	Explain the basic concepts of Conventional, Electric, Hybrid EV and Autonomous Vehicles
		CO-2	Describe different configurations of electric and hybrid electric drive trains
		CO-3	Discuss the propulsion unit for electric and hybrid vehicles
		CO-4	Compare various energy storage and EV charging systems
		CO-5	Select drive systems and various communication protocols for EV
VIII	ENETREPRENURSHIP ESSENTIALS	CO-1	IDENTIFY AND EVALUATE THE ESSENTIAL QUALITIES REQUIRED FOR ENTREPRENEURIAL SUCCESS, INCLUDING RESILIENCE, INNOVATION, AND LEADERSHIP.
		CO-2	DEVELOP STRATEGIES FOR TEAM MANAGEMENT AND MAINTAINING A POSITIVE TEAM CULTURE IN THE EARLY STAGES.
		CO-3	REVIEW HOW TO ASSESS THE FINANCIAL POSITION OF A COMPANY AT A SPECIFIC POINT IN TIME.
		CO-4	LLUSTRATE ADVANCED INNOVATION STRATEGIES, FOCUSING ON DESIGN-DRIVEN AND SYSTEMS THINKING APPROACHES.
		CO-5	EXPLAIN THE SUPPORT SYSTEMS AVAILABLE TO STARTUPS THROUGH INCUBATION AND ACCELERATION PROGRAMS.

Practical

SEMESTER	SUBJECT CODE	NAME OF THE SUBJECTS	CO	COURSE OUTCOMES
IV	BTEEL406	Network Theory	CO-1	Use Kirchhoff's current and voltage laws to analyze and solve electrical circuits in a laboratory setting.
			CO-2	Apply the superposition theorem to determine the response of linear circuits with multiple sources.
			CO-3	Determine the Thevenin equivalent circuit for a given complex network to simplify circuit analysis.
			CO-4	Determine the Norton equivalent circuit for a given complex network to simplify circuit analysis.
			CO-5	Apply the Maximum Power Transfer theorem to find the load resistance that maximizes power delivery in a circuit.
			CO-6	Use the Reciprocity theorem to validate circuit properties and relationships in different configurations.
			CO-7	Analyze the resonance frequency and impedance

				characteristics of an RLC series circuit.
			CO-8	Analyze the resonance behavior and impedance characteristics of a parallel RLC circuit.

SEMESTER	SUBJECT CODE	NAME OF THE SUBJECTS	CO	COURSE OUTCOMES
VI	(BTEEC602)	ELECTRICAL MACHINE DESIGN	CO-1	TO RECALL THE CONCEPT AND ABILITY TO ANALYZE THE MAGNETIC MATERIALS AND MAGNETIC CIRCUITS IN ELECTRICAL MACHINES
			CO2	TO IDENTIFY AND DESIGN THE DIFFERENT TYPES OF WINDING
			CO-3	TO DISTINGUISH THE CHARACTERISTICS AND APPLICATION OF INDUCTION MOTOR STATOR
			CO-4	TO DISTINGUISH THE CHARACTERISTICS AND APPLICATION OF INDUCTION MOTOR ROTOR
			CO-5	TO ASSESS THE KNOWLEDGE OF FUNDAMENTALS, CONSTRUCTION DETAILS AND CLASSIFICATION OF HEATING , COOLING, VENTILATION

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IV	BTEEL407	Power system	CO-1	Explain various aspects of design considerations of different types of power plant.
			CO-2	Describe various insulators & conductors with various components used in transmission and distribution system.
			CO-3	Discover various equipment's used in substation.
			CO-4	Student can determine different parameter used in cable.
			CO-5	Student can do survey on industrial visit and write report in details.

SEMESTER	SUBJECT CODE	NAME OF THE SUBJECTS	CO	COURSE OUTCOMES
III	BTEEL307	Electrical Electronics and Measurement	CO-1	Use AC bridges for the measurement of inductance, capacitance and frequency.
			CO-2	Identify different measuring instruments for the measurement of various electrical and non-electrical parameters.
			CO-3	use of various transducers for the measurement of physical quantities like temperature, pressure, distance and displacement.

			CO-4	Demonstrate the characteristics of Solar panel and earth resistance.
			CO-5	Analyze the errors present in measuring instruments and calibrate them.

SEMESTER	SUBJECT CODE	NAME OF THE SUBJECTS	CO	COURSE OUTCOMES
IV	BTEEL408	Electrical Machine II	CO-1	Explain the different Starting and speed control methods of 3-Phase Induction Motor.
			CO-2	Analyze the performance of 3-Phase Induction Motor Perform by conducting no-load and blocked rotor test
			CO-3	Formulate equivalent circuit parameters of an alternator and also its voltage regulation by different methods
			CO-4	Evaluate the synchronization of an alternator to infinite bus and control load sharing
			CO-5	Analyze the behavior of Synchronous motor at different loading conditions using V and inverted V curve.

SEMESTER	SUBJECT CODE	NAME OF THE SUBJECTS	CO	COURSE OUTCOMES
IV	BTEEL408	Electrical Machine II	CO-1	Students will be able to identify fault current under the

				symmetrical and unsymmetrical faults conditions
			CO-2	Students will be able to analyse power system studies by MATLAB
			CO-3	Students will be able to develop the Y-Bus Matrix

SEMESTER	SUBJECT CODE	NAME OF THE SUBJECTS	CO	COURSE OUTCOMES
V	BTEEL606	SWITCHGEAR AND PROTECTION LAB	CO-1	Verify and analyze the characteristics of static overcurrent and overvoltage relays, including IDMT and reverse power relays.
			CO-2	Demonstrate the operational principles of differential protection schemes for transformers, including their schematic diagrams.
			CO-3	Demonstrate the operational principles of differential protection schemes for alternators, including their schematic diagrams.
			CO-4	Identify and describe the components and specifications of various types of circuit breakers through practical demonstrations and models.

