Mar Baselios Christian College of Engineering & Technology, Peermade

Department of Electrical & Electronics Engineering

Batch: 2016-2020

Semester	Course Code	Name of the Course	C O Code	Course Outcome Statement
I	MA101	Calculus	MA101.1	Check convergence of infinite series.
			MA101.2	Acquire a basic knowledge of phenomena involving continuous change of variable.
			MA101.3	Understand differential calculus of functions of one or more variables and of vector functions.
			MA101.4	Find areas and volumes using integrals.
			MA101.5	Analyses the application of vector valued functions in physical applications.
			MA101.6	Understand integral calculus of functions of one or more variables and of vector functions.
I	CY100	Engineering Chemistry	CY100.1	Identify the structures of different organic moleculesusing spectroscopic techniques
			CY100.2	Explain the fundamental and applied concepts of Electrochemistry.
			CY100.3	Use instrumental techniques for engineering practices.
			CY100.4	Choose the appropriate materials for engineering purposes
			CY100.5	Understand the different properties of fuels and lubricating oils.
			CY100.6	apply the knowledge of various water treatment methods.
I	BE110	Engineering Graphics	BE110.1	Able to prepare the orthographic projections of points and straight lines placed in various quadrants.
			BE110.2	Demonstrate the ability to draw orthographic projections of various solids.
			BE110.3	Ability to draw and interpret the sectioned views of solids.
			BE110.4	Ability to draw the developments of various solids.
			BE110.5	be confident in preparing the isometric and perspective views of various solids.
			BE110.6	Ability to draw the projections of intersection of solids and perform free hand sketching.
I	BE 10103	Introduction to Electrical Engineering	BE10103.1	acquire fundamental knowledge of Electrical circuits and can solve circuit related problems
			BE10103.2	able to recall and state ideas about magnetic circuits.
			BE10103.3	explain the fundamentals of AC circuits
			BE10103.4	analyze three phase systems.
			BE10103.5	compare and contrast various types of resonance circuits
			BE10103.6	able to identify and differentiate between various methods of Power measurement

I	BE103	Introduction to Sustainable Engineering	BE103.1	Explain the need and concept of sustainability
			BE103.2	Evaluate current challenges to sustainability including modern world social, environmental and economic structures and crisis
			BE103.3	Understand different types of environmental pollution problems and their sustainable solutions
			BE103.4	Recall the environmental ethics and legal provisions
			BE103.5	Demonstrate the environmental impacts of energy development
			BE103.6	Identify the values and conservation methods of biodiversity
			BE103.7	Work in the area of sustainability for research and education
			BE103.8	Develop a broader perspective in thinking for sustainable practices by utilising the engineering knowledge and principles gained from this course
I	EC100	Basics of Electronics Engineering	EC100.1	and active components.
			EC100.2	Get an idea about the working and applications of different types of semiconductors, diodes and transistors.
			EC100.3	Understand the working of rectifiers, amplifiers and oscillators.
			EC100.4	Get a basic idea of analog and digital integrated circuits and various measuring instruments.
			EC100.5	Understand the concepts of radiocommunication and satellite communication.
			EC100.6	Get a fundamental idea about mobile and optical communication and entertainment electronics.
I	CY110	Engineering Chemistry Lab	CY110.1	Use instrumental techniques for chemical analysis.
			CY110.2	Identify the structure of different organic compounds using IR and NMR spectroscopy.
			CY110.3	Acquire the skill for the preparation of engineering materials like polymers.
			CY110.4	: Develop understanding about the properties of different fuels and lubricating oils.
			CY110.5	Analyse the quality of water by determining its chemical parameters.
			CY110.6	Acquire knowledge about different types of quantitative estimation.

I	EE110	Electrical Engineering Workshop	EE110.1	Understand the different supply arrangements and their limitations, standard voltages and their tolerances.
			EE110.2	Familiarize with safety aspects of electrical systems and importance of protective measures in wiring systems.
			EE110.3	Select the suitable wires, cables and other accessories used in wiring.
			EE110.4	Wire up simple lighting circuits for domestic buildings, distinguish between light and power circuits.
			EE110.5	Familiarity with backup power supply in domestic installation
I	EC110	Electronics Engineering Workshop	EC110.1	Identify different electronic components like resistors, capacitors, inductors, transformers
			EC110.2	Familiarize testing and measuring instruments like the multimeter, function generator, power supply & CRO.
			EC110.3	Assemble and connect different circuits on a breadboard.
			EC110.4	Acquire soldering and desoldering skills, useful in electronic circuit interconnections.
			EC110.5	Familiarize EDA tool and public addressing electronic systems
			EC110.6	Assemble electronic circuits/systems on general purpose PCB.
II	MA102	Differential Equations	MA102.1	Identify and solve homogeneous differential equations.
			MA102.2	Solve non-homogeneous differential equations.
			MA102.3	Evaluation of Fourier series.
			MA102.4	Identify and solve problems in partial differential equations.
			MA102.5	Apply one dimensional wave equation to solve problems in different domain.
			MA102.6	Apply one dimensional heat equation to solve problems in different domain.
II	PH100	Engineering Physics	PH100.1	Differentiate different types of oscillations and apply knowledge in engineering systems
			PH100.2	Differentiate interference, diffraction and polarization and apply knowledge in daily life situations.
			PH100.3	Distinguish between different types of superconductors.
			PH100.4	Explain the principles of physics using theories of quantum mechanics statistical mechanics and optics.
			PH100.5	Apply the knowledge of acoustics in the construction of buildings
			PH100.6	Explain the construction and working of different laser systems and their applications.

II	BE100	Engineering Mechanics	BE100.1	Identify all the forces associated with a static frame work and to draw free body diagrams.
			BE100.2	Compute the support reactions necessary to ensure static equilibrium
			BE100.3	Compute Centre of Gravity and Moment of Inertia.
			BE100.4	Solve mechanics problems associated with friction forces.
			BE100.5	Describe the motion of a particle in terms of its position, velocity and acceleration in different frames of reference and to define the forces causing the motion of a particle.
			BE100.6	Discuss of the vibrational analysis of different mechanical systems
II	BE102	Design & Engineering	BE102.1	Appreciate the different elements involved in good designs and to apply them in practice.
			BE102.2	Aware of the product oriented and user oriented aspects that make the design a success.
			BE102.3	Think of innovative designs incorporating different segments of knowledge gained in the course.
			BE102.4	A boarder perspective of design covering function, cost, environmental sensitivity, safety and other factors other than engineering analysis.
			BE102.5	Gain an ability to design a system, component or process to meet desired needs within realistic constraints.
			BE102.6	Capable to apply knowledge of mathematics, science and engineering.
II	CE100	Basics of Civil Engineering	CE100.1	Descibe the fundamental aspects of civil engineering.
			CE100.2	Discuss the fundamentals for planning and setting out a building.
			CE100.3	Understand the concepts of surveying for making horizontal & vertical measurements.
			CE100.4	Discuss the uses of various building materials.
			CE100.5	Explain the method of construction of different components of a building.
			CE100.6	Discuss about various services in a building.
II	ME100	Basics of Mechanical Engineering	ME100.1	Describe fundamentals of Thermodynamics and air standard cycle.
			ME100.2	Explain the working of various energy conservation devices.
			ME100.3	Distinguish different refrigeration and air conditioning system.
			ME100.4	Identify various parts of an automobile.
			ME100.5	Select the appropriate manufacturing process.
			ME100.6	Describe elements and functions of various machine tools.

II	PH110	Engineering Physics Lab	PH110.1	Gain knowledge to measure the basic physical quantities like frequency and amplitude of a wave function using CRO and strain gauge
			PH110.2	Measure the wave pattern in a stressed string and the corresponding frequency values using a melbis string apparatus
			PH110.3	Determine the wavelenght of monochromatic beam of light and thickness of micro-thin object by means of newtons rings apparatus, air wedge method etc,
			PH110.4	Detrmine the wavelength of LASER Beam using Plain transmission grating
			PH110.5	Study the properties of a Solar cell through its VI characteristics
			PH110.6	Study the phenomenon of Seebeck effect using thermocouple
II	CE110	Civil Engineering Workshop	CE110.1	Set out a building using tape and cross staff
			CE110.2	To determine area and mass moment of inertia
			CE110.3	To construct one and a half and two brick walls using English bond
			CE110.4	To calculate the area and volume of various features of a building
			CE110.5	To find level difference between any two points
			CE110.6	To find area of irregular polygon set out on the field
II	ME110	Mechanical Engineering Workshop	ME110.1	Construct different moulds.
			ME110.2	Prepare different tyes of fitting using MS plate.
			ME110.3	Sheet metal components.
			ME110.4	Types of joints using wodden materials.
			ME110.5	different joints by arc-welding.
III	MA201	Linear Algebra & Complex Analysis	MA201.1	Identify analytic functions and harmonic functions
			MA201.2	Identify conformal mapping
			MA201.3	Evaluate the integrals and complex functions
			MA201.4	Acquire knowledge of various singularities series expressions and applications of residues
			MA201.5	Find the rank of a matrix and solve any given system of linear equations
			MA201.6	find the eigen values of a matrix and how to diagonalise a matrix

III	EE201	Circuits and Networks	EE201.1	Write and solve equations for DC and AC circuits using Network Theorems
			EE201.2	Apply graph theory in solving networks
			EE201.3	Find the transient response of any circuit
			EE201.4	Analyse the transient response of any circuit using Laplace Transform
			EE201.5	To analyse the performance of two port networks using network parameters
			EE201.6	Able to synthesise networks
III	EE203	Analog Electronic Circuits	EE203.1	Construct wave shaping, rectification and amplification circuits
			EE203.2	Design biasing schemes for transistor circuits
			EE203.3	Model BJT and FET amplifier circuits
			EE203.4	Choose a power amplifier with appropriate specifications for electronic circuit applications
			EE203.5	Choose operational amplifier (OPAMP) for specific applications including waveform generation
			EE203.6	Design and develop analog circuits using OPAMPs.
III	EE205	DC Machines and Transformers	EE205.1	Identify dc generator types, and appreciate their performance
			EE205.2	Describe the principle of operation of dc motor and select appropriate motor types for different applications.
			EE205.3	Analyse the performance of different types of dc motors
			EE205.4	Describe the principle of operation of single phase transformers
			EE205.5	Analyse the performance of single phase transformers
			EE205.6	Familiarize with the principle of operation and performance of three phase transformers.
III	EE207	Computer Programming	EE207.1	: Impart knowledge about programming in C
			EE207.2	Develop skill to design programs using c language
			EE207.3	Achieve ability to develop simple programs using Python
			EE207.4	Impart knowledge about functions in C

III	HS200	Business Economics	HS200.1	Understand elementary principles of Economics and Business Economics.
			HS200.2	Analyze the various market situations with good grasp on the effect of trade cycle.
			HS200.3	Analyze the basic macro-economic concepts and monetary theory.
			HS200.4	Understand macro- economic concepts to improve their ability to analyses the business climate.
			HS200.5	Analyze their employability by combining their technical knowledge with appropriate economic models.
			HS200.6	Attain knowledge of elementary accounting concepts used for preparing balance sheet and interpretation of balance sheets.
III	EE231	Electronic Circuits Lab	EE231.1	Design and develop various Electronic Circuits using diodes and Zener diodes.
			EE231.2	Design and implement amplifier circuits using BJT
			EE231.3	Design and implement oscillator circuits using BJT
			EE231.4	Design and implement basic circuits using Op-amps
			EE231.5	Design and implement Mutivibrator circuits using 555 timer IC
III	EE233	Programming Lab	EE233.1	To impart knowledge about programming in C
			EE233.2	To develop skill to design programs using C language
			EE233.3	To develop simple programs using Python
IV	MA202	Probability Distributions, Transforms and Numerical Methods	MA202.1	acquire the concept of random variable, discrete probability distributions with practical applications in various engineering and social life situation.
			MA202.2	acquire the concept of continuous probability distributions with practical applications in various engineering and social life situation.
			MA202.3	understand Fourier transforms which has wide applications in all engineering courses.
			MA202.4	understand Laplace transforms which has wide applications in all engineering courses.
			MA202.5	solve various engineering problems using interpolation and iteration.
			MA202.6	solve various engineering problems using numeric integration.

IV	EE202	Synchronous and Induction Machines	EE202.1	. Identify alternator types, and appreciate their performance
			EE202.2	Determine the voltage regulation and analyze the performance of alternators
			EE202.3	Describe the parallel operation of alternators
			EE202.4	Describe the principle of operation of synchronous motor and induction motor and their applications.
			EE202.5	Differentiate the different Starting & Braking methods of induction motors
			EE202.6	Familiarize with principle of operation and application of Induction generator and single phase induction motor.
IV	EE204	Digital Electronics and Logic Design	EE204.1	Identify various number systems, binary codes and formulate digital functions using Boolean algebra.
			EE204.2	Simplify the logical expressions using Boolean functions
			EE204.3	Design and implement combinational logic circuits.
			EE204.4	Design and implement sequential logic circuits.
			EE204.5	Compare the operation of various analog to digital and digital to analog conversion circuits.
			EE204.6	Select suitable programmable logic devices to program logic functions and Explain the basic VHDL programmes.
IV	EE206	Material Science	EE206.1	.Describe the characteristics of conducting and semiconducting materials
			EE206.2	Classify magnetic materials and describe different laws related to them
			EE206.3	Classify and describe different insulators and to explain the behavior of dielectrics in static and alternating fields
			EE206.4	Describe the mechanisms of breakdown in solids, liquids and gases
			EE206.5	Classify and describe Solar energy materials and superconducting materials
			EE206.6	Gain knowledge in the modern techniques for material studies
IV	EE208	Measurements and Instrumentation	EE208.1	Compare different types of instruments-their working principles, advantages and dis-advantages.
			EE208.2	Explain the operating principles of various ammeters, voltmeters and ohmmeters
			EE208.3	Explain different flux and permeability measurements methods
			EE208.4	Identify different AC potentiometers and bridges
			EE208.5	Understand the working and applications of cathode ray oscilloscope
			EE208.6	: Identify the transducers for physical variables and to describe operating principle.

IV	HS210	Life Skills	HS210.1	Explain communication competence in prospective engineers.
			HS210.2	Described to convey thoughts and ideas with clarity and focus.
			HS210.3	Develop report writing skills.
			HS210.4	Inculcate critical thinking process.
			HS210.5	Provide symbolic, verbal, and graphical interpretations of statements in a problem description.
			HS210.6	Understand team dynamics & effectiveness.
IV	EE232	Electrical Machines Lab I	EE232.1	Analyse the caharacteristics of different dc generators
			EE232.2	Seperate the losses in dc motors
			EE232.3	Analyse the performance of different types of dc motors
			EE232.4	Determine the performance characteristics of single phase transformers.
			EE232.5	Compare the performance of transformers in different modes of operations and connections.
IV	EE234	Circuits and Measurements Lab	EE234.1	Analyze RLC circuits and coupled circuit to obtain the voltage -current relations
			EE234.2	Verify DC network theorems by setting up various networks
			EE234.3	Calibrate the single phase and three phase energy meter at various power factors
			EE234.4	Measure power in a single and three phase circuits by various methods
			EE234.5	Determine magnetic characteristics of iron ring specimen
			EE234.6	Measure high and low resistances using various bridges
V	EE301	Power Generation, Transmission and Protection	EE301.1	Explain electricity generation and economics of generation.
			EE301.2	Identify different power distributions systems and compute transmission line parameters.
			EE301.3	Analyze the electrical and mechanical features of overhead and underground transmission systems
			EE301.4	Explain the basics of High Voltage DC transmission and Flexible AC Transmission Systems
			EE301.5	Compare different types of circuit breakers and its operation
			EE301.6	Explain different methods of protection of alternators, transformers and transmission lines

V	EE303	Linear Control Systems	EE303.1	Obtain mathematical model of a given mechanical, electrical and electromechanical system in transfer functions
			EE303.2	Explain the needs and effect of feedback in a control system.
			EE303.3	Identify the type of a given system from mathematical model and input output characteristics (steady state and transient response)
			EE303.4	Explain the characteristics and principle of operation of control system components
			EE303.5	Analyze the systems stability and performance (both in time domain and frequency domain) in terms of the key characteristics of the models.
V	EE305	Power Electronics	EE305.1	Choose appropriate power semiconductor device in converter circuits and develop their triggering circuits.
			EE305.2	Analyze various types of power electronic converters and apply different switching techniques
			EE305.3	Select appropriate power converter for specific applications
			EE305.4	Interpret and use datasheets of power semiconductor devices for design.
V	EE307	Signals and Systems	EE307.1	Represent various signals and systems
			EE307.2	Analyze the continuous time system with Laplace transform
			EE307.3	Represent and analyses signals using Fourier representation
			EE307.4	Analyze the discrete time system using discrete convolution and develop the sample methods
			EE307.5	Analyze the discrete time system with Z transform
			EE307.6	Acquire basic knowledge in nonlinear systems and develop the discrete time system with DFS.
V	EE309	Microprocessor and Embedded Systems	EE309.1	Apply the fundamentals of assembly level programming of 8085 microprocessor.
			EE309.2	Develop timing diagram for instructions.
			EE309.3	Work with standard microprocessor real time interfaces.
			EE309.4	Understanding the features and applications of embedded systems
			EE309.5	Develop skill for writing C programs for 8051 microcontrollers.
			EE309.6	Design microprocessors/microcontrollers-based systems.

V	EE367	New & Renewale Energy System	EE367.1	Describe the needs of renewable Energy technologies and their role in the Indian and world energy demands
			EE367.2	Discuss the essential components and methods for the collection of thermal energy and heat transfer processes
			EE367.3	Explain the solar electric system and its applications
			EE367.4	Depict the various energy potentials in oceans and the extraction methodologies
			EE367.5	Discuss the wind energy scenario and the wind energy conversion systems
			EE367.6	Summarize biomass and emerging energy generation technologies and their applications
V	EE369	High Voltage Engineering	EE369.1	Understand the generation and transmission of electrical energy using various techniques.
			EE369.2	Explain the generation of high voltage AC and high frequency AC.
			EE369.3	Analyze various impulse voltage generation.
			EE369.4	Understand the various methods of measuring impulse voltage and current.
			EE369.5	Understand the various methods of high voltage testing, measurement of partial discharge, corona and radio interference voltage.
			EE369.6	Understand the testing techniques used in power equipment's, design of HV lab and the grounding of impulse testing laboratory.
V	EE341	Design Project	EE341.1	Think innovatively on the development of components, products, processes or technologies in the engineering field.
			EE341.2	Analyse the problem requirements and arrive workable design solutions.
			EE341.3	Ability to think of different solution to a given problem, compare different solutions and to determine the optimum design solution among them
			EE341.4	Has the course made you to observe and analyse the different designs around you in your daily life and made you to think creatively
V	EE331	Digital Circuits and Embedded Systems Lab	EE331.1	Design, setup and analyse various digital circuits.
			EE331.2	Students will be able to program and explain 8085 microprocessor for different applications
			EE331.3	Students will be able to program and use advanced microprocessors
			EE331.4	Students will be able to program and interface 8051 microcontroller
			EE331.5	Students will be able to combine different system for a practical applications

V	EE333	Electrical Machines Lab II	EE333.1	Determine the regulation of alternators by different methods.
			EE333.2	Analyse the characteristics of slip ring and squirrel cage induction motors.
			EE333.3	Compare the different starting methods of induction motors.
			EE333.4	Analysis of the characteristics of synchronous motors.
VI	EE302	Electromagnetics	EE302.1	Able to define different coordinate system and apply them to analyze fields & potentials due to static charges
			EE302.2	Analyse electric fields and potentials due to various static charge distributions
			EE302.3	Analyse magnetic fields and potential due to various current carrying configurations
			EE302.4	Describe how materials are affected by electric and magnetic fields.
			EE302.5	Identify the relation between the fields under time varying situations
			EE302.6	Identify principles of propagation of uniform plane waves in various mediums
VI	EE304	Advanced Control Theory	EE304.1	To analyze compensators and design compensators using bode plot
			EE304.2	To analyze controllers and design compensators using root locus technique
			EE304.3	analyze continuous time linear systems using state space representation
			EE304.4	analyze sampled data control systems using state space representation and design controllers using pole placement technique
			EE304.5	To analyze the behavior of nonlinear control systems
			EE304.6	analyze stability of discrete time nonlinear systems using phase plane and Liapunovs method.
VI	EE306	Power System Analysis	EE306.1	Learn the fundamentals of power system for designing a system to model transformers, lines and cables in the positive, negative and zero sequences based on physical models.
			EE306.2	Differentiate different methods for power system analysis in steady state operation and during grid faults.
			EE306.3	Formulate Y bus and compute load flow solutions.
			EE306.4	Predict constraints in load dispatch and compute optimal solution through unit commitment and economic load disptach.
			EE306.5	Perform modelling of load frequency control and analyze power system stability under steady state and transient conditions.

VI	EE308	Electric Drives	EE308.1	Interpret the principle of operation and construction of electrical machines.
			EE308.2	Analyze the performance characteristics of electrical machines at different loading conditions.
			EE308.3	Select a drive for a particular application based on power rating.
			EE308.4	Control the electrical machines at different loading conditions.
			EE308.5	The student will be able to select a drive based on mechanical characteristics for a particular drive application.
			EE308.6	The student will be having a broader perspective in controllers by utilizing the engineering knowledge and principles gained from this course.
VI	HS300	Principles of Management	HS300.1	Define management of people and organization
			HS300.2	Evaluate current challenges to management including modern world social, environmental and economic structures & crisis.
			HS300.3	Understand and apply a variety of management theories and their sustainable practices.
			HS300.4	Plan and make decisions for organizations.
			HS300.5	Do staffing and related HRD functions.
			HS300.6	To generate their own innovative management competency for todays and global workplace.
VI	EE366	Illumination Technology	EE366.1	To get an overview of types of illumination and artificial lighting systems
			EE366.2	Familiarize with different terms related to illumination engineering
			EE366.3	Equip student with basic knowledge on design of interior lighting
			EE366.4	Equip student with basic knowledge on design of street lighting
			EE366.5	Equip student with basic knowledge on design of flood lighting
			EE366.6	Understand special features of aesthetic lighting
VI	EE 372	Biomedical Istrumentation	EE372.1	Explain the field of biomedical instrumentation
			EE372.2	Describe anatomy of physiological system
			EE372.3	Explain bioelectric potential and different type of bio potential electrode
			EE372.4	Analyze different measuring systems used for measuring blood pressure, blood flow, cardiac output and heart sound.
			EE372.5	Explain different life supporting instruments such as cardiac pacemakers, ventilators, heart lung machine, hemodialysis and infant incubators.
			EE372.6	Explain and analyze different imaging techniques.

VI	EE332	Systems and Control Lab	EE332.1	Develop mathematical models for servomotors and other electrical systems
			EE332.2	Analyse different process control systems
			EE332.3	Select a suitable controller for a system
			EE332.4	Use MATLAB and SIMULINK to design and analyze simple systems and compensators
			EE332.5	Demonstarte the working of Synchros
VI	EE334	Power Electronics & Drives Lab	EE334.1	Analyze the VI characteristics of power electronics switches (SCR & MOSFET)
			EE334.2	Design and execute different gate triggering methods for SCR
			EE334.3	Design and setup various converters for controlling machines
			EE334.4	Predict the output of electrical systems using Mat lab simulation
			EE334.5	Design and simulate different converters and drives
VI	EE352	Comprehensive Exam	EE352.1	Think innovatively on the development of components, products, processes or technologies in the engineering field.
			EE352.2	Apply knowledge gained in solving real life engineering problems.
VII	EE401	Electronic Communication	EE401.1	Obtain the basic relations used in analog modulation.
			EE401.2	Summarize the various analog communication systems
			EE401.3	Describe the concepts of TV & RADAR Engineering.
			EE401.4	Explain the basic principles of digital communication
			EE401.5	Outline the concepts of various wireless communication systems
VII	EE403	Distributed Generation and Smart Grids	EE403.1	Explain the evolution of Distributed Generation and Smart Grids.
			EE403.2	Classify the Distributed Energy Sources, its control elements and its protection.
			EE403.3	Describe Smart Grid elements Tariff, metering, Electric Vehicle and sensors.
			EE403.4	Apply the Demand response and Demand Management for load shaping.
			EE403.5	Discuss networks used in Smart Grids, Automation schemes and cloud computing resources.
			EE403.6	Describe the Power Quality issues and related parameters in Smart Grids

VII	EE405	Electrical System Design	EE405.1	Explain fundamental acts and rules regulating the design of electrical systems in India.
			EE405.2	Design low voltage and medium voltage electrical installations for domestic dwellings.
			EE405.3	Design indoor and outdoor distribution transformer substations for small and medium industries.
			EE405.4	Design earthing system for a distribution substation.
			EE405.5	Design illumination system for area lighting and road lighting
			EE405.6	Recommend a reliable and efficient supply system for an industry
VII	EE407	Digital Signal Processing	EE407.1	Analyse DT systems with DFT
			EE407.2	Design digital filters IIR and FIR filters
			EE407.3	Analyse finite word length effects in signal processing
			EE407.4	Design filters using MATLAB FDA tool box
			EE407.5	Understand Digital Signal Controllers and Applications
VII	EE409	Electrical Machine Design	EE409.1	Impart knowledge on principles of design of transformers
			EE409.2	Develop the ability to design dc machines
			EE409.3	Achieve ability to design synchronous machines
			EE409.4	Develop ability to design induction machines
			EE409.5	Develop a basic idea about modern tools including CAD and FEM for analysis and synthesis
			EE409.6	Impart knowledge about basic considerations in electrical machine design
VII	EE465	Power Quality	EE465.1	Explain various power quality problems.
			EE465.2	Discuss the cause of harmonics, harmonic introducing devices and effects of harmonics on system equipment’s and loads.
			EE465.3	Analysis of harmonics for various networks and components
			EE465.4	: Develop analytical modeling skills needed for modeling harmonics mitigating techniques.
			EE465.5	Describe the need for power quality monitoring and measurement.
			EE465.6	Analyze various power quality issues and their solutions in a smart grid.

VII	EE469	Electric & Hybrid Vehicle	EE469.1	Compute the mathematical model of the vehicle in motion.
			EE469.2	Choose a suitable drive scheme for developing an electric hybrid vehicle depending on resources.
			EE469.3	Design and develop basic schemes of electric vehicles and hybrid vehicles.
			EE469.4	Choose proper energy storage systems for vehicle applications.
			EE469.5	Identify various communication protocols and technologies used in vehicle networks.
VII	EE451	Seminar & Project Preliminary	EE451.1	develop skills in doing literature survey, technical presentation and report preparation.
			EE451.2	enable project identification and execution of preliminary works
VII	EE431	Power System Lab	EE431.1	Identify and formulate solutions to problems relevant to power system using software tools.
			EE431.2	Analyze a power system by carrying out load flow and short circuit experimentations.
			EE431.3	Analyze Power System stability
			EE431.4	Design appropriate control scheme to compensate reactive power and to filter harmonics.
			EE431.5	Illustrate the load frequency change in single are and multi area power system network.
			EE431.6	Validate the performance of Power System by appropriate tests
VIII	EE402	Special Electric Machines	EE402.1	Understand the constructional features, principle of operation and analysis of AC and DC Servomotors.
			EE402.2	Describe the basic principles, theory of operation and classification of Stepper motors.
			EE402.3	Explain fundamentals, constructional details and principle of operation of single phase special electrical AC series motor, Universal Motor and Hysteresis Motor.
			EE402.4	Demonstrate the constructional features, principal of operation and power converter circuits of Switched Reluctance Motor.
			EE402.5	Explain the constructional features and principle of working of Permanent Magnet DC Motors and Brushless DC motor.
			EE402.6	Summarize the fundamentals, constructional details and classification of Linear Motors.
VIII	EE404	Industrial Instrumentation & Automation	EE404.1	Select instruments and transducers for various physical variables.
			EE404.2	Get an insight on data acquisition, processing and monitoring system
			EE404.3	Design various signal conditioning systems for transducers.
			EE404.4	Analyze dynamic responses of various systems.
			EE404.5	Get the concepts of virtual instrumentation
			EE404.6	Understand the programming realization of PLC.

VIII	EE464	FACTS	EE464.1	: Understand various power flow constraints and benefits of FACTS controllers.
			EE464.2	: Know the significance of reactive power compensation and role of FACTS devices on system control.
			EE464.3	Explain various shunt and series compensator for power flow.
			EE464.4	: Describe the principles, operation and control of TCVR and TCPAR
			EE464.5	: Summarize the operation of SVC and STATCOM
			EE464.6	Understand the working UPFC and IPFC.
VIII	EE 474	Energy Management &Auditing	EE474.1	To enable the students to understand the concept of energy management and energy management opportunities.
			EE474.2	understand the different methods used to control peak demand.
			EE474.3	know energy auditing procedure.
			EE474.4	understand the different methods used for the economic analysis of energy projects
VIII	BT362	Sustainable Energy Process	BT362.1	Summarize global and Indian energy sources and their potentials
			BT362.2	Describe the capture, conversion methodologies and application of solar and wind energy
			BT362.3	Discuss the conversion techniques of biomass to energy
			BT362.4	Explain the extraction procedures of energy from the oceans
			BT362.5	Express future emerging energy generation, storage and application technologies
VIII	MT482	Industrial Safety	MT482.1	gain a general concept of safety
			MT482.2	Aware of safety responsibilities of various agencies
			MT482.3	Know the occupational health hazards and human factors contributing to industrial accidents
			MT482.4	Learn the concepts of safety management
			MT482.5	Understand the need for timely maintenance of equipments, the need and measures for industrial safety control
			MT482.6	Familiar with the general legal rules for an industrial safety practitioner
VIII	EE492	Project	EE492.1	Apply the fundamental knowledge of Electrical and Electronics Engineering in developing products or solutions or society
			EE492.2	Design and develop system or prototypes independently by utilizing modern software tools and equipments
			EE492.3	Understand the materials obtained and get familiar with industrial standards