			DEPARTMENT OF ELECTRICAL ENGINEERING	
SL. NO.	**Sub. Code**	**Subject Name**	**Course Outcomes**	
1	C101	COMMUNICATIVE ENGLISH	C101.1	Define the role of communication in the present day world.
			C101.2	Understand the fundamentals of Grammar for error free written communication.
			C101.3	Use basic knowledge in Phonetics and Pronunciation skills for better Communication.
			C101.4	Illustrate the diversified traditions and cultures through interpersonal communication.
			C101.5	Evaluate student's competency through various writing skills.
			C101.6	Develop the confidence to make communication in all the situations with knowledge on soft skills.
2	C103	MATHEMATICS-I	C103.1	Apply the knowledge of calculus, Gamma and Beta functions for analyzing engineering problems.
			C103.2	Analyze the first order differential equations using standard methods and its application in engineering fields.
			C103.3	Demonstrate various physical models through higher order differential equation
			C103.4	Explain linear differential equations with variation of parameters.
			C103.5	Describe series solution of differential equations and explain application of Bessel's function.
			C103.6	Develop the essential tool of different matrices with matrix algebra and to compute eigen values and eigen vectors required for matrix diagonalization process.
3	C106	PHYSICS	C106.1	Solve the classical and wave mechanical problems.

			C106.2	Demonstrate various types of oscillation and their application in various processes
			C106.3	Formulate and solve the engineering problems on electromagnetism.
			C106.4	Correlate the different ideas in solving the problems of classical physics in their parent streams.
			C106.5	Learn physics behind various types of lasers and their characteristics.
			C106.6	Analyze the quantum physics and their importance in engineering platform
4	C130	BASIC MECHANICAL ENGINEERING	C130.1	Understand basics of thermodynamics
			C130.2	Application of basics of thermodynamics
			C130.3	Illustrate basics of heat transfer, refrigeration and internal combustion engine
			C130.4	Understand basics of Robotics
			C130.5	Understand the basics of Mechanical measuring instruments
			C130.6	Mechanism of power transfer through belt,rope,chain and gear drives
5	C109	BASIC ELECTRONICS ENGINEERING	C109.1	Describe the basic concept of Semiconductors and PN junction diode
			C109.2	Understand the working principle and characteristics of Transistor.
			C109.3	Study the basic concept of FET, MOSFET and CMOS inverter.
			C109.4	Classify the OP-AMP with its applications as Integrator, Differentiator & Summing Amplifier
			C109.5	Relate the various Number systems and logic gates.
			C109.6	Study about the basic combinational logic circuits and their implementations.

6	C113	ENGLISH LANGUAGE LAB	C113.1	Explain and facilitate computer-aided multi-media instruction enabling individualized and independent language learning.
			C113.2	Interpret the students to the nuances of English speech sounds, word accent, intonation and rhythm.
			C113.3	Change a consistent accent and intelligibility in their pronunciation of English by providing an opportunity for practice in speaking.
			C113.4	Develop the fluency in spoken English and neutralize mother tongue influence.
			C113.5	Compare the abilities of students with real life situations faced by the students.
			C113.6	Modify students to use language appropriately for interviews, group discussion and public speaking.
7	C116	PHYSICS LAB	C116.1	Explain the value of g on various places.
			C116.2	Summarize the elasticity of various materials.
			C116.3	Analyses the characteristics of various diode.
			C116.4	Interpret the law of string.
			C116.5	Determine the wavelength of light.
			C116.6	Illustrate the viscosity of liquid.
8	C136	BASICS OF MECHANICAL ENGINEERING LAB	C136.1	Study the fundamental of IC engine
			C136.2	Demonstrate pressure measuring instruments of fluid.
			C136.3	Study on analytical knowledge about refrigerator and air conditioner.
			C136.4	Demonstrate fundamental knowledge of automobile transmission system.
			C136.5	Understand about the construction and function of gear and gear train.
			C136.6	Understand the working and construction of steam power plant.

9	C138	ENGINEERING GRAPHICS AND DESIGN LAB	C138.1	Develop adequate competence in visualization, interpretation and expression of drawing of engineering parts and objects.
			C138.2	Perform free hand sketching of basic geometrical constructions and multiple views of objects.
			C138.3	Gain knowledge on universally accepted conventions and symbols for their usage in technical drawings.
			C138.4	Draw orthographic projection of lines and plane surfaces.
			C138.5	Draw projection of solids and perform development of surfaces.
			C138.6	Gain knowledge about Computer aided drafting.
10	C119	BASICS OF ELECTRONICS ENGINEERING LAB	C119.1	Demonstrate and explain electronic components and electronic components.
			C119.2	Compute the DC and AC resistance of diode with the help of VI characteristics.
			C119.3	Design of Half Wave and Full Wave Rectifier.
			C119.4	Analysis of positive , negative and biased clipper circuit .
			C119.5	Demonstrate the design of inverting and non inverting amplifiers using the OPAMP.
			C119.6	Extract logic gates and their usage in digital circuits
11	C129	BASICS OF CIVIL ENGINEERING	C129.1	Understand the property, use, advantage and disadvantage of diffent material used for construction.
			C129.2	Analyse different types of materials will be used for construction, their proportions, different types of test & experiments and importance of quality.
			C129.3	Analyse the importance of surveying, its requirements and applications in civil engineering.
			C129.4	Differentiate the types of soil and its classifications, their properties, strengths and Types of foundations.

			C129.5	Explain the ideas of Irrigation engineering and types of irrigation structures like: canals, siphons, weirs, dams etc.
			C129.6	Learn about construction materials, role of transportation as well as of water and its conservation.
12	C110	BASIC ELECTRICAL ENGINEERING	C110.1	Recognize the circuit elements with their characteristics and solve Electrical engineering circuit problems applying:KCL, KVL, node voltage analysis, mesh current analysis, super position theorem and maximum power transfer theorem.
			C110.2	Analyze the ac circuits having Resistive, Inductive and Capacitive load in the presence of sinusoidal excitation along with resonance condition.
			C110.3	Evaluate the transient and steady state response of various electrical circuits.
			C110.4	Understand the generation and distribution of ac power and simultaneously can apply to solve the problems relating to complex powers of single phase and three phase AC circuits.
			C110.5	Differentiate the relationship between the Magnetic and Electric circuits.
			C110.6	Explain and generalize the construction, principle of operation and the relating governing equations of electric machines like: DC Generator, DC Motor Induction Motors and Alternators.
13	C111	ENGINEERING MECHANICS	C111.1	Analize a system of forces acting on a rigid body.
			C111.2	Apply the knowledge of parallel forces in determining the centroid and second moment of area of plain figures.
			C111.3	Analyze planar and spatial systems to determine the forces in members of trusses and frames.
			C111.4	Acquire the knowledge of space-time relationship of a body in motion and calculate the motion parameters under external forces.
			C111.5	Apply the knowledge to analise the motion of a body

				under curvilininer motion.
			C111.6	Study the motion of a rotational body under external forces.
14	C105	CHEMISTRY	C105.1	Understand the basics of quantum mechanical concept.
			C105.2	Apply the principles of spectroscopy in predicting absorption and relative terms in diatomic molecule.
			C105.3	Evaluate the phase diagram of some one and two component systems by applying Phase Rule.
			C105.4	Classify the organometallics .
			C105.5	Analyse the quantitative aspects of fuel combustion by understanding the fundamental concepts of fuels.
			C105.6	Evaluate the corrosion of a material by using the the fundamental concepts of corrosion chemistry.
15	C104	MATHEMATICS-II	C104.1	Apply the knowledge of Laplace transformation and its use in getting solution to differential equations.
			C104.2	Use of periodic functions and Fourier series, Fourier intergral
			C104.3	Describe Fourier transform to analyze circuit and system communication.
			C104.4	Illustrate the concept of vector differential calculus to understand the solenoidal and irrotational vectors
			C104.5	Illustrate the concept of tangent and arclength,gradient.
			C104.6	Solve the Vector differential and integral calculus problem.
16	C107	PROGRAMMING FOR PROBLEM SOLVING USING C	C107.1	Illustrate the flowchart and design an algorithm for a given problem and write a C Program
			C107.2	Develop conditional and iterative statement to write c Program
			C107.3	Exercise user defined functions to solve real-time problems

			C107.4	Inscribe C programs that use pointers to access arrays, pointers and strings
			C107.5	Exercise user defined datatypes including structures and unions to solve problems
			C107.6	Exercise files concept to show input output of the file in C
17	C117	PROGRAMMING FOR PROBLEM SOLVING USING C LAB	C117.1	Understand the basics of Electrical Laws which can be applied for solving electrical Circuits.
			C117.2	Interpret and explain DC and AC circuits.
			C117.3	Analyses Three phase circuits.
			C117.4	Understand elementary idea of Magnetic Circuits.
			C117.5	Classify various electrical Machines.
			C117.6	Gain knowledge about the different Electrical Machines.
18	C121	WORKSHOP	C121.1	Get a good knowledge and experience about the working conditions at shop floor level.
			C121.2	Practice on fabrication of components through various operations in fitting and welding.
			C121.3	Identify and apply suitable tools for various operations in lethe machine.
			C121.4	Get the knowledge of working in machine shop such as milling machine, shapper etc.
			C121.5	Study and practice on machine tools and their operations
			C121.6	Acquire the Knowledge about safety in workshop and industry.
19	C115	CHEMISTRY LAB	C115.1	Determine the amount of a compound / ion present in a given mixture / compound.
			C115.2	Understand the Iodometric titrations.
			C115.3	Analyse water sample to know some of its characteristics.
			C115.4	Evaluate the suitability of a lubricant/fuel by

				determining some general property.
			C115.5	Create a drug.
			C115.6	Aplly the knowledge gained to determine the strength of a solution.
20	C133	BASICS OF CIVIL ENGINEERING LAB	C133.1	Determine the shape, size and Compressive strength of brick.
			C133.2	Learn the testing of chain and measurement of correct length of the line, Bearing of a line.
			C133.3	Know the importance of total station and its application.
			C133.4	Determine Setting time of cement
			C133.5	Evaluate the tensile strength of reinforcing steel.
			C133.6	Calculate Compressive strength of concrete.
21	C120	BASIC ELECTRICAL ENGINEERING LAB	C120.1	Understand the basics of Electrical Laws which can be applied for solving electrical Circuits.
			C120.2	Interpret and explain DC and AC circuits.
			C120.3	Analyses Three phase circuits.
			C120.4	Understand elementary idea of Magnetic Circuits.
			C120.5	Classify various electrical Machines.
			C120.6	Gain knowledge about the different Electrical Machines.
SECOND YEAR				
22	C203	ENGINEERING ECONOMICS	C203.1	Define the basic concept of micro and macroeconomics, engineering economics and their application in engineering economy.
			C203.2	Understand the law of demand and law of supply.
			C203.3	Understand the environment and financial systems of the country and its impact on business, society and enterprise.
			C203.4	Analyze time value of money using engineering economy factors.

			C203.5	Gain knowledge of economics and engineering principles to solve engineering problems and to evaluate engineering projects considering upon depreciation, taxes and inflation.
			C203.6	Apply depreciation methods for individual/industrial/ public alternatives
23	C205	NETWORK THEORY	C205.1	Understanding basic electrical circuits and can apply different electrical laws and theorems to solve complex electrical networks.
			C205.2	Analyze the transient and steady state response of 1st and 2nd order differential equations for series and parallel R-L, R-C, and R-L-C networks.
			C205.3	Recognize the need of sinusoidal steady state response of single phase and three phase circuits.
			C205.4	Analyze of electrical networks using Laplace transform for standard inputs.
			C205.5	Evaluate the stability of electrical circuit using frequency domain analysis.
			C205.6	Understanding two-port circuit behaviour and inter connection of two-port networks.
24	C230	OBJECT ORIENTED PROGRAMMI NG USING JAVA	C230.1	List and use various Object Oriented Programming concepts for problem solving.
			C230.2	Describe various fundamental tokens as well as linear data structure using object oriented programming.
			C230.3	Solve problems on string and inheritance by applying different library function.
			C230.4	Analyze and Design program based on concept of multithreading and abstraction
			C230.5	Evaluate various GUI component using Applet and AWT to solve real world problem.

			C230.6	Design & Create various application based on swing by using javafx.
25	C210	ANALOG ELECTRONIC CIRCUITS	C210.1	Apply the basic concept of MOSFET, Biasing of BJT and FET to analysis and design of basic transistor amplifier circuits.
			C210.2	Test and Analyze the behavior of BJT/FET in low and high frequency regions by performing frequency analysis of BJT and FET.
			C210.3	Analyze BJT/FET in small signal models.
			C210.4	Apply principle of Feedback Amplifiers and Oscillators.
			C210.5	Apply basic concepts of transistors to design different oscillator and power amplifier circuits of desired frequency and gain.
			C210.6	Implement knowledge of op-amp with basic circuits.
26	C201	MATHEMATICS - III	C201.1	Identify, formulate formula and analyze complex engineering problems and they can solve it.
			C201.2	Understand the processes of Interpolation of a polynomial by Lagrange, Newton divided, forward and backward difference.
			C201.3	Gain knowledge to analyze and formulate the formula to compare the exact and approximate value of an integral by different rules.
			C201.4	Solve an ordinary differential equation and a system of ordinary differential equations by using numerical Methods and extract the value of variables.
			C201.5	Evaluate the probabilistic problems by defining the probability formula and use them to solve Probability problems.
			C201.6	Gain knowledge about the Statistical hypothesis and analyze the regression and related them into estimate
27	C232	ANALOG ELECTRONIC	C232.1	Design and simulate BJT/JFET/MOSFET bias circuits and compare the results.

		S LAB	C232.2	Design and simulate BJT/JFET/MOSFET common emitter circuit and compare their DC and AC performance.
			C232.3	Apply the knowledge about a common emitter amplifier to simulate its frequency response and compare the performance in low-frequency, mid-frequency, and high-frequency regions.
			C232.4	Design a differential amplifier circuit with/without current source and compare its performance during DC and AC operation.
			C232.5	Design a differentiator, integrator, square wave generator using a OPAMP.
			C232.6	Design oscillators and power amplifiers using the knowledge of OPAMPs and transistors.
28	C231	OBJECT ORIENTED PROGRAMMING USING JAVA LAB	C231.1	To Understand OOP concepts and basics of Java programming.
			C231.2	To create Java programs using inheritance and polymorphism.
			C231.3	To Implement error-handling techniques using exception handling and multithreading. database connection.
			C231.4	To differentiate various collections.
			C231.5	To build files and establish database connection.
			C231.6	To develop GUI using Swing components.
29	C207	NETWORK THEORY LAB	C207.1	Apply the knowledge of network theorems to solve complex electrical engineering problems.
			C207.2	Apply the knowledge of network theorems to solve complex electrical engineering problems.
			C207.3	Evaluate the circuit parameters of different two-port networks.

			C207.4	Analyze the frequency response of different filters.
			C207.5	Evaluate the inductance parameter of coupled circuit
			C207.6	Analyze the Resonance circuit using oscilloscope
30	C208	DIGITAL ELECTRONICS	C208.1	Apply knowledge about logic gates to investigate the behaviour of different logic gates and analyse the gate level minimization.
			C208.2	Design and implement different combinational circuits using NAND/NOR gates only or using minimized number of logic gates.
			C208.3	Design and implement different sequential circuits such as flip-flops, registers, and counters.
			C208.4	Investigate the behaviour of a RAM and its storage capacity.
			C208.5	Design, test, and implement a clock pulse generator, parallel adder, accumulator, and binary multiplier.
			C208.6	Implement different combinational and sequential circuits using VHDL/Verilog.
31	C209	ELECTRICAL MACHINE -I	C209.1	Recognize the need of magnetic circuits in electrical science
			C209.2	Apply the concept of electromagnetism in rotating machine
			C209.3	Analyze the construction and operation of DC machine
			C209.4	Analyzing the different characteristics of DC machine and apply it industry
			C209.5	Evaluating different performance parameter of DC machine using different tests
			C209.6	Analyze single phase and three phase transformers circuits and its usage
32	C210	POWER	C210.1	Understanding the different characteristics of power

		ELECTRONICS		semiconductor devices
			C210.2	Analyze various single phase and three phase power converters and understanding their applications.
			C210.3	Understanding the operation of DC-DC chopper and their applications in industry.
			C213.4	Analyze steady state wave form of a boost converter and its application.
			C210.5	Understanding the concept of single phase VSI and their application.
			C210.6	Analyze the operation of three phase VSI.
33	C204	ORGANISATIONAL BEHAVIOUR	C204.1	Demonstrate the applicability of the concept of organizational behaviour to understand the behaviour of people in the organization.
			C204.2	Demonstrate the applicability of analyzing the complexities associated with management of individual behaviour in the organization.
			C204.3	Analyze the complexities associated with management of the group behaviour in the organization.
			C204.4	Demonstrate how the organizational behaviour can integrate in understanding the motivation (why) behind behaviour of people in the organization.
			C204.5	Evaluate the impact of different cultures within an organization
			C204.6	Develop a new technique to implement organizational change for the achievement of organizational goal.
34	C211	ELECTRO MAGNETIC FIELD THEORY	C211.1	Understanding the concepts of different co ordinate systems to describe the spatial variations of the physical quantities dealt in electromagnetic field theory as they are functions of space and time.
			C211.2	Applying the fundamental laws governing electromagnetic fields and evaluate the physical quantities of electromagnetic fields (Field intensity, Flux density etc.) in different media using the fundamental

				laws.
			C211.3	Analyze the field equations for the wave propagation in special cases such as lossy and low loss dielectric media.
			C211.4	Formulate the idea of applying properties of electromagnetic waves in transmission lines anddesign circuits using conductors as well as dielectrics
			C211.5	Visualize TE and TM mode patterns of field distributions in a rectangular –wave-guide
			C211.6	Understand and analyze radiation by antennas.
35	C213	ELECTRICAL & ELECTRONICS MEASUREMENT	C213.1	Recognize the instrument suitable for accurate and precise measurement of current, voltage, power and energy with their construction, theory and operating principle.
			C213.2	Estimate accurately the values of R, L and C employing suitable bridges.
			C213.3	Understanding the construction and principle of different types of galvanometer and potentiometer.
			C213.4	Understand the construction, theory and working of Instrument Transformers and their applications.
			C213.5	Understand the working of electronics instruments
			C213.6	Learn the working principle of Oscilloscope
36	C214	DIGITAL SIGNAL PROCESSING	C214.1	Apply knowledge of basic signals and systems to analyse different LTI Systems.
			C214.2	Apply knowledge of Z - transformation techniques to analyse the signal in LTI Systems.
			C214.3	Apply the knowledge of Discrete Fourier Transform (DFT), its properties in linear filtering.
			C214.4	Apply the knowledge about DFT for its efficient computation using different FFT algorithms.
			C214.5	Apply the basic knowledge about signals and systems to design and implement different filters.

			C214.6	Design different adaptive filters and implement them using MATLAB.
37	C217	DIGITAL ELECTRONIC S LAB	C217.1	Apply knowledge about logic gates to investigate the behaviour of different logic gates and analyse the gate level minimization.
			C217.2	Design and implement different combinational circuits using NAND/NOR gates only or using minimized number of logic gates.
			C217.3	Design and implement different sequential circuits such as flip-flops, registers, and counters.
			C217.4	Investigate the behaviour of a RAM and its storage capacity.
			C217.5	Design, test, and implement a clock pulse generator, parallel adder, accumulator, and binary multiplier.
			C217.6	Implement different combinational and sequential circuits using VHDL/Verilog.
38	C218	ELECTRICAL MACHINE LAB-I	C218.1	Evaluation of efficiency and determination of voltage regulation by Open Circuit and Short Circuit test on single phase transformer
			C218.2	Understanding the load sharing by parallel operation and calculation of parameters using back-to back test of transformer.
			C218.3	Applying open delta and scott connection to build a three phase transformer using two single phase transformer.
			C218.4	Analyzing the speed control of three phase induction motor.
			C218.5	Evaluation of different parameters, efficiency by different tests on three phase induction motor.
			C218.6	Evaluation of different parameters of single phase induction motor.
39	C219	POWER ELECTRONIC	C219.1	Analyze the characteristics of SCR, TRIAC, IGBT and MOSFET.

		LAB	C219.2	Understanding the application of cosine triggering circuit
			C219.3	Analysis of half wave and full wave single phase controlled rectifier.
			C219.4	Analysis of full wave three phase controlled rectifier.
			C219.5	Understanding the operation and characteristics of different type of DC to DC converter circuit.
			C219.6	Analysis the performance of single phase and three phase VSI with PWM control.
THIRD YEAR				
40	C301	ELECTRICAL POWER TRANSMISSION AND DISTRIBUTION	C301.1	Overview of present day power scenario and generation of electrical power from various sources
			C301.2	Evaluate the resistance, inductance and capacitance present in the power lines and the characteristics of these line parameters.
			C301.3	Analyze the performance of the transmission lines under different operating conditions
			C301.4	Design the mechanical and insulation system of transmission lines.
			C301.5	Design AC & DC distribution system with capacitors and filters.
			C301.6	Get an insight of the underground cables, their construction and requirement of earthing
41	C303	CONTROL SYSTEM	C303.1	Analyzing the mathematical models of physical systems, transfer function modelblock diagram reduction technique & Mason gain formula to find out overall gain of a system.
			C303.2	Understanding the time response and concept of stability using Routh-Hurwitz and Root-Locus technique
			C303.3	Analyzing the relationship between time and frequency response using Polar plots,

				Bode plots and relative stability using Nyquist criterion.
			C303.4	Implementation of constant M circle, constant N circle, and Nichols Chart for close loop frequency response
			C303.5	Identify the needs of different types of controllers and compensator to ascertain the required dynamic response from the system.
			C303.6	Understanding the concept of state space model and stability of linear discrete time systems.
42	C304	ELECTRICAL MACHINE-II	C304.1	Understanding the physical arrangement of windings in stator and rotor.
			C304.2	Analyzing the concept of revolving magnetic field.
			C304.3	Describe the construction, operation and performance of 3-phase induction machines
			C304.4	Applying the concept of double revolving field theory in single phase induction motor.
			C304.5	Acquiring knowledge concept of synchronous motor.
			C304.6	Understand the concept of parallel operation of alternator and its synchronization with infinite bus bar.
43	C305	INDUSTRIAL PROCESS CONTROL AND DYNAMICS	C305.1	Analysis the application of OP-AMP circuits in instrumentation and also apply the knowledge of control system in anolog and digital signal processing.
			C305.2	Recognization the need of analog and digital signal conditioning for industrial purpose
			C305.3	Development of different types temperature sensing and position sensing devices
			C305.4	Use of different modern tools like ladder ,PLC,control loop in discrete state process control
			C305.5	Analyze of different control system parameters and its different modes of operation

			C305.6	Apply the knowledge of different controllers in process controller
44	C307	ELECTRIC DRIVES	C307.1	Able to acquire the knowledge about electric drives ,its operation and its control
			C307.2	Analyze the performance characteristics of dc motor drives and its method of application
			C307.3	Design different speed control techniques of ac motor drive
			C307.4	Apply the knowledge of drivein traction system
			C307.5	Synthesize the characteristics of different types of dc and ac motors used in traction
			C307.6	Apply proper drive in industry as well as domestic purpose
45	C308	RENEWABLE POWER GENERATING SYSTEM	C308.1	Imparting knowledge for the needs of alternative and "clean" energy technologies and Resources
			C308.2	Apply the knowledge of solar science in engineering field and able to produce heat and Electricity
			C308.3	Able to get research based knowledge on wind power systems
			C308.4	Analyze the use of different electrical machines in renewable power
			C308.5	Apply the knowledge of chemistry to produce electricity from biomass
			C308.6	Apply the knowledge of renewable energy sources to design hybrid systems
46	C309	SENSORS AND TRANSDUCERS	C309.1	Get the knowledge about the different characteristics of measurement system
			C309.2	Analyze step and frequency response of 1st and 2nd order elements

			C309.3	Apply the engineering knowledge of sensing elements in industry
			C309.4	Analyze the application of different thermoelectric sensing elements
			C309.5	Apply the knowledge of bridges for improvement of linearity and sensitivity
			C309.6	Utilise the knowledge of OP-AMP in instrumentation
47	C310	ELECTRICAL POWER TRANSMISSION AND DISTRIBUTION LAB	C310.1	Analyze different causes of ferranti effect
			C310.2	Evaluate ABCD parameters and understand its necessity
			C310.3	Get the knowledge of string efficiency and its evaluation
			C310.4	Measure the earth resistance and analyze
			C310.5	Able to test the performance of transformer oil.
			C310.6	Understand the application of various lighting arrestor and corona discharge
48	C311	CONTROL AND INSTRUMENTATION LAB	C311.1	Analyze the characteristics of different dc as well as ac motors.
			C311.2	Get the knowledge about the frequency of a lag lead compensator.
			C311.3	Understand the time response of P,PI & PID controller with a 2nd order system
			C311.4	Evaluate the transfer function of a network system with transfer function analyser.
			C311.5	Able to use strain gauge .LVDT and J type thermo couple in proper field.
			C311.6	Able to calibrate energy meter.
49	C312		C312.1	Evaluate and analyze the voltage regulation of a alternator.

		ELECTRICAL MACHINE –II LAB	C312.2	Be capable to analyze different parameters of a synchronous machine.
			C312.3	Able to perform the test of parallel operation of two alternator
			C312.4	Be able to know the power angle characteristics of an alternator
			C312.5	Analyze the performance characteristics of a grid connected induction generator
			C312.6	Can determine the parameters in different types of induction motors.
50	C313	COMMUNICA TION ENGINEERING	C313.1	Investigate the basics of signals, systems and different modulation schemes.
			C313.2	Apply the basic knowledge about different modulation schemes to investigate the effect of noise in them.
			C313.3	Apply the basic knowledge about modulation to investigate Pulse Code Modulation(PCM) and Delta modulation.
			C313.4	Investigate about the time division multiplexing and digital multiplexers.
			C313.5	Apply the basic knowledge about modulation to investigate different digital modulation techniques.
			C313.6	Investigate about the detection theory.
51	C314	MICROPROC ESSOR AND MICROCONT ROLLER	C314.1	Apply knowledge on organization of microprocessor and its hardware to interface with memory and I/O devices.
			C314.2	Apply the knowledge of instruction set, addressing mode, and assembler directives to write a program and execute it for different applications.
			C314.3	Design embedded systems for real time application by interfacing Intel 8086 Microprocessor with peripherals such as Intel 8255, Intel 8279, ADC, DAC, Printer, CRT terminal etc.

			C314.4	Apply the knowledge about the pin description and architecture of Intel 8051 Microcontroller to interface with Memory and I/O devices.
			C314.5	Design embedded systems for real time applications by programming the Intel 8051 microcontroller with the knowledge about its instruction set, addressing mode, and assembler directives.
			C315.6	Apply the knowledge about advanced microprocessors, such as Intel 80386, and 80486 microprocessors to design an embedded system for practical applications.
52	C302	OPTIMIZATION ENGINEERING	C302.1	To Explain the theory of optimization methods and algorithms developed for solving various types of optimization problem
			C302.2	To Understand the fundamental knowledge of linear programming
			C302.3	To develop and promote research interest in applying optimization techniques on problems of engineering and technology
			C302.4	To Illustrate fundamentals of integer programming techniques and apply different techniques to solve various optimization problems arising from engineering area
			C302.5	To apply the mathematical results and numerical techniques of optimization theory to concrete engineering problem
			C302.6	To modify and use classical optimization techniques and numerical methods of optimization
53	C315	POWER SYSTEM PROTECTION AND CONTROL	C315.1	Understand about Per- Unit System, Node Equations, Complex Power in three Phase system
			C315.2	Analyze the Economic Operation of Power System, Automatic Generation, Unit Commitment Problems in details

			C315.3	Get the knowledge of about Two Area Systems, excitation system in AVR.
			C315.4	Able to control the frequency and voltage of turbine and speed governors
			C315.5	Analyze the stability of the power system
			C315.6	Able to optimize the cost of different power generating system
54	C319	BIOMEDICAL INSTRUMENTATION	C319.1	Study the introductions of Bioengineering.
			C319.2	Analyze the utilization of basic medical instrumentation..
			C319.3	Study the Bioelectrical signals and electrodes.
			C319.4	Analyze the utilization of electrodes for ECG.
			C319.5	Analyze the physiological Transducer and pressure transducers.
			C319.6	Study the recording systems.
56	C323	SEMINAR-I	C323.1	Select topics on modern technology, prepare slides for power point presentation
			C323.2	Gain good knowledge on modern technology by referring the journals/magazines
			C323.3	Improvement in presentation skill viz. clarity of voice, proper body language, interaction with audience.
			C323.4	Development of communication skills.
			C323.5	Improve in demonstration knowledge, skills and in development of attitudes of a professional engineer.
			C323.6	Learn to compile a detail report about presentation in the prescribed format.
57	C321	COMMUNICATION	C321.1	Simulate and analyze spectrum of different signals.
			C321.2	Design and test a AM/FM modulation and demodulation.

		ENGINEERING LAB	C321.3	Simulate the process of frequency division multiplexing and frequency division demultiplexing.
			C321.4	Simulate different channel coding and decoding techniques.
			C321.5	Transmit and receive a signal through a satellite link.
			C321.6	Simulate and compare different forms of BPSK, QPSK, and OQPSK anlyze the spectrum with spectrum analyzer.
58	C322	MICROPROCESSOR AND MICROCONTROLLER LAB	C322.1	Apply knowledge about instruction set of Intel 8086 to perform 16 bit arithmetic operation, searching and sorting operation, and string manipulation operation.
			C322.2	Implement a digital clock and stop watch using Intel 8086 Microprocessor.
			C322.3	Apply knowledge about instruction set of Intel 8086 to interface and program Intel 8279, Intel 8259, Intel 8253, stepper motor, DC motor, ADC, and DAC.
			C322.4	Apply knowledge about Intel 8255 and Intel 8251 to perform parallel and serial communication between two MP Kits in Mode 1 and Mode 2.
			C322.5	Apply knowledge about instruction set of Intel 8051 microcontroller to perform arithmetic, bit manipulation, and logical operations.
			C322.6	Design multi-parameter data acquisition system, voltmeter, power meter, frequency counter, traffic control system using Intel 8051 microcontroller.
FINAL YEAR				
59	C402	ADVANCE CONTROL SYSTEM	C402.1	Be conversant with Discrete Time Control Systems and Continuous Time Control Systems with z transform and stability
			C402.2	Analyze the stability of a system by different stability testing method

			C402.3	Understand the subtle concepts of State Variable Analysis, Concepts of Controllability and Observability
			C402.4	Capable to design state model of continuous time systems.
			C402.5	Analyze Behaviors of Nonlinear Systems and stability analysis
			C402.6	Understand the construction of Phase Trajectories
61	C405	SMART GRID	C405.1	Get the knowledge of generation of electric power and concept of smart grid
			C405.2	Able to get the concept of conversion from conventional electric system to smart i.e IoT based electric system
			C405.3	Analyze PMU,WAMS System
			C405.4	Capable to face the issues while a micro grid connected to main grid.
			C405.5	Analyze the issues during the integration of renewable energies with grid
			C405.6	Use different storage systems in industry
62	C418	INTERNET OF THINGS	C418.1	Describe what Iot is and how it works today
			C418.2	Describe different types of management information system
			C418.3	Design and program Iot devices
			C418.4	Use real IoT protocols for communication
			C418.5	Secure the elements of an IoT device
			C418.6	Design an IoTdevice to work with a cloud computing infrastructure.
63	C401	ENTERPREN	C401.1	Communicate effectively both orally and in writing.

		EURSHIP DEVELOPME NT	C401.2	Demonstrate knowledge of the legal and ethical environment impacting business organizations and exhibit an understanding and appreciation of the ethical implications of decisions.
			C401.3	Demonstrate an understanding of and appreciation for the importance of the impact of globalization and diversity in modern organizations.
			C401.4	Demonstrate an ability to engage in critical thinking by analyzing situations and constructing and selecting viable solutions to solve problems.
			C401.5	Demonstrate an ability to work effectively with others.
			C401.6	Demonstrate knowledge of current information, theories and models, and techniques and practices in all of the major business disciplines including the general areas of Accounting and Finance, Information Technologies, Management, Marketing, and Quantitative Analysis.
64	C333	GREEN TECHNOLOG Y	C333.1	Understanding global warming and its effects
			C333.2	Analyze straties to reduce global warming
			C333.3	Evaluate business opportunities in India for control of carbon emissions and accumulations.
			C333.4	Classify various technologies available for energy production
			C333.5	Illustrate measures taken to reduce carbon emission at personal and city wide levels.
			C333.6	Cite India's national action plan to low carbon path
65	C419	SOFT COMPUTING	C419.1	Understand about the basics of soft computing techniques
			C419.2	Explain about the neural network
			C419.3	Explain about the fuzzy logic concept
			C419.4	Understand the basic concepts of genetic algorithem

			C419.5	Describe about hybrid soft computing techniques and its application
			C419.6	Identify and describe soft computing techniques and their roles in buildings
67	C412	SEMINAR-II	C412.1	Select topics on modern technology, prepare slides for power point presentation
			C412.2	Gain good knowledge on modern technology by referring the journals/magazines
			C412.3	Improvement in presention skill viz. clarity of voice, proper body language, interaction with audiance.
			C412.4	Development of communication skills.
			C412.5	Improve in demonstration knowledge, skills and in development of attitudes of a professional engineer.
			C412.6	Learn to compile a detail report about presentation in the prescribed format.
68	C413	MINOR PROJECT	C413.1	Identify & undertake projects which is feasible, cost effective, ecofriendly and safe.
			C413.2	Analyze the relation of the project to the literature and how much the project is applicable to the society.
			C413.3	Plan properly to complete the project within the schedule time.
			C413.4	Conduct all relevant testings after execution of the project and analyze the test results for future research.
			C413.5	Execute any project with proper methodology and in a team spirit.
			C413.6	Compile project report as per standard norm.
69	C417	COMPREHEN SSIVE VIVA VOCE	C417.1	Demonstrate the understanding of engineering knowledge learnt in four year graduation course.
			C417.2	Defend any type of interviews, viva-voce, and aptitude tests both at the academic and the industry sector.

			C417.3	Perform well in group discussions and enhance the communications skills and interaction.
			C417.4	Apply knowledge in developing their career in particular fields.
			C417.5	Apply the principles and phenomena, and their applications in solving engineering problems.
			C417.6	Exhibit professional etiquette suitable for career progression
70	C415	INTERNSHIP / MAJOR PROJECT	C415.1	Identify & undertake projects which is feasible, cost effective, ecofriendly and safe.
			C415.2	Analyze the relation of the project to the literature and how much the project is applicable to the society.
			C415.3	Plan properly to complete the project within the schedule time.
			C415.4	Conduct all relevant testings after execution of the project and analyze the test results for future research.
			C415.5	Execute any project with proper methodology and in a team spirit.
			C415.6	Develop confidence for self-education and ability for lifelong learning