



विद्युत अभियंत्रण विभाग
राजकीय इंजीनियरिंग कॉलेज, अम्बेडकर नगर, उत्तर प्रदेश (224122)
Electrical Engineering Department
Rajkiya Engineering College, Ambedkar Nagar-224122

SEMESTER III				
Sr. No	Subject	Subject Code	Theory/ Practical	Course Outcomes:
1.	Mathematics-IV	BAS 303	Theory	<p>CO1: The idea of partial differential equation and its different types of solution.</p> <p>CO2: The concept of method of separation of variables and Fourier transform to solve partial differential equations.</p> <p>CO3: The basic ideas of statistics including measures of central tendency, correlation, regression and their properties.</p> <p>CO4: The idea of probability, random variables, discrete and continuous probability distributions and their properties.</p> <p>CO5: The statistical methods of studying data samples, hypothesis testing and statistical quality control.</p>
2.	Technical Communication	BAS301	Theory	<p>CO1: Students will be able to UNDERSTAND the nature and objective of Technical Communication relevant for the work place as Engineers.</p> <p>CO2: Students will be able to DEVELOP an understanding of key concepts of writing, designing and speaking.</p> <p>CO3: Students will be able to UTILIZE the technical writing skills for the purposes of Technical Communication and its exposure in various dimensions.</p> <p>CO4: Students will be able BUILD UP interpersonal communication traits that will make the transition from institution to workplace smoother and help them to excel in their jobs.</p> <p>CO5: Students will be able to APPLY technical communication to build their</p>

				personal brand and handle crisis communication.
3.	Electromagnetic Field Theory	BEE301	Theory	<p>CO1: Apply different coordinate systems and their application in electromagnetic field theory, establish a relation between any two systems and also understand the vector calculus.</p> <p>CO2: Understand the concept of static electric field. Understand the concept of current and properties of conductors. Establish boundary conditions and to calculate capacitances of different types of capacitors</p> <p>CO3: Understand the concept of static magnetic field, magnetic scalar and vector potential</p> <p>CO4: Understand the forces due to magnetic field, magnetization, magnetic boundary conditions and inductors.</p> <p>CO5: Understand displacement current, time varying fields, propagation and reflection of EM waves and transmission lines.</p>
4.	Electrical Measurements & Instrumentation	BEE302	Theory	<p>CO1: Evaluate errors in measurement as well as identify and use different types of instruments for the measurement of voltage, current.</p> <p>CO2: Demonstrate the construction and working of different measuring instruments for Power, energy and frequency measurements.</p> <p>CO3: Demonstrate the construction and working of different AC and DC bridges, along with their applications.</p> <p>CO4: Demonstrate the working of instrument transformers as well as calculate the errors in current and potential transformers, Manifest the working of electronic instruments like voltmeter, multi-meter, frequency meter and CRO and ability to measure electrical engineering parameters like voltage, current, power, phase difference and frequency.</p> <p>CO5: Display the knowledge of transducers, their classifications and their applications for the measurement</p>

Course Outcome (III & IV Sem)

				of physical quantities like motion, force, pressure, temperature, flow and liquid level.
5.	Electrical Measurements and Instrumentation Lab	BEE352	Practical	<p>CO1: Understand the importance of calibration of measuring instruments.</p> <p>CO2: Demonstrate the construction and working of different measuring instruments.</p> <p>CO3: Demonstrate the construction and working of different AC and DC bridges, along with their applications.</p> <p>CO4: Ability to measure electrical engineering parameters like voltage, current, power & phase difference in industry as well as in power generation, transmission and distribution sectors.</p> <p>CO5: Capability to analyze and solving the variety of problems in the field of electrical measurements.</p>
6.	Basic Signals & Systems	BEE303	Theory	<p>CO1: Represent the various types of signals & systems and can perform mathematical operations on them.</p> <p>CO2: Analyze the response of LTI system to Fourier series and Fourier transform and to evaluate their applications to network analysis.</p> <p>CO3: Analyze the properties of continuous time signals and system using Laplace transform and determine the response of linear system to known inputs.</p> <p>CO4: Implement the concepts of Z transform to solve complex engineering problems using difference equations.</p> <p>CO5: Develop and analyze the concept of state-space models for SISO & MIMO system.</p>
7.	Circuit Simulation Lab	BEE351	Practical	<p>CO1: Apply the knowledge of basic circuit law, nodal and mesh analysis for given circuit.</p> <p>CO2: Analysis of the AC and DC circuits using simulation techniques.</p> <p>CO3: Analysis of transient response of AC circuits.</p> <p>CO4: Evaluation and analysis of two-port network parameters.</p> <p>CO5: Estimation of parameters of different filters.</p>

8.	Cyber Security	BCC301	Theory	<p>CO1: Understand the basic concepts of cyber security and cybercrimes.</p> <p>CO2: Understand the security policies and cyber laws.</p> <p>CO3: Understand the tools and methods used in cyber crime</p> <p>CO4: Understand the concepts of cyber forensics</p> <p>CO5: Understand the cyber security policies and cyber laws</p>
9.	Electrical Workshop	BEE353	Practical	<p>CO1: Perform various types of Electrical connections.</p> <p>CO2: Develop small circuits on PCB</p> <p>CO3: Differentiate between various electrical wires, cables and accessories.</p> <p>CO4: Demonstrate the layout of electrical substation & various safety measures.</p>
10.	Internship Assessment /Mini Project	BCC351		

SEMESTER IV				
Sr. No	Subject	Subject Code	Theory/ Practical	Course Outcomes:
1.	Science Based Open Elective	BOE408	Theory	<p>CO1: Understand the characteristics of diodes and transistors.</p> <p>CO2: Design and analyze various rectifier and amplifier circuits.</p> <p>CO3: Design sinusoidal and non-sinusoidal oscillators.</p> <p>CO4: Understand the functioning of OP-AMP and design OP-AMP based circuits.</p> <p>CO5: Design LPF, HPF, BPF, BSF</p>
2.	Universal Human Value and Professional Ethics	BVE401	Theory	<p>CO1: Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content, and process of value education, explore the meaning of happiness and prosperity, and do a correct appraisal of the current scenario in the society</p> <p>CO2: Distinguish between the Self and the Body, and understand the meaning of Harmony in the Self and the Co-existence of Self and Body.</p> <p>CO3: Understand the value of harmonious relationships based on trust, respect, and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society</p> <p>CO4: Understand the harmony in nature and existence, and workout their mutually fulfilling participation in nature.</p> <p>CO5: Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.</p>
3.	Digital Electronics	BVE401	Theory	<p>CO1: Perform number style arithmetic and logic simplification using various methods.</p> <p>CO2: Design and analyze modular combinational circuits with MUX / DEMUX, Decoder & Encoder.</p> <p>CO3: Design & analyse synchronous sequential logic circuits.</p> <p>CO4: Analyze various logic families and design circuits using PLDs.</p> <p>CO5: Design various ADCs and DACs according to the given specifications.</p>

Course Outcome (III & IV Sem)

4.	Electrical Machines-I	BEE402	Theory	<p>CO1: Analyze the various principles & concepts involved in Electromechanical Energy conversion.</p> <p>CO2: Demonstrate the constructional details of DC machines as well as transformers, and principle of operation of brushless DC motor, Stepper and DC Servo motors.</p> <p>CO3: Evaluate the performance and characteristics of DC Machine as motor and as well as generator.</p> <p>CO4: Evaluate the performance of transformers, individually and in parallel operation.</p> <p>CO5: Demonstrate and perform various connections of three phase transformers.</p>
5.	Networks Analysis & Synthesis	EE403	Theory	<p>CO1: Apply the knowledge of basic circuit law, nodal and mesh methods of circuit analysis and simplify the network using Graph Theory approach.</p> <p>CO2: Analyze the AC and DC circuits using Kirchhoff's law and Network simplification theorems.</p> <p>CO3: Analyze steady-state responses and transient response of DC and AC circuits using classical and Laplace transform methods.</p> <p>CO4: Demonstrate the concept of complex frequency and analyze the structure and function of one and two port network. Also evaluate and analysis two-port network parameters.</p> <p>CO5: Synthesize one port network and analyze different filters.</p>
6.	Network Analysis & Synthesis Lab	BEE451	Practical	<p>CO1: Understand basics of electrical circuits with nodal and mesh analysis.</p> <p>CO2: Appreciate electrical network theorems.</p> <p>CO3: Analyse RLC circuits.</p> <p>CO4: Determine the stability of an electrical circuit.</p> <p>CO5: Design network filters.</p>
7.	Electrical Machines-I Lab	BEE452	Practical	<p>CO1: Analyze and conduct basic tests on DC Machines and single-phase Transformer</p> <p>CO2: Obtain the performance indices using standard analytical as well as graphical methods.</p> <p>CO3: Determine the magnetization, Load and speed-torque characteristics of DC Machines.</p>

				CO4: Demonstrate procedures and analysis techniques to perform electromagnetic and electromechanical tests on electrical machines.
8.	Digital Electronics Lab	BEE453	Practical	<p>CO1: Understanding of Digital Binary System and implementation of Gates.</p> <p>CO2: Design the Sequential circuits with the help of combinational circuits and feedback element.</p> <p>CO3: Design data selector circuits with the help of universal Gates.</p> <p>CO4: Design the counters with the help of sequential circuit and basic Gates.</p> <p>CO5: Implement the projects using the digital ICs and electronics components.</p>
9.	Python Programming	BCC402	Theory	<p>CO 1: Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.</p> <p>CO2: Express proficiency in the handling of strings and functions</p> <p>CO3: Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets.</p> <p>CO4: Identify the commonly used operations involving file systems and regular expressions.</p> <p>CO5: Articulate the Object-Oriented Programming concepts such as encapsulation, inheritance and polymorphism as used in Python</p>
10.	Sports and Yoga - II / NSS-II	BVE451 / BVE452		<ul style="list-style-type: none"> • To maintain their mental and physical wellness upright and develop ability in them to cope up with the stress arising in the life. • To create space in the curriculum to nurture the potential of the students in sports/games/yoga etc. • To take forward the previous course on the topic to next advance level in terms of practice and specialization.
<p>Science Based Open Elective</p> <ul style="list-style-type: none"> • Electric and Hybrid Vehicles • Material Science • Analog Electronics Circuits • Electronics Engineering • Digital Electronics • Laser System and Applications 				