

# ELECTRICAL & ELECTRONICS ENGINEERING- 22SCHEME

COURSE CODE	22EEE13 BASIC ELECTRICAL ENGINEERING
CO1	Understand the concepts of DC circuits and Electromagnetism.
CO2	Understand the concepts of single phase and Three phase AC circuits.
CO3	Apply the basic Electrical laws to solve circuits.
CO4	Understand the concepts of measurements and measuring Instruments
CO5	Explain the concepts of domestic wiring, electricity billing, circuit protective devices and personal safety measures.
COURSE CODE	22EEE23 BASIC ELECTRICAL ENGINEERING
CO1	Understand the concepts of DC circuits and Electromagnetism.
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CO5	Explain the concepts of domestic wiring, electricity billing, circuit protective devices and personal safety measures.
COURSE CODE	BMATE 301 Mathematics-III for EE Engineering
CO1	Understand that physical systems can be described by differential equations and solve such equations
CO2	Make use of correlation and regression analysis to fit a suitable mathematical model for statistical data
CO3	Demonstrate the Fourier series to study the behavior of periodic functions and their applications in system communications, digital signal processing, and field theory.
CO4	To use Fourier transforms to analyze problems involving continuous-time signals and to apply Z-Transform techniques to solve difference equations
COURSE CODE	22EE302 Electric Circuit Analysis
CO1	Understand that physical systems can be described by differential equations and solve such equations
CO2	Make use of correlation and regression analysis to fit a suitable mathematical model for statistical data
CO3	Demonstrate the Fourier series to study the behavior of periodic functions and their applications in system communications, digital signal processing, and field theory.
CO4	To use Fourier transforms to analyze problems involving continuous-time signals and to apply Z-Transform techniques to solve difference equations
CO5	Apply discrete and continuous probability distributions in analyzing the probability models arising in the engineering field. Demonstrate the validity of testing the hypothesis.
COURSE CODE	BEE303 Analog Electronic Circuits
CO1	Utilize the characteristics of transistor for different applications.
CO2	Design and analyze biasing circuits for transistor.
CO3	Design, analyze and test transistor circuitry as amplifiers and oscillators
COURSE CODE	BEE304 Transformers and Generators
CO1	Explain the construction, working and various tests of single phase Transformer.

CO2	Explain the construction, working and parallel operation of three phase Transformer.
CO3	Explain the construction, working and analysis of Synchronous Generator.
CO4	Explain the construction, working of solar and wind power generators.
<b>COURSE CODE</b>	<b>BEEL305 Transformers and Generators Lab</b>
CO1	Conduct various tests on transformers and synchronous machines and evaluate their performance.
CO2	Perform the parallel operation on two single phase transformers.
CO3	Verify the performance of synchronous generator.
CO4	Calculate the voltage regulation of an alternator using different methods for comparison.
<b>COURSE CODE</b>	<b>BEE 306A DIGITAL LOGIC CIRCUITS</b>
CO1	Explain the concept of combinational and sequential logic circuits
CO2	Analyse and design combinational circuits
CO3	Describe and characterize flip flops and its applications
CO4	Design the sequential circuits using SR, JK, D and T flip-flops and Melay and Moore applications
CO5	Design applications of combinational and sequential circuits
CO6	Employ the digital circuits for different applications
<b>COURSE CODE</b>	<b>BEE306B Electrical Measurements and Instrumentation</b>
CO1	Explain the significance and methods of Measurements, elements of generalised measurement system and errors in measurements.
CO2	Measure resistance, inductance and capacitance by different methods.
CO3	Explain the construction, working and characteristics of various instrument transformers.
CO4	Explain the working of different electronic instruments and display devices.
<b>COURSE CODE</b>	<b>BEE 306C ELECTROMAGNETIC FIELD THEORY</b>
CO1	Explain Scalars, Vectors, Cartesian co-ordinate system, relation between different coordinate systems, Coulomb's law, Electric field intensity and its evaluation for different charge conditions.
CO2	Explain the potential field of a point charge, Potential gradient, Energy density in the electrostatic field and conductor's properties and boundary conditions.
CO3	Explain the Poisson's and Laplace Equations, Biot - Savart's law, Ampere's circuital law and Stokes theorem.
CO4	Explain the Magnetic force, Force between differential current elements. Force and torque on a closed circuit, Nature of magnetic materials and Magnetic boundary conditions
CO5	Explain the Faraday's law, Displacement current. Maxwell's equations, Wave propagation in free space and dielectrics.
<b>COURSE CODE</b>	<b>BEEL358A Scilab / MATLAB for Transformers &amp; Generators</b>
CO1	Analyse in an intelligent manner, think better, and perform better.
<b>COURSE CODE</b>	<b>BEEL358B 555 IC Laboratory</b>
CO1	Analyse in an intelligent manner, think better, and perform better.
<b>COURSE CODE</b>	<b>BEEL358C Circuit Laboratory using P-spice</b>
CO1	Analyse in an intelligent manner, think better, and perform better.

<b>COURSE CODE</b>	<b>BEEL358D ELECTRICAL HARDWARE LABORATORY</b>
CO1`	Analyse in an intelligent manner, think better, and perform better.
<b>COURSE CODE</b>	<b>BEE306D PHYSICS OF ELECTRONIC DEVICES</b>
CO1	Understand the principles of semiconductor physics
CO2	Understand the principles and characteristics of different types of semiconductor devices
CO3	Understand the fabrication process of semiconductor devices
CO4	Utilize the mathematical models of MOS transistors for circuits and systems
CO5	Identify the mathematical models of MOS transistors for circuits and systems
<b>COURSE CODE</b>	<b>BEE401 ELECTRIC MOTORS</b>
CO1	Understand the construction and operation, characteristics, Testing of DC Motors and determine losses and efficiency.
CO2	Understand the construction and operation, classification and types of Three phase Induction motors.
CO3	Describe the performance characteristics and applications of three phase Induction motors.
CO4	Demonstrate and explain Speed Control methods of three phase induction motor and types of single phase induction motors.
CO5	Understand the construction and operation, V and inverted V curves of synchronous motors.
CO6	Construction and operation of Universal motor, AC servomotor, Linear induction motor, PMSM, SRM and BLDC motors.
<b>COURSE CODE</b>	<b>BEE402 Transmission and Distribution</b>
CO1	Explain the structure of electrical power system, its components, advantages of high voltage AC and DC transmission, various conductors used for transmission, sag and its calculation.
CO2	Explain various types of insulators and methods to improve string efficiency.
CO3	Explain the various transmission line parameters, their effects on transmission of electricity.
CO4	Evaluate the parameters that influence the performance of transmission line and to calculate performance parameters of various transmission lines.
CO5	Explain carona and its effects, underground cable and its construction, classification, limitations and specifications.
CO6	Evaluate different types of distribution systems.
<b>COURSE CODE</b>	<b>BEE403Microcontrollers</b>
CO1	Outline the 8051 architecture, registers, internal memory organization, addressing modes.
CO2	Discuss 8051 addressing modes, instruction set of 8051, accessing data and I/O port programming.
CO3	Develop 8051C programs for time delay, I/O operations, I/O bit manipulation, logic and arithmetic operations, data conversion and timer/counter programming.
CO4	Summarize the basics of serial communication and interrupts, also develop 8051 programs for serial data communication and interrupt programming.
CO5	Program 8051to work with external devices for ADC, DAC, Stepper motor control, DC motor control
CO6	Develop various 8051 based projects.
<b>COURSE CODE</b>	<b>BEEL404 Electric Motors Lab</b>
CO1	Perform tests on DC Machines to determine their characteristics.
CO2	Control the DC Motors using different methods.

CO3	Pre-determination the performance characteristics of DC Machines.
CO4	Conduct load test on single-phase and three-phase Induction Motor and draw performance characteristics.
CO5	Conduct test on Induction Motor to determine performance characteristics.
CO6	Conduct test on synchronous motor to draw performance curves.
<b>COURSE CODE</b>	<b>BEE405A Electrical Power Generation and Economics</b>
CO1	Explain the basics of hydro electric power plant, merits and demerits of hydroelectric power plants, site selection, arrangement and elements of hydro electric plant.
CO2	Explain the working, site selection and arrangement of Steam, Diesel and Gas Power Plants.
CO3	Explain the working, site selection and arrangement of Nuclear Power Plants.
CO4	Explain the importance of different equipments in substation, Interconnection of power stations and different types of grounding.
CO5	Explain the economics of power generation.
<b>COURSE CODE</b>	<b>BEE405B OPAMPS AND LIC</b>
CO1	Explain the basics of linear ICs.
CO2	Design circuits using linear ICs
CO3	Demonstrate the application of Linear ICs.
CO4	Use ICs in the electronic projects
<b>COURSE CODE</b>	<b>BEE405C Engineering Materials</b>
CO1	Explain wave particle duality, tunnelling phenomenon, electron theory of metals.
CO2	Explain the free electron theory of conduction in metals.
CO3	Explain the polarization under static fields, behavior of dielectrics in alternating fields, Inorganic materials, organic materials, ), resins and varnishes, liquid insulators.
CO4	Explain the mechanism of conduction in semiconductors.
CO5	Explain the magnetic materials, their classification and magneto materials.
<b>COURSE CODE</b>	<b>BEE405D Object Oriented Programming</b>
CO1	Discuss the basic Object Oriented concepts.
CO2	Develop applications using Object Oriented Programming Concepts.
CO3	Implement features of object oriented programming to solve real world problems.
<b>COURSE CODE</b>	<b>BEE456A BASICS OF -VHDL LAB</b>
CO1	Write the VHDL/Verilog programs to simulate combinational circuits in data flow, behavioral, gate level abstractions.
CO2	Describe sequential circuits like flip-flops, counters, in behavioral descriptions and obtain simulated waveforms.
CO3	Use FPGA/CPLD kits for downloading Verilog codes and check output.
CO4	Synthesize combinational and sequential circuits on programmable ICs and test the hardware
CO5	Interface the hardware programmable chips and obtain the required output.
<b>COURSE CODE</b>	<b>BEEL456B Scilab / MATLAB for Electrical and Electronic Measurements</b>
CO1	Analyse in a systematic way, think better, and perform better.
<b>COURSE CODE</b>	<b>BEEL456C PCB Design Laboratory</b>
CO1	Analyse in an intelligent manner, think better, and perform better.

<b>COURSE CODE</b>	<b>BEEL456D ARDUINO AND RASPBERRY PI</b>
CO1	Explain the concepts of Internet of Things and its hardware and software components
CO2	Interface I/O devices, sensors & communication modules
CO3	Remotely monitor data and control devices
CO4	Develop real life IoT based projects.