ANNA UNIVERSITY, CHENNAI
AFFILIATED INSTITUTIONS REGULATIONS – 2017
B.E. ELECTRICAL AND ELECTRONICS ENGINEERING
I TO VIII SEMESTERS CURRICULUM

S.No	Sem	Course Code	Course Title
1.	I	HS8151	Communicative English
2.		MA8151	Engineering Mathematics - I
3.		PH8151	Engineering Physics
4.		CY8151	Engineering Chemistry
5.		GE8151	Problem Solving and Python Programming
6.		GE8152	Engineering Graphics
7.		GE8161	Problem Solving and Python Programming Laboratory
8.		BS8161	Physics and Chemistry Laboratory
9.	III	MA8353	Transforms and Partial Differential Equations
10.		EE8351	Digital Logic Circuits
11.		EE8391	Electromagnetic Theory
12.		EE8301	Electrical Machines - I
13.		EC8353	Electron Devices and Circuits
14.		ME8792	Power Plant Engineering
15.		EC8311	Electronics Laboratory
16.		EE8311	Electrical Machines Laboratory - I
17.	V	EE8501	Power System Analysis
18.		EE8551	Microprocessors and Microcontrollers
19.		EE8552	Power Electronics
20.		EE8591	Digital Signal Processing
21.		CS8392	Object Oriented Programming
22.			*Open Elective I**
23.		EE8511	Control and Instrumentation Laboratory
24.		HS8581	Professional Communication
25.		CS8383	Object Oriented Programming Laboratory
26.	VII	EE8701	High Voltage Engineering
27.		EE8702	Power System Operation and Control
28.		EE8703	Renewable Energy Systems
29.			*Open Elective II**
30.			*Professional Elective III*
31.			*Professional Elective IV*
32.		EE8711	Power System Simulation Laboratory
33.		EE8712	Renewable Energy Systems Laboratory

S.No	Sem	Course Code	Course Title
34.	II	HS8251	Technical English
35.		MA8251	Engineering Mathematics - II
36.		PH8253	Physics for Electronics Engineering
37.		BE8252	Basic Civil and Mechanical Engineering
38.		EE8251	Circuit Theory
39.		GE8291	Environmental Science and Engineering
40.		GE8261	Engineering Practices Laboratory
41.		EE8261	Electric Circuits Laboratory
42.	IV	MA8491	Numerical Methods
43.		EE8401	Electrical Machines - II
44.		EE8402	Transmission and Distribution
45.		EE8403	Measurements and Instrumentation
46.		EE8451	Linear Integrated Circuits and Applications
47.		IC8451	Control Systems
48.		EE8411	Electrical Machines Laboratory - II
49.		EE8461	Linear and Digital Integrated Circuits Laboratory
50.		EE8412	Technical Seminar
51.	VI	EE8601	Solid State Drives
52.		EE8602	Protection and Switchgear
53.		EE8691	Embedded Systems
54.			*Professional Elective I*
55.			*Professional Elective II*
56.		EE8661	Power Electronics and Drives Laboratory
57.		EE8681	Microprocessors and Microcontrollers Laboratory
58.		EE8611	Mini Project
59.	VIII		*Professional Elective V*
60.			*Professional Elective VI*
61.		EE8811	Project Work

S.No	Index	Course Code	Course Title	S.No.	Index	Course Code	Course Title
1	C101	HS8151	Communicative English	34	C301	EE8501	Power System Analysis
2	C102	MA8151	Engineering Mathematics - I	35	C302	EE8551	Microprocessors and Microcontrollers
3	C103	PH8151	Engineering Physics	36	C303	EE8552	Power Electronics
4	C104	CY8151	Engineering Chemistry	37	C304	EE8591	Digital Signal Processing
5	C105	GE8151	Problem Solving and Python Programming	38	C305	CS8392	Object Oriented Programming
6	C106	GE8152	Engineering Graphics	39	C306 OE1		*Open Elective I**
7	C107	GE8161	Problem Solving and Python Programming Laboratory	40	C307	EE8511	Control and Instrumentation Laboratory
8	C108	BS8161	Physics and Chemistry Laboratory	41	C308	HS8581	Professional Communication
9	C109	HS8251	Technical English	42	C309	CS8383	Object Oriented Programming Laboratory
10	C110	MA8251	Engineering Mathematics - II	43	C310	EE8601	Solid State Drives
11	C111	PH8253	Physics for Electronics Engineering	44	C311	EE8602	Protection and Switchgear
12	C112	BE8252	Basic Civil and Mechanical Engineering	45	C312	EE8691	Embedded Systems
13	C113	EE8251	Circuit Theory	46	C313 PE1		**Professional Elective I** a)Design of Electrical apparatus b)Power systems Stability
14	C114	GE8291	Environmental Science and Engineering	47	C314 PE2		**Professional Elective II** a)Power quality b)Special Electrical machines
15	C115	GE8261	Engineering Practices Laboratory	48	C315	EE8661	Power Electronics and Drives Laboratory
16	C116	EE8261	Electric Circuits Laboratory	49	C316	EE8681	Microprocessors and Microcontrollers Laboratory
17	C201	MA8353	Transforms and Partial Differential Equations	50	C317	EE8611	Mini Project
18	C202	EE8351	Digital Logic Circuits	51	C401	EE8701	High Voltage Engineering
19	C203	EE8391	Electromagnetic Theory	52	C402	EE8702	Power System Operation and Control
20	C204	EE8301	Electrical Machines - I	53	C403	EE8703	Renewable Energy Systems
21	C205	EC8353	Electron Devices and Circuits	54	C404 OE2		Open Elective II*
22	C206	ME8792	Power Plant Engineering	55	C405 PE3		**Professional Elective III** a)Fibre optics and Laser Instrumentation
23	C207	EC8311	Electronics Laboratory	56	C406 PE4		**Professional Elective IV** a)Power system Transients b)Total Quality Management c)VLSI
24	C208	EE8311	Electrical Machines Laboratory - I	57	C407	EE8711	Power System Simulation Laboratory
25	C209	MA8491	Numerical Methods	58	C408	EE8712	Renewable Energy Systems Laboratory
26	C210	EE8401	Electrical Machines - II	59	C409 PE5		**Professional Elective V** a)Electric energy generation, utilization and Conservation b)FACTS c)Principles of Management d)Professional ethics in Engineering
27	C211	EE8402	Transmission and Distribution	60	C410 PE6		**Professional Elective VI** a)Bio-Medical Instrumentation b)Microcontroller based System design
28	C212	EE8403	Measurements and Instrumentation	61	C411	EE8811	Project Work
29	C213	EE8451	Linear Integrated Circuits and Applications				
30	C214	IC8451	Control Systems				
31	C215	EE8411	Electrical Machines Laboratory - II				
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33	C217	EE8412	Technical Seminar				

K.L.N. College of Engineering
Department of Electrical and Electronics Engineering
Course Outcomes-R-2017

Course Name: C101-Communicative English   **Course Code: HS8151**

C**101.1**	Listen and recognize main ideas from different discourses in different accents.
C**101.2**	Speak clearly, confidently, comprehensively, and communicate with one or many listeners using appropriate communicative strategies.
C**101.3**	Read different genres of text adopting various reading strategies
C**101.4**	Write cohesively and coherently by using a wide range of vocabulary and organize ideas logically on a topic without grammatical errors
C**101.5**	Determine the main and subordinate ideas, draw conclusions and summarize information from written material

Course Name: C102– Engineering Mathematics – I   **Course Code: MA8151**

C**102.1**	Use both the limit definition and rules of differentiation to differentiate functions.
C**102.2**	Apply differentiation to solve maxima and minima problems
C**102.3**	Evaluate integrals both by using Reimann sums and by using the fundamental theorem of convergent improper integrals. Evaluate integrals using techniques of integration, such as substitution, partial Fractions, integration by parts and improper integrals.
C**102.4**	Apply integration to compute multiple integrals, area, volume, integrals in polar Coordinates, in addition to change of order and change of variables.
C**102.5**	Apply various techniques in solving differential equations.

Course Name: C103– Engineering Physics   **Course Code: PH8151**

C**103.1**	Demonstrate the properties of elasticity and measure the different moduli of elasticity.
C**103.2**	Examine the characteristics of waves, Laser and optical fiber
C**103.3**	Illustrate different modes of heat transfer through objects.
C**103.4**	Explain the block body radiation, properties of matter waves and schrodinger equations.
C**103.5**	Classify the bravais lattices, crystal structures, crystal imperfections and crystal growth techniques

Course Name: C104– Engineering Chemistry   **Course Code: CY8151**

C**104.1**	Explain the hardness of water, its types and estimation, boiler troubles and treatment of boiler feed water.
C**104.2**	Explain adsorption, types and theories of adsorption isotherm and its application in pollution abatement, theories of catalysis and applications
C**104.3**	Understand the basic concepts of phase rule and its application to one and two component systems, properties, significance and applications of alloys.
C**104.4**	Relate the significance of solid, liquid and gaseous fuels and to calculate the calorific value of fuels.
C**104.5**	Illustrate the methods of harvesting energy from non-conventional energy sources.

Course Name: C105 – Problem Solving and Python Programming   Course Code: GE8151

C105.1	Develop algorithmic solutions to simple computational problems .
C105.2	Demonstrate programs using simple Python statements and expressions.
C105.3	Explain control flow and functions concept in Python for solving problems.
C105.4	Use Python data structures- lists, tuples & dictionaries for representing compound data.
C105.5	Explain files, exception, modules and packages in Python for solving problems.

Course Name: C106 – Engineering Graphics   Course Code: GE8152

C106.1	Familiarize with the fundamentals and standards of engineering graphics.
C106.2	Perform freehand sketching of basic geometrical constructions and multiple views of objects.
C106.3	Project orthographic projections of lines and plane surfaces.
C106.4	Draw projections, solids and development of surfaces.
C106.5	Visualize and to project isometric and perspective sections of simple solids.

Course Name: C107 – Problem Solving and Python Programming Laboratory   Course Code: GE8161

C107.1	Develop solutions to simple computational problems using Python programs.
C107.2	Solve problems using conditionals and loops in Python.
C107.3	Develop Python programs by defining functions and calling them.
C107.4	Use Python lists, tuples & dictionaries for representing compound data.
C107.5	Develop Python programs using files.

Course Name: C108 – Physics and Chemistry Laboratory   Course Code: BS8161

Chemistry Laboratory

C108.1	Determine and estimate the types of alkalinity & hardness of a given water sample.
C108.2	Estimate the amount of copper content present in a given sample.
C108.3	Determine the strength of an acid by using pH meter.
C108.4	Determine the strength of a pure acid and mixture of acids by using conductivity meter.
C108.5	Estimate the amount of iron content present in a given solution by means of potentiometric titration.

Physics Laboratory

C108.1	Evaluate moment of inertia of disc and rigidity modulus for thin wire using Torsion pendulum.
C108.2	Appraise Young's modulus of the beam by Non-Uniform bending method.
C108.3	Measure the wavelength of LASER, Particle size and basic parameter of optical fiber using Semiconductor diode LASER.
C108.4	Examine the thermal conductivity of bad conductors using Lee's disc apparatus.
C108.5	Determine the wavelength of the prominent spectral lines.

Course Name: C109 – Technical English   **Course Code: HS8251**

C109.1	Read technical texts and write area- specific texts effortlessly
C109.2	Listen and comprehend lectures and talks in their area of specialization successfully
C109.3	Speak appropriately and effectively in varied formal and informal contexts
C109.4	Write reports and winning job applications.
C109.5	Use appropriate technologies to organize, present, and communicate information to address a range of audiences, purposes, genres

Course Name: C110 – Engineering Mathematics - II   **Course Code: MA8251**

C110.1	Calculate the eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices
C110.2	Evaluate the line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.
C110.3	Determine Analytic functions, conformal mapping and Bilinear transformation.
C110.4	Evaluate the Cauchy's integrals, Taylor's and Laurent's and residue theorem for evaluation for real integrals using circular and semicircular, contour
C110.5	Evaluate Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

Course Name: C111 – Physics for Electronics Engineering   **Course Code: PH8253**

C111.1	Gain knowledge on classical and quantum electron theories and energy band structures.
C111.2	Acquire knowledge on basis of semiconductor physics and its applications in various devices.
C111.3	Get knowledge on magnetic and dielectric properties of materials.
C111.4	Have the necessary understanding on the functioning of optical materials for opto electronics.
C111.5	Understand the basics of quantum structures and their applications in spintronics and carbon nanotubes.

Course Name: C112 – Basic Civil and Mechanical Engineering   **Course Code: BE8252**

C112.1	State the scope of civil Engineering and Overview of Civil Engineering and Explain the scope of Mechanical Engineering and Overview of Mechanical Engineering.
C112.2	State the functions of IC engine and differentiate the working principle of 2stroke, 4 stroke petrol and diesel engine, Types of power plant and classify the various types of boilers and conclude the use of boiler in power plant.
C112.3	Apply the principles of vapour absorption and compression systems and Explain the Operation and type of air conditioner.
C112.4	Apply the principles of surveying and use various measurements for surveying and Explain about various engineering materials and leveling instruments.
C112.5	Classify the types of bridges, foundation, floorings, roofs, plasters and R.C.C structural members and state the purpose of dam.

Course Name: C113 – Circuit Theory   **Course Code: EE8251**

C113.1	Apply Kirchhoff's current and voltage laws to simple circuits and Solve complex circuits using Mesh & Nodal Methods.
C113.2	Apply Network theorems to linear circuits and to solve simple and complex problems.
C113.3	Analyze the Transient response of RLC circuits under DC and AC excitation using Laplace Transform
C113.4	Analyze three phase balanced and unbalanced star, delta network
C113.5	Compute the frequency response of Series and Parallel resonance and analyze tuned circuits.

Course Name: C114 – Environmental Science and Engineering   **Course Code: GE8291**

C114.1	Explain the values, threats and conservation of biodiversity and classify various ecosystems.
C114.2	Identify and implement technological and economical solution to environmental pollution.
C114.3	Develop the knowledge on various natural resources, their causes and their effects.
C114.4	Explain various environmental acts and to explain various disaster management.
C114.5	Relate population growth and environment and the role of IT in environment and human health.

Course Name: C115 – Engineering Practices Laboratory   **Course Code: GE8261**

C115.1	Demonstrate wiring for a simple residential house; identify the ratings of various appliances like fluorescent tube
C115.2	Calculate the different electrical quantities
C115.3	Measure the resistance to earth of electrical equipment
C115.4	Verify the truth tables of logic gates AND
C115.5	Develop soldering in a PCB

Course Name: C116 – Electric Circuits Laboratory   **Course Code: EE8261**

C116.1	Apply Kirchhoff's voltage and current laws to solve simple and complex circuits.
C116.2	Apply network theorems to solve simple and complex circuits.
C116.3	Demonstrate the working of Analog and digital storage oscilloscopes.
C116.4	Determine frequency response of RLC circuits and Use MATLAB to simulate series, parallel resonant circuit.
C116.5	Apply MATLAB tool to simulate three phase balanced and unbalanced star, delta network circuit.

Course Name: C201 – Transforms and Partial Differential Equations   Course Code: MA8353

C201.1	Solve First, Second order homogeneous and non homogeneous partial differential equations
C201.2	Find the Fourier series of a given function satisfying Dirchlet's condition.
C201.3	Apply Fourier series to solve one dimensional wave, one and two dimensional heat equations.
C201.4	Determine Fourier transform for a given function and use them to evaluate certain definite Integrals
C201.5	Determine z transforms of standard functions and use them to solve difference equations

Course Name: C202 – Digital Logic Circuits   Course Code: EE8351

C202.1	Analyze the various types of number system and compare the digital logic families.
C202.2	Apply K –Map for simplification and implementation of combinational logic circuit.
C202.3	Design the synchronous Sequential logic circuits, draw the block diagram of Shift Registers.
C202.4	Design of asynchronous sequential circuits and describe the operation of Programmable Logic Devices.
C202.5	Design the VHDL coding for combinational logic and Sequential circuits.

Course Name: C203 – Electromagnetic Theory   Course Code: EE8391

C203.1	Apply the vector calculus to static electric-magnetic fields.
C203.2	Apply the principles of electrostatics related to electric field and electric potential, boundary conditions, energy density and capacitance of different configurations.
C203.3	Apply the principles of magnetostatics related to magnetic field and magnetic potential, boundary conditions, energy density and inductance of different configurations.
C203.4	Apply Maxwell's equations in differential and integral forms.
C203.5	Apply Maxwell's equations to solutions of problems relating to uniform plane wave propagation in different media and its interfaces

Course Name: C204 – Electrical Machines - I   Course Code: EE8301

C204.1	Apply KCL, KVL and Faradays law to magnetic circuits to calculate B, H, S, Self and mutually induced emf.
C204.2	Analyze the electrical power transfer in transformer for different loading condition and formulate equivalent circuit of transformer
C204.3	Analyze field energy, co-energy, force and torque in single and multiple excited systems
C204.4	Analyze the DC shunt, series, compound generators' terminal voltages for different load conditions and to analyze the emf equation and armature reaction.
C204.5	Apply KCL, KVL and faradays law to calculate Back emf and Torque in D.C motor and Analyze its speed-torque characters for different connections

Course Name: C205 – Electron Devices and Circuits　　　　　**Course Code: EC8353**

C205.1	Analyze how the AC supply is converted in to DC supply in the power supply circuit.
C205.2	Analyze how an SCR can be triggered ON by a pulse applied to the gate terminal using UJT.
C205.3	Analyze the small signal performances of single stage BJT and FET amplifier.
C205.4	Analyze how the differential amplifier, single tuned amplifier and power amplifiers amplify the frequency signals and Select a suitable amplifier for the application of TV stations transmitter at a desired radio frequency.
C205.5	Design RC, LC and Crystal oscillator using BJT and Generate a radio frequency signal between 1MHz and 500MHz using BJT

Course Name: C206 – Power Plant Engineering　　　　　**Course Code: ME8792**

C206.1	Identify the various components of modern coal power plant and analyse the safety measures of environmental factors in thermal power plant.
C206.2	Apply the knowledge of various gas power cycles to analyse the construction and working of various liquid and gas Power Plants.
C206.3	Review the layout and working of the components of nuclear power plants and analyze the safety measures of the environment for the healthy society.
C206.4	Identify the various renewable energy resources of power generation and gain the knowledge for sustainable development.
C206.5	Formulate the cost of electrical energy based on Power tariff, analyse the Economics and discuss the safety aspects of power plant operation

Course Name: C207 – Electronics Laboratory　　　　　**Course Code: EC8311**

C207.1	**Analyze** the PN junction diode acts as a perfect switch and Zener diode act as a voltage regulator. **Design** an experimental setup of a voltage buffer, current buffer and amplifier circuit using NPN transistor.
C207.2	**Analyze** the characteristics of a voltage controlled device. **Design** an experimental setup of the relaxation oscillator using UJT.
C207.3	**Design** a experiment and determine the frequency response of common emitter amplifier. **Analyze** the characteristics of photo sensitive semiconductor device and Light activated relay circuit.
C207.4	**Design** an experimental setup of a Audio frequency oscillator and Radio frequency oscillator. **Design** and implement a circuit that converts AC voltage to DC voltage for the given input and calculate its ripple factor and percentage of regulation with and without capacitive and inductive filter.
C207.5	**Design** an experimental setup of a differential amplifier using field effect transistor and determine its gain and CMRR. **Analyze** the sine, square and triangular waveforms Using Cathode ray oscilloscope and then **measure** its corresponding amplitude, frequency and phase respectively. Design the low pass filter and High pass filter using passive components with cutoff frequency of 1khz and determine its gain.

Course Name: C208 – Electrical Machines Laboratory - I　　　　**Course Code: EE8311**

C208.1	Investigate the voltage drop due to armature reaction effect in DC shunt and DC compound generators and Design Ampere turns for Inter poles and compensating winding. Examine critical resistance and critical speed.
C208.2	Analyze load characteristics DC shunt, series and compound motor. Examine its maximum output and maximum efficiency
C208.3	Investigate the constant losses of the DC shunt motor predict the efficiency in different methods at different load condition
C208.4	Analyze load characteristics of single and three phase transformer. Examine the different losses and efficiency
C208.5	Investigate the the equivalent circuit parameters of single phase transformer to predetermine its voltage regulation and efficiency.

Course Name: C209 – Numerical Methods　　　　**Course Code: MA8491**

C209.1	Determine the solution of algebraic and transcendental system of linear equations
C209.2	To interpolate the values of unknown functions using Newton's Formula
C209.3	Estimate the numerical values of the derivatives and integrals of unknown function.
C209.4	Solve first and second order initial value problem
C209.5	Solve Numerically boundary value problem

Course Name: C210 – Electrical Machines-II　　　　**Course Code: EE8401**

C210.1	Apply the Knowledge of Engineering fundamentals to the solutions of induced emf, voltage regulation, performance characteristics and analyzing the operation of synchronous generator
C210.2	Apply the Knowledge of Engineering fundamentals to the solutions of induced emf, torque developed, performance characteristics and analyzing the operation of synchronous motor
C210.3	Apply the Knowledge of Engineering fundamentals to the solutions of torque developed, performance characteristics and analyzing the operation of three phase induction motor
C210.4	Analyze the operations of starter used for AC motor, speed control of three phase induction motor
C210.5	Apply the Knowledge of Engineering fundamentals to the solutions of torque developed, performance characteristics and analyzing the operation of single phase induction motor and Special Electrical Machines

Course Name: C211 — Transmission and Distribution　　　　**Course Code: EE8402**

C211.1	Explain the structure of Electrical power system and to analyze Transmission Line Parameters
C211.2	Analyze the equivalent circuits for the transmission lines based on distance and to analyze voltage regulation and efficiency.
C211.3	Analyze the mechanical design of transmission lines and the voltage distribution in insulator strings to improve the efficiency.
C211.4	Analyze the types and construction of cables and to review the methods of grading of cables for the calculation of cable parameters
C211.5	Review about distribution systems, types of substations, methods of grounding, EHVAC, HVDC and FACTS.

Course Name: C212 —Measurements and Instrumentation   **Course Code: EE 8403**

C212.1	Analyze the basic functional block elements in Different measuring Instruments and the errors in the measurement system
C212.2	Analyze construction and working of electrical and electronics instruments.
C212.3	Design AC and DC bridge circuits to determine the values of resister, inductor and capacitors.
C212.4	Review the knowledge on various types of storage and display devices.
C212.5	Analyze the concepts of various transducers and data acquisition systems.

Course Name: C213 – Linear Integrated Circuits and Applications   **Course Code: EE8451**

C213.1	Analyze the basic planar processes to fabricate the monolithic IC and Summarize the fabrication of active and passive components of ICs.
C213.2	Design the basic applications of op-amp and also analyze the characteristics of op-amp.
C213.3	Design the signal analysis using op-amp based circuits like filters, comparators, multivibrators, waveform generators, converters and instrumentation amplifier.
C213.4	Analyze the functional blocks and applications of special IC's like 555 Timer, 565-PLL, IC 566-VCO and AD633-Analog multiplier ICs.
C213.5	Analyze the functional blocks and applications of AD623, LM78XX, LM79XX, LM317, 723, SMPS and ICL8038.

Course Name: C214 –Control Systems   **Course Code: IC8451**

C214.1	Develop mathematical models for physical system and simplify it using reduction techniques.
C214.2	Determine the time domain responses of first and second-order systems to test inputs.
C214.3	Analyze system's stability using different frequency domain methods.
C214.4	Design compensators and their selection to meet desired response.
C214.5	Develop and analyze state space models

Course Name: C215 – Electrical Machines Laboratory-II   **Course Code: EE8411**

C215.1	Analyze the voltage regulation of three phase alternator for different loading condition in different methods and compare the results.
C215.2	Analyze the voltage regulation three phase salient pole synchronous machine in different loading condition and Estimate its negative and zero sequence components
C215.3	Analyze the characteristic of three phase synchronous machine at different load condition for different excitation
C215.4	Analyze performance characteristics of three phase induction motor at different load condition and estimate its equivalent circuit parameters
C215.5	Analyze performance characteristics of single phase induction motor at different load condition and estimate its equivalent circuit parameters.

Course Name: C216 – Linear and Digital Integrated Circuits Laboratory   Course Code: EE8461

C216.1	Design and implement the experimental setup of combinational circuits like Boolean functions, code converters, parity generator, parity checker, encoders, decoders, multiplexer and demultiplexer.
C216.2	Design and implement the experimental setup of Counters and Shift registers using specific IC's.
C216.3	Design a experimental setup of Timer IC applications.
C216.4	Design an experimental setup of a Op-Amp applications like inverting and Non inverting amplifier, adder, comparator, integrator and differentiator.
C216.5	Analyze the voltage to frequency characteristics of voltage controlled oscillator using NE/SE 566 IC and Design the variability voltage regulator using LM317 IC.

Course Name: C217 –TECHNICAL SEMINAR   Course Code: EE8412

C217.1	Function effectively as an individual and Make effective presentation on Engineering/ technology
C217.2	Review, prepare and present technological developments in the field of electrical and electronics engineering.
C217.3	Design documentation and write effective reports on seminar topics

Course Name: C301 – Power System Analysis   Course Code: EE8501

C301.1	Apply engineering knowledge to evaluate the per unit values and to formulate bus impedance, admittance matrices for the given power system network.
C301.2	Analyze load flow techniques using Newton – Raphson and Gauss Seidel methods for the power system networks and interpret the results
C301.3	Analyze the power system network under symmetrical fault condition using Thevenin's theorem and bus impedance matrix
C301.4	Analyze the power system network under unsymmetrical fault condition using symmetrical components
C301.5	Analyze the transient stability of power system using equal area criterion and to apply Runge Kutta and Euler's methods to solve the swing equation

Course Name: C302 – Microprocessors and Microcontrollers   Course Code: EE8551

C302.1	Analyze the functional building blocks of 8085 microprocessor
C302.2	Identify the instructions with the help of addressing modes of 8085 microprocessor and develop the assembly language program on addition
C302.3	Analyze the functional building blocks of 8051 microcontroller
C302.4	Analyze the architecture and functional modes of 8255
C302.5	Apply the instructions of 8051 microcontroller to develop the program for Closed loop control of servo motor

Course Name: C303 –Power Electronics   **Course Code: EE8552**

C303.1	Apply the knowledge on Different types of power semiconductor devices and their switching characteristics
C303.2	Analyze and compare the Operation, characteristics and performance parameters of various types controlled rectifiers and to design controlled rectifiers and interpret with their applications.
C303.3	Analyze the Operation, switching techniques and basics topologies of different types DC-DC switching Regulators and design regulators that meet the appropriate applications.
C303.4	Apply the modulation techniques for pulse width modulated inverters and analyze harmonic reduction methods. Infer the applications of inverter.
C303.5	Apply the Operation of AC voltage controller and various configurations to design for their applications.

Course Name: C304 – Digital Signal Processing   **Course Code: EE8591**

C304.1	Apply the Mathematical knowledge to evaluate the different types of signals and systems and analyze the sampling process of continuous time signal.
C304.2	Analyze the discrete time systems using z-transform and inverse Z transform
C304.3	Apply the Radix-2 Decimation in Time (DIT) and Decimation in Frequency (DIF) FFT Algorithm to Compute the Discrete Fourier Transform.
C304.4	Design of different types of Infinite Impulse Response (IIR) filters and Finite Impulse Response (FIR) filters.
C304.5	Analyze the various architectures of Digital Signal Processors and addressing formats.

Course Name: C305– Object Oriented Programming   **Course Code: CS8392**

C305.1	Outline OOP principles such as objects, classes, encapsulation, inheritance and polymorphism and associate those principles in java language.
C305.2	Design algorithms and develop programs using the concept of Inheritance and Interfaces.
C305.3	Examine the exception handling concepts and develop I/O streams for reading and writing files.
C305.4	Develop programs that run in the same instant using multithreading and multitasking concepts and utilize the power of generic programming in java for robust programming.
C305.5	Design and develop applications in java using forms, AWT, and swing.

Course Name: C307– Control and Instrumentation Laboratory   **Course Code: EE8511**

C307.1	Analyze the characteristics of P, PI and PID controllers experimentally and analyze the stability of the control system using MATLAB
C307.2	Compute the transfer function of a Field controlled DC motor experimentally and analyze the response of Lag, Lead and Lag-Lead Compensators
C307.3	Analyze the transient response of Position Control system experimentally and analyze the Characteristics of Synchro-Transmitter- Receiver and to Use MATLAB for the Simulation of Control Systems.
C307.4	Ability to analyze the basic concepts of bridge networks and to analyze the Dynamics of Sensors/Transducers
C307.5	Measure the Power and Energy experimentally and analyze signal conditioning circuits and to Use MATLAB for Process Simulation

Course Name: C308– Professional Communication   **Course Code: HS8581**

C308.1	Summarize various skills such as Soft Skills, Hard skills, employability and career Skills and demonstrate values such as Time Management and general awareness of current affairs.
C308.2	Demonstrate oneself before the audience by making effective presentations on introducing oneself, answering questions and visual presenting.
C308.3	Demonstrate oneself by participating in group discussions, brainstorming sessions and question sessions. Develop activities to improve GD Skills.
C308.4	Develop interview skills so as to be successful in them.
C308.5	Develop adequate Soft Skills required for the workplace and long-term career.

Course Name: C309– Object Oriented Programming Laboratory   **Course Code: CS8383**

C309.1	Design C++ programs using functions, classes with objects, member functions and constructors.
C309.2	Develop operator and function overloading and run time polymorphism using C++.
C309.3	Develop file handling techniques in C++ for sequential and random access also use Java code for strings.
C309.4	Construct packages and interfaces in Java.
C309.5	Create threads in Java and handle predefined and user defined exceptions.

Course Name: C310–Solid State Drives   **Course Code: EE8601**

C310.1	Analyze the Classification of the various types of drives and load torque characteristics and Apply the multi quadrant dynamics in hoist load system.
C310.2	Analyze the operation of steady state analysis of single phase and three phase fully controlled converter and Chopper fed separately excited dc motor drives and discuss the various control strategies of converter.
C310.3	Analyze the operation and characteristics of various methods of solid state speed control of induction motor.
C310.4	Analyze the operation of various modes of V/f control of synchronous motor drives and different types of permanent magnet synchronous motor drives.
C310.5	Analyze and design a current and speed controller and develop the transfer function for DC motor, load and converter, closed loop control with current and speed feedback.

Course Name: C311— Protection and Switchgear   **Course Code: EE8602**

C311.1	Identify the causes and effects of faults and ungrounded system
C311.2	Analyze the characteristics and functions of Electromagnetic type protective relays
C311.3	Analyze the various abnormal conditions in power system apparatus and to select a suitable protection scheme
C311.4	Synthesize the static relays using comparators and numerical relays.
C311.5	Analyze arc interruption and to select a suitable circuit breaker

Course Name: C312— Embedded Systems   **Course Code: EE8691**

C312.1	Analyze the basic build process of embedded systems, structural units in embedded processor and selection of processor and memory devices depending upon the applications.
C312.2	Analyze the different types of I/O device ports, buses and different interfaces for data transfer in embedded networking.
C312.3	Apply the different techniques like state machine model, sequential program model and concurrent model in Embedded Product Development Life Cycle (EDLC).
C312.4	Analyze the basic concept of Real Time Operating Systems and scheduling of different task and compare the features of different types of Real Time Operating Systems
C312.5	Apply the knowledge of programming concepts of Embedded Systems for various applications like Washing Machine automotive and Smart Card System applications.

Course Name: C313PE1A – Design of Electrical Apparatus   **Course Code: EE8002**

C313PE1A.1	Apply the Knowledge of Engineering fundamentals to the solutions of magnetic circuits
C313 PE1A.2	Apply the Knowledge of Engineering fundamentals to the design solutions of transformers
C313 PE1A.3	Apply the Knowledge of Engineering fundamentals to the design solutions of DC machines
C313 PE1A.4	Apply the Knowledge of Engineering fundamentals to the design solutions of induction motors
C313 PE1A.5	Apply the Knowledge of Engineering fundamentals to the design solutions of synchronous machines

Course Name: C313PE1B –Power System Stability   **Course Code: EE8003**

C313PE1B.1	Apply the Engineering knowledge for modelling of power system components in stability studies.
C313PE1B.2	Analyze small signal stability of SMIB and multi machine system.
C313PE1B.3	Analyze the stability of the power system using Modified Euler's and Runge-Kutta methods.
C313PE1B.4	Apply Engineering techniques for voltage collapse and voltage stability assessment of Power system.
C313PE1B.5	Analyze various methods of Enhancing the stability of power system.

Course Name: C314PE2A –Power Quality   **Course Code: EE8006**

C314PE2A.1	Apply the engineering knowledge on defining and classifying the various power quality issues in power system
C314PE2A.2	Estimate the voltage sag performance and severity, then apply the engineering knowledge in the mitigation of voltage sag and voltage swell
C314PE2A.3	Analyze the causes and mitigation of harmonics with the characteristics of power system with harmonics.
C314PE2A.4	Analysis and Design of Passive Shunt Compensators Simulation and Performance of Passive Power Filters.
C314PE2A.5	Apply the expert system in the monitoring of power quality and analyze the different types of power quality analyzers and custom power devices

Course Name: C314PE2B –Special Electrical Machines   **Course Code: EE8005**

C314PE2B.1	Apply the magnetic circuit concept to increase the saliency ratio of synchronous reluctance motor and compare improvement of the saliency ratio for the different rotor constructions
C314PE2B.2	Apply the magnetic circuit concept in stepper motor for various methods of excitation and compare its static and dynamic performance
C314PE2B.3	Apply basic engineering knowledge to compare the performance of switched reluctance motor with and without sensors
C314PE2B.4	Apply the concept of D.C motor for brushless operation with electronic commutation in brushless D.C. motor and to develop the torque .
C314PE2B.5	Apply basic engineering knowledge in permanent magnet synchronous motor to design power controller for permanent magnet synchronous motors.

Course Name: C315— Power Electronics and Drives Laboratory   **Course Code: EE8661**

C315.1	Analyze the VI characteristics of SCR,TRIAC and Generation of Gate Pulse using R, RC and UJT.
C315.2	Analyze the characteristics of MOSFET,IGBT,GTO and IGCT
C315.3	Design a single phase AC to DC half controlled converter, AC to DC fully controlled converter, step down chopper and step up MOSFET, Switched Mode Power Converter and analyze the output response.
C315.4	Analyze the output waveforms of single phase and three phase IGBT based PWM inverter, AC Voltage controller and the characteristic of PMBLDC motor.
C315.5	Analyze the Simulation of output waveform PE circuits (1Φ & 3Φ semi converters, 1Φ & 3Φ full converters, DC-DC converters, AC voltage controllers).

Course Name: C316 —Microprocessors and Microcontrollers Laboratory   Course Code: EE8681

C316.1	Design a program for arithmetic operation, Ascending/ Descending order, finding Maximum/Minimum numbers, rotate instruction and code conversions and execute using 8085 processor
C316.2	Identify and convert Analog to Digital , Digital to Analog numbers and implement the traffic light controller with 8085
C316.3	Design a code to display the given words using keyboard display controller for serial communication and programming practices with simulator/Emulator /open source
C316.4	Analyze a program using read key to interface with display units and demonstrate conditional jumps ,loops and calling subroutines with 8051 Microcontroller .
C316.5	Create program using I/O port ,8051 timer , A/D & D/A interface with DC & AC motors and develop a program for hardware application using embedded processors

Course Name: C317 —Mini Project   **Course Code: EE8611**

C317.1	Apply practical knowledge within the chosen area of expertise for project development
C317.2	Identify, analyze, design and handle prototype projects with a complete and organized approach
C317.3	Contribute as an individual or in a team in development of technical projects
C317.4	Develop effective communication skills for presentation of project related activities and prepare mini project reports and examination

Course Name: C401—High Voltage Engineering   **Course Code: EE8701**

C401.1	Apply the knowledge of Engineering fundamentals to identify the causes of different over voltages in Electrical Power System and select the protection system according to the types of over voltages.
C401.2	Identify the factors that leads the breakdown mechanism of different dielectric materials and Compare dielectric strength of the different dielectric materials (Gas, Oil, Vacuum and solid)
C401.3	Apply the knowledge of Engineering fundamentals to identify the generating circuits to produce different high voltages and High currents.
C401.4	Apply the knowledge of Engineering fundamentals to identify the measuring instrument to measure the different over voltages and currents in Electrical Power System.
C401.5	Analyse the testing of different Electrical power apparatus and the insulation coordination.

Course Name: C402 —Power System Operation and Control   **Course Code: EE8702**

C402.1	Outline the voltage, frequency regulation and load forecasting methods
C402.2	Analyze the real – power frequency control for single area and two area power system
C402.3	Analyze reactive power – voltage control and select a suitable controller to improve the voltage profile
C402.4	Predict the unit to be committed and evaluate the generation scheduling by analyzing cost equation of the units.
C402.5	Analyze the Energy Management System and Design a SCADA system
C402.6	Prepare a comprehensive report on micro turbine modelling*

Course Name: C403 —Renewable Energy System   **Course Code: EE8703**

C403.1	Analyze the challenges and problems associated with the use of various energy sources, including fossil fuels, with regard to future supply and the environment.
C403.2	Formulate the power in wind energy, classify the types of WPPs, select the site for WPPs and analyze the grid integration issues of WPPs.
C403.3	Apply the knowledge of engineering for harnessing thermal and electrical energy from solar energy.
C403.4	Apply the knowledge of engineering for harnessing electrical energy from biomass, geothermal and hydro power energy.
C403.5	Apply the knowledge of engineering for harnessing electrical energy from ocean energy, fuel cell, hybrid energy systems and production with storage of the hydrogen.

Course Name: C405PE3A —Fibre Optics and Laser Instrumentation   **Course Code: EI8075**

C405PE3A.1	Analyze the characteristics of optical fibres and working the light through the fibre
C405PE3A.2	Apply the gained knowledge of optical fibres and application of the fibre in industries for measurement system and units.
C405PE3A.3	Analyze the fundamentals concepts of laser operation and its characteristics of various types of lasers.
C405PE3A.4	Analyze the application of lasers in industrials for various units and working methods.
C405PE3A.5	Apply the level of laser in hologram and medical application.

Course Name: C406PE4A — Power System Transients **Course Code: EE8010**

C406PE4A.1	Apply engineering fundamentals to compute the solution of transient current equation for RL and RLC circuits.
C406PE4A.2	Identify the importance of switching transients and illustrate the concept of resistance switching, load switching and capacitance switching.
C406PE4A.3	Recall the concept of lightning mechanism and analyze the interaction between lightning and power system
C406PE4A.4	Apply the concept of reflection and refraction and determine the Bewley Lattice diagram for different systems.
C406PE4A.5	Analyze transients in integrated power system and apply IT tools for transient computation

Course Name: C406PE4B — Total Quality Management **Course Code: GE8077**

C406PE4B.1	Infer the need for quality, evolution of quality, definitions of quality and dimensions of a quality via. the contributions of Juran, Deming and Crosby; Show the barriers to TQM, Customer focus, Customer orientation, Customer satisfaction, Customer complaints and Customer retention.
C406PE4B.2	Summarize the quality principles like quality statements, strategic quality planning, quality council, employee empowerment, team, recognition, rewards, performance appraisal and motivation. Develop a continuous process improvement using PDCA Cycle, 5S, kaizen etc.
C406PE4B.3	Summarize, compare and contrast the 7 traditional tools of quality and new management tools such as Six Sigma, benchmarking and FMEA charts.
C406PE4B.4	Summarize, compare and contrast the modern management tools such as Quality circles, Quality cost, Quality function deployment and Taguchi's loss function.
C406PE4B.5	Infer various quality management systems such as ISO9000 series and ISO14000 series. Prescribe the same to any management based on its requirements and expected benefits.

Course Name: C406PE4C — VLSI Design **Course Code: EC8095**

C406PE4C.1	Demonstrate the concepts of digital building blocks using MOS transistor.
C406PE4C.2	Design combinational MOS circuits and power strategies.
C406PE4C.3	Design and construct Sequential Circuits and Timing systems.
C406PE4C.4	Design arithmetic building blocks and memory subsystems.
C406PE4C.5	Apply and implement FPGA design flow and testing.

Course Name: C407 —Power system simulation Laboratory **Course Code: EE 8711**

C407.1	Develop the coding to analyze the performance of transmission line in electrical power system and to formulate bus impedance, admittance matrix for the given power network.
C407.2	Develop the coding to Analyse the load flow problems using Newton Raphson and Gauss seidal methods for the power system and interpret the results.
C407.3	Design the simulation model to Analyse the power system under symmetrical and unsymmetrical fault conditions and analyse the transient stability of the power system
C407.4	Develop the coding to Analyse the economic dispatch and load frequency dynamic problems for the given power system and interpret the results
C407.5	Design the simulation model to Analyse the occurrence of electromagnetic transients in power system and interpret the results

Course Name: C408—Renewable Energy Systems Laboratory   **Course Code: EE8712**

C408.1	Analyze the V-I characteristics and efficiency of 1 KW solar PV system with stand alone and grid connected by conducting experiment and simulation using MATLAB Simulink.
C408.2	Analyze the performance and assessment of micro wind energy generator by conducting experiment and simulation using MATLAB Simulink.
C408.3	Analyze the performance and assessment of solar-wind hybrid system by conducting experiment and simulation using MATLAB Simulink.
C408.4	Analyze the Hydel power using MATLAB Simulink and analyze the performance and assessment of Fuel cell by conducting experiment and simulation using MATLAB Simulink.
C408.5	Analyze the various types of intelligent controller for hybrid system using MATLAB Simulink.

Course Name: C409PE5A— Electric Energy Generation, Utilization and Conservation   **Course Code: EE8015**

C409PE5A.1	Apply the knowledge of mathematics to evaluate the illumination level and wattage consumption by applying laws of illumination.
C409PE5A.2	Analyse the various types of air conditioning system and the energy efficient motors used in the air conditioning and Refrigeration unit.
C409PE5A.3	Analyse the different Heating methods and Welding methods used in the industry and Evaluate the energy consumption of electric furnaces.
C409PE5A.4	Apply the knowledge of mathematics to evaluate the specific energy consumption of different traction services and analyse the different traction motor control.
C409PE5A.5	Analyse the different Domestic utilization of electric energy and the power quality aspects.

Course Name: C409PE5C— Principles of Management   **Course Code: MG8591**

C409PE5C.1	Demonstrate the basics of management and its types, skills, management roles; Differentiate types of business organizations and to examine organization culture and current trends in business.
C409PE5C.2	Outline the nature and purpose of planning, Classify the types of planning, develop objectives, policies, planning premises and decision-making process.
C409PE5C.3	Compare the different organization structures – formal vs informal organization, line vs staff authority, centralization vs decentralization; design job attributes such as HR management, HR planning, Recruitment, selection, training, career planning etc.
C409PE5C.4	Criticize individual and group behavior, compare and explain the types and theories of leadership and motivation; Explain the communication process, examine the barriers in communication and propose an effective communication method.
C409PE5C.5	Analyze and design various control process like budgetary control, non-budgetary control, use of IT in management control, direct control and preventive control.

Course Name: C410PE6A—Biomedical Instrumentation   **Course Code: EI8073**

C410PE6A.1	Identify the functions of human nervous system, Basic Components of a biomedical system and able to analyze the functions of different transducers used in biomedical system.
C410PE6A.2	Apply the knowledge of medical science to analyse the different non-electrical parameter measurements.
C410PE6A.3	Analyse the different electrodes and amplifiers used in physiological measurements like EEG, ECG, EMG etc.,
C410PE6A.4	Analyse the different imaging techniques and biotelemetry system.
C410PE6A.5	Analyse the different life assisting, Therapeutic and robotic devices used in Biomedical field.

Course Name: C410PE6B—MICROCONTROLLER BASED SYSTEM DESIGN   **Course Code: EE8018**

C410PE6B.1	Analyze the functional building block of PIC16cxx and formulate the instruction set for simple operations.
C410PE6B.2	Analyze the concept of interrupts in PIC micro controllers and write the interrupt programs
C410PE6 B.3	Apply the knowledge of PIC programming to interface I/O devices like LCD, Keyboard, and Sensors etc.,
C410PE6B.4	Apply the knowledge of programming concepts in ARM processor
C410PE6B.5	Design an embedded ARM applications and select an ARM Coprocessor

Course Name: C411— Project Work   **Course Code: EE8811**

C411.1	Identify and apply the real world and societal importance problems in the Electrical and its allied area.
C411.2	Identify, analyze, design, implement and handle prototype projects with a complete and organized solution methodologies
C411.3	Apply modern engineering tools for solution
C411.4	Contribute as an individual or in a team in development of technical projects
C411.5	Develop effective communication skills for presentation of project related activities and prepare reports and examination following professional ethics

CO-PO Mapping- R2017

Course Name: C101- Communicative English   **Course Code: HS8151**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101.1	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C101.2	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C101.3	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C101.4	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C101.5	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C101	-	-	-	-	-	-	-	-	3	3	-	2	-	-

Course Name: C102 – Engineering Mathematics – I   **Course Code: MA8151**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C102.1	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C102.2	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C102.3	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C102.4	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C102.5	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C102	3	3	3	-	-	-	-	-	-	-	-	2	-	-

Course Name: C103 – Engineering Physics   **Course Code: PH8151**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C103.1	2	2	1	-	1	-	1	-	-	-	-	1	1	1
C103.2	2	2	1	-	1	-	1	-	-	-	-	1	2	1
C103.3	2	2	1	-	1	-	1	-	-	-	-	1	2	1
C103.4	2	2	1	-	1	-	1	-	-	-	-	1	1	1
C103.5	2	2	1	-	1	-	1	-	-	-	-	1	1	-
C103	2	2	1	-	1	-	1	-	-	-	-	1	2	1

Course Name: C104 – Engineering Chemistry   **Course Code: CY8151**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C104.1	3	3	1	-	1	1	2	2	-	-	-	3	-	-
C104.2	3	1	1	-	-	-	2	2	-	-	-	2	-	-
C104.3	3	1	-	-	-	-	2	-	-	-	-	1	-	-
C104.4	3	1	1	-	-	-	2	-	-	-	-	1	-	-
C104.5	3	3	2	-	1	-	3	3	-	2	-	3	-	-
C104	3	2	1	-	-	-	1	2	-	1	-	2	-	-

Course Name: C105 – Problem Solving and Python Programming   **Course Code: GE8151**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C105.1	3	2	1	-	-	1	-	-	-	-	-	1	2	-
C105.2	3	2	1	-	2	1	-	-	-	-	-	1	2	1
C105.3	3	2	1	-	2	1	-	-	-	-	-	1	2	1
C105.4	3	2	1	-	2	1	-	-	-	-	-	1	2	1
C105.5	3	2	1	1	2	1	-	-	-	-	-	2*	2	1
C105	3	2	1	-	2	1	-	-	-	-	-	1	2	1

Course Name: C106 – Engineering Graphics　　　　　　　　　　**Course Code: GE8152**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C106.1	1	2	-	-	1	-	-	-	1	-	-	-	1	1
C106.2	1	2	-	-	1	-	-	-	1	-	-	-	1	1
C106.3	1	2	-	-	1	-	-	-	1	-	-	-	1	1
C106.4	1	2	-	-	1	-	-	-	1	-	-	-	1	1
C106.5	1	2	-	-	1	-	-	-	1	-	-	-	1	1
C106	1	2	-	-	1	-	-	-	1	-	-	-	1	1

Course Name: C107 – Problem Solving and Python Programming Laboratory　　Course Code: GE8161

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C107.1	3	2	1	-	2	1	-	-	2	-	-	1	2	2
C107.2	3	3*	2*	-	2	1	-	-	2	-	-	1	2	2
C107.3	3	2	1	-	2	1	-	-	2	-	-	1	2	2
C107.4	3	2	1	-	2	1	-	-	2	-	-	1	2	2
C107.5	3	2	1	1	2	1	-	-	2	-	-	1	2	2
C107	3	2	1	-	2	1	-	-	2	-	-	1	2	2

Course Name: C108 – Physics and Chemistry Laboratory　　　　　　　**Course Code: BS8161**

Chemistry Laboratory

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C108.1	2	-	-	-	-	1	1	1	-	-	-	1	-	-
C108.2	2	2	-	-	1	1	-	1	-	-	-	1	-	-
C108.3	2	-	-	-	1	1	-	1	-	-	-	1	-	-
C108.4	2	-	-	-	1	1	-	1	-	-	-	1	-	-
C108.5	2	-	-	-	1	1	-	1	-	-	-	1	-	-
C108	2	1	-	-	1	1	-	1	-	-	-	1	-	-

Physics Laboratory

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C108.1	2	2	-	-	-	-	-	-	-	-	-	1	-	-
C108.2	2	2	-	-	-	-	-	-	-	-	-	1	-	-
C108.3	2	2	-	-	-	-	-	-	-	-	-	1	-	-
C108.4	2	2	-	-	-	-	-	-	-	-	-	1	-	-
C108.5	2	2	-	-	-	-	-	-	-	-	-	1	-	-
C108	2	2	-	-	-	-	-	-	-	-	-	1	-	-

Course Name: C109 – Technical English　　　　　　　　　　**Course Code: HS8251**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C109.1	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C109.2	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C109.3	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C109.4	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C109.5	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C109	-	-	-	-	-	-	-	-	3	3	-	2	-	-

Course Name: C110 – Engineering Mathematics - II   **Course Code: MA8251**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C110.1	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C110.2	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C110.3	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C110.4	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C110.5	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C110	3	3	3	-	-	-	-	-	-	-	-	2	-	-

Course Name: C111 – Physics for Electronics Engineering   **Course Code: PH8253**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C111.1	3	2	2	-	2	-	1	-	-	-	-	2	2	1
C111.2	3	2	2	-	2	-	1	-	-	-	-	2	2	1
C111.3	3	2	2	-	2	-	1	-	-	-	-	2	2	1
C111.4	3	2	2	-	2	-	1	-	-	-	-	2	2	1
C111.5	3	2	2	-	2	-	1	-	-	-	-	2	2	1
C111	3	2	2	-	2	-	1	-	-	-	-	2	2	1

Course Name: C112 – Basic Civil and Mechanical Engineering   **Course Code: BE8252**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C112.1	3	2	1	1	-	-	-	-	-	-	-	-	2	-
C112.2	3	2	2	2	-	-	-	-	-	-	-	-	2	-
C112.3	3	2	1	2	-	-	-	-	-	-	-	-	2	-
C112.4	3	2	2	1	-	-	-	-	-	-	-	-	2	-
C112.5	2	1	2	2	-	-	-	-	-	-	-	-	2	-
C112	3	2	2	2	-	-	-	-	-	-	-	-	2	-

Course Name: C113 – Circuit Theory   **Course Code: EE8251**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C113.1	3	2	1	1	1	-	-	-	-	-	-	1	1	-
C113.2	3	2	1	1	1	-	-	-	-	-	-	1	1	-
C113.3	3	2	1	1	1	-	-	-	-	-	-	1	1	-
C113.4	3	2	1	1	1	-	-	-	-	-	-	1	1	-
C113.5	3	2	1	1	1	-	-	-	-	-	-	1	1	-
C113	3	2	1	1	1	-	-	-	-	-	-	1	1	-

Course Name: C114 – Environmental Science and Engineering   **Course Code: GE8291**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C114.1	-	-	3	1	-	1	2	2	-	1	-	2	-	-
C114.2	-	-	3	1	-	1	2	2	-	1	-	2	-	-
C114.3	-	-	3	1	-	1	2	2	-	1	-	2	-	-
C114.4	-	-	3	1	-	1	2	2	-	1	-	2	-	-
C114.5	-	-	3	1	-	1	2	2	-	1	-	2	-	-
C114	-	-	3	1	-	1	2	2	-	1	-	2	-	-

Course Name: C115 – Engineering Practices Laboratory   **Course Code: GE8261**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C115.1	2	-	-	-	1	-	-	-	1	-	-	-	1	1
C115.2	1	1	-	-	1	-	-	-	1	-	-	-	1	1
C115.3	1	1	-	-	1	-	-	-	1	-	-	-	1	1
C115.4	1	-	1	-	1	-	-	-	1	-	-	2	1	1
C115.5	1	1	2	-	1	-	-	-	1	-	-	2	1	1
C115	1	1	1	-	1	-	-	-	1	-	-	1	1	1

Course Name: C116 – Electric Circuits Laboratory   Course Code: EE8261

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C116.1	3	-	2	1	1	1	-	-	-	1	-	1	1	1
C116.2	3	-	2	1	1	1	-	-	-	1	-	1	1	1
C116.3	3	-	2	1	1	1	-	-	-	1	-	1	1	1
C116.4	3	-	2	1	1	1	-	-	-	1	-	1	1	1
C116.5	3	-	2	1	#2	1	-	-	-	1	-	#2	1	1
C116	3	-	2	1	1	1	-	-	-	1	-	1	1	1

Course Name: C201 – Transforms and Partial Differential Equations   Course Code: MA8353

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201.1	3	3	-	-	3	-	-	-	-	-	-	2		-
C201.2	3	3	-	-	3	-	-	-	-	-	-	2		-
C201.3	3	3	-	-	3	-	-	-	-	-	-	2		-
C201.4	3	3	-	-	3	-	-	-	-	-	-	2		-
C201.5	3	3	-	-	3	-	-	-	-	-	-	2		-
C201	3	3	-	-	3	-	-	-	-	-	-	2		-

Course Name: C202 – Digital Logic Circuits   Course Code: EE8351

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	2	2	1	1	-	-	-	-	-	-	-	-	2	-
C202.2	2	2	2	2	-	-	-	-	-	-	-	-	2	-
C202.3	2	2	2	2	-	-	-	-	-	-	-	-	2	-
C202.4	1	2	2	1	-	-	-	-	-	-	-	-	2	-
C202.5	1	1	1	1	#1	-	-	-	-	-	-	-	1	-
C202	2	2	2	1	-	-	-	-	-	-	-	-	2	-

Course Name: C203 – Electromagnetic Theory   Course Code: EE8391

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C203.1	3	1	-	-	-	-	-	-	-	-	-	-	3	-
C203.2	3	1	-		-	-	-	-	-	-	-	-	3	-
C203.3	3	1	-	-	-	-	-	-	-	-	-	-	3	-
C203.4	3	1	-	-	-	-	-	-	-	-	-	-	3	-
C203.5	3	1	-	-	-	1#	-	-	-	-	-	-	3	-
C203	3	1	-	-	-	-	-	-	-	-	-	-	3	-

Course Name: C204 – Electrical Machines - I   Course Code: EE8301

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C204.1	3	2	-	-	1	-	-	-	-	-	-	-	1	-
C204.2	3	2	-	2	1	-	-	-	-	-	-	-	2	-
C204.3	3	2	-	-	1	-	-	-	-	-	-	-	1	-
C204.4	3	2	-	-	1	-	-	-	-	-	-	-	1	-
C204.5	3	2	-	2	1	-	-	-	-	-	-	-	2	-
C204	3	2	-	1	1	-	-	-	-	-	-	-	1	-

Course Name: C205 – Electron Devices and Circuits　　　　　　　**Course Code: EC8353**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	2	2	-	-	1#	-	-	-	-	-	-	-	2	-
C205.2	2	2	-	-	-	-	-	-	-	-	-	-	2	-
C205.3	2	3	-	2	-	-	-	-	-	-	-	-	2	-
C205.4	2	3	-	2	-	-	-	-	-	-	-	-	2	-
C205.5	2	3	2	-	-	-	-	-	-	-	-	-	2	-
C205	2	3	-	1	-	-	-	-	-	-	-	-	2	-

Course Name: C206 – Power Plant Engineering　　　　　　　**Course Code: ME8792**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	2	2	-	-	-	2	2	2	-	-	-	-	2	-
C206.2	2	2	-	-	-	2	2	2	-	-	-	-	2	-
C206.3	2	2	-	-	-	2	2	2	-	-	-	-	2	-
C206.4	2	2	-	-	1#	2	2	2	-	-	-	-	2	-
C206.5	2	2	-	-	-	2	2	2	-	-	-	-	2	-
C206	2	2	-	-	-	2	2	2	-	-	-	-	2	-

Course Name: C207 – Electronics Laboratory　　　　　　　**Course Code: EC8311**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C207.1	2	1	2	2	-	-	-	-	2	-	-	-	2	-
C207.2	2	1	2	2	-	-	-	-	2	-	-	-	2	-
C207.3	2	1	2	2	-	-	-	-	2	-	-	-	2	-
C207.4	2	-	2	2	1	-	-	-	2	-	-	-	2	-
C207.5	2	1	2	2	-	-	-	-	2	-	-	-	2	-
C207	2	1	2	2	-	-	-	-	2	-	-	-	2	-

Course Name: C208 – Electrical Machines Laboratory - I　　　　　　　**Course Code: EE8311**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C208.1	3	2	-	3	1	-	-	-	-	-	-	-	1	-
C208.2	3	2	-	3	1	-	-	-	-	-	-	-	2	-
C208.3	3	2	-	3	1	-	-	-	-	-	-	-	1	-
C208.4	3	2	-	3	1	-	-	-	-	-	-	-	1	-
C208.5	3	2	-	3	1	-	-	-	-	-	-	-	2	-
C208	3	2	-	3	1	-	-	-	-	-	-	-	1	-

Course Name: C209 – Numerical Methods　　　　　　　**Course Code: MA8491**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C209.1	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C209.2	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C209.3	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C209.4	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C209.5	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C209	3	3	3	-	-	-	-	-	-	-	-	2	-	-

Course Name: C210 – Electrical Machines-II **Course Code: EE8401**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C210.1	3	3	2	-	-	-	-	-	-	-	-	-	2	-
C210.2	3	3	2	-	-	-	-	-	-	-	-	-	2	-
C210.3	3	3	2	-	-	-	-	-	-	-	-	-	2	-
C210.4	3	3	2	-	#2	-	-	-	-	-	-	-	2	-
C210.5	3	3	2	-	-	-	-	-	-	-	-	-	2	-
C210	3	3	2	-	-	-	-	-	-	-	-	-	2	-

Course Name: C211 – Transmission and Distribution **Course Code: EE8402**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C211.1	3	3	-	-	3*	-	-	-	-	-	-	-	2	-
C211.2	3	3	-	-	-	-	-	-	-	-	-	-	2	-
C211.3	3	3	3	-	-	3	-	-	-	-	-	-	2	1
C211.4	3	3	-	-	-	3	-	-	-	-	-	-	2	1
C211.5	-	-	-	-	-	3	3	-	-	-	-	-	-	1
C211	3	3	-	-	1*	3	-	-	-	-	-	-	2	1

Course Name: C212 – Measurements and Instrumentation **Course Code: EE 8403**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212.1	2	2	-	-	-	1	-	-	-	-	-	1	2	-
C212.2	2	2	-	-	2#	1	-	-	-	-	-	1	2	-
C212.3	2	2	2	-	-	1	-	-	-	-	-	1	2	-
C212.4	2	2	-	-	-	1	-	-	-	-	-	1	2	-
C212.5	2	2	-	-	-	1	-	-	-	-	-	1	2	-
C212	2	2	-	-	-	1	-	-	-	-	-	1	2	-

Course Name: C213 – Linear Integrated Circuits and Applications **Course Code: EE8451**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	2	1	-	-	-	-	-	-	-	-	-	-	2	-
C213.2	2	3	2	-	1#	-	-	-	-	-	-	-	3	-
C213.3	2	3	2	-	-	-	-	-	-	-	-	-	3	-
C213.4	2	3	-	-	-	-	-	-	-	-	-	-	2	-
C213.5	2	3	-	-	-	-	-	-	-	-	-	-	2	-
C213	2	3	-	-	-	-	-	-	-	-	-	-	2	-

Course Name: C214 – Control Systems **Course Code: IC8451**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C214.1	3	2	-	-	-	2	-	-	-	-	-	1	3	-
C214.2	3	1	-		1#	2	-	-	-	-	-	1	3	-
C214.3	3	2	-		1#	2	-	-	-	-	-	1	3	-
C214.4	3	2	-	-	1#	2	-	-	-	-	-	1	3	-
C214.5	3	2	-	-	1#	2	-	-	-	-	-	1	3	-
C214	3	2	-	-	1#	2	-	-	-	-	-	1	3	-

Course Name: C215 – Electrical Machines Laboratory-II   **Course Code: EE8411**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C215.1	2	2	1	3	-	-	-	-	1	-	-	-	2	-
C215.2	2	3*	1	3	-	-	-	-	1	-	-	-	2	-
C215.3	2	3*	1	3	-	3*	-	-	1	-	-	-	2	1
C215.4	2	2	1	3	-	-	-	-	1	-	-	-	2	-
C215.5	2	2	1	3	-	-	-	-	1	-	-	-	2	-
C215	2	2	1	3	-	1	-	-	1	-	-	-	2	-

Course Name: C216 – Linear and Digital Integrated Circuits Laboratory   **Course Code: EE8461**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C216.1	2	2	2	2	-	-	-	-	2	-	-	-	2	-
C216.2	2	2	2	2	-	-	-	-	2	-	-	-	2	-
C216.3	2	2	2	2	-	-	-	-	2	-	-	-	2	-
C216.4	2	2	2	2	1#	-	-	-	2	-	-	-	2	-
C216.5	2	2	2	-	-	-	-	-	2	-	-	-	2	-
C216	2	2	2	2	-	-	-	-	2	-	-	-	2	-

Course Name: C217 – Technical Seminar   **Course Code: EE8412**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C217.1	2	2	-	-	-	-	-	-	2	3#	-	-	-	-
C217.2	2	2	-	-	-	-	-	-	2	3#	-	-	-	-
C217.3	2	2	-	-	-	-	-	-	2	2	-	-	-	-
C217	2	2	-	-	-	-	-	-	2	3#	-	-	-	-

Course Name: C301 – Power System Analysis   **Course Code: EE8501**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C301.1	3	-	-	-	-	-	-	-	-	-	-	-	3	-
C301.2	3	3	-	-	3*	-	-	-	-	-	-	-	3	-
C301.3	3	3	-	-	-	-	-	-	-	-	-	-	3	-
C301.4	3	3	-	-	-	-	-	-	-	-	-	-	3	-
C301.5	3	3	-	-	-	-	-	-	-	-	-	-	3	-
C301	3	3	-	-	1*	-	-	-	-	-	-	-	3	-

Course Name: C302 – Microprocessors and Microcontrollers   **Course Code: EE8551**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C302.1	2	-	-	-	1	-	-	-	-	-	-	-	1	-
C302.2	2	3	3	-	1	-	-	-	-	-	-	-	2	-
C302.3	2	-	-	-	1	-	-	-	-	-	-	-	1	-
C302.4	2	2	3	-	1	-	-	-	-	-	-	-	2	-
C302.5	2	3	3	-	1	-	-	-	-	-	-	-	2	-
C302	2	2	2	-	#1	-	-	-	-	-	-	-	2	-

Course Name: C303– Power Electronics   **Course Code: EE8552**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C303.1	2	1	-	1	-	-	1	-	-	-	-	-	1	1
C303.2	3	2	2	2	-	-	1	-	-	-	-	-	2	1
C303.3	3	2	2	2	-	-	1	-	-	-	-	-	2	1
C303.4	3	2	2	2	2*	-	1	-	-	-	-	-	2	1
C303.5	2	2	2	2	-	-	1	-	-	-	-	-	1	1
C303	3	2	2	2	-	-	1	-	-	-	-	-	2	1

Course Name: C304– Digital Signal Processing   **Course Code: EE8591**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C304.1	3	2	-	-	1	-	-	-	-	-	-	1	2	1
C304.2	3	2	-	1	1	-	-	-	-	-	-	1	2	1
C304.3	3	2	-	1	1	-	-	-	-	-	-	1	2	1
C304.4	3	2	2	-	#2	-	-	-	-	-	-	1	2	1
C304.5	3	1	-	-	1	-	-	-	-	-	-	1	2	1
C304	3	2	-	-	1	-	-	-	-	-	-	1	2	1

Course Name: C305– Object Oriented Programming   **Course Code: CS8392**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C305.1	2	-	-	-	-	-	-	-	-	-	-	-	1	-
C305.2	2	1	2	3	2	-	-	-	-	-	-	-	2	1
C305.3	2	1	2	3	2	-	-	-	-	-	-	-	2	1
C305.4	2	1	2	3	2	-	-	-	-	-	-	-	2	1
C305.5	2	1	2	3	2	-	-	-	-	-	-	-	2	1
C305	2	1	2	2	2	-	-	-	-	-	-	-	2	1

Course Name: C307– Control and Instrumentation Laboratory   **Course Code: EE8511**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C307.1	3	-	2	2	3	-	-	-	2	2	2	2	2	1
C307.2	3	1	2	3	-	-	-	-	2	2	2	-	2	-
C307.3	3	-	3*	3	3	-	-	-	2	2	2	2	2	1
C307.4	3	-	2	3	-	-	-	-	2	2	2	-	2	-
C307.5	3	-	2	3	2	-	-	-	2	2	2	-	2	1
C307	3	1	2	3	2	-	-	-	2	2	2	1	2	1

Course Name: C308– Professional Communication   **Course Code: HS8581**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C308.1	-	-	-	-	3	-	-	3	3	3	-	3	-	2
C308.2	-	-	-	-	3	-	-	3	3	3	-	3	-	2
C308.3	-	-	-	-	3	-	-	3	3	3	-	3	-	2
C308.4	-	-	-	-	3	-	-	3	3	3	-	3	-	2
C308.5	-	-	-	-	3	-	-	3	3	3	-	3	-	2
C308	-	-	-	-	3	-	-	3	3	3	-	3	-	2

Course Name: C309– Object Oriented Programming Laboratory   **Course Code: CS8383**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C309.1	2	2	2	2	-	-	-	-	1	-	-	-	2	-
C309.2	2	2	2	2	-	-	-	-	1	-	-	-	2	-
C309.3	2	2	2	2	1	-	-	-	1	-	-	-	2	1
C309.4	2	2	2	2	1	-	-	-	1	-	-	-	2	1
C309.5	2	2	2	2	1	-	-	-	1	-	-	-	2	1
C309	2	2	2	2	1	-	-	-	1	-	-	-	2	1

Course Name: C310– Solid State Drives   **Course Code: EE8601**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C310.1	3	-	-	-	-	-	-	-	-	-	-	-	1	-
C310.2	3	2	1	3	-	-	-	-	-	-	-	-	3	-
C310.3	3	1	1*	-	-	-	-	-	-	-	-	-	1	-
C310.4	3	-	-	-	-	-	-	-	-	-	-	-	1	-
C310.5	3	2	1	2	-	-	-	-	-	-	-	-	2	-
C310	3	1	-	1	-	-	-	-	-	-	-	-	2	-

Course Name: C311– Protection and Switchgear   **Course Code: EE8602**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C311.1	-	2	-	-	-	-	-	-	-	-	-	-	-	-
C311.2	3	3	-	-	-	-	-	-	-	-	-	-	-	-
C311.3	3	3	-	-	-	-	-	-	-	-	-	-	-	-
C311.4	3	3	2	-	3*		-	-	2*	2*	-	-	-	-
C311.5	3	3	2	-	-	-	-	-	-	-	-	-	-	-
C311	3	3	1	-	1*	-	-	-	1*	1*	-	-	-	-

Course Name: C312– Embedded Systems   **Course Code: EE8691**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C312.1	2	1	-	1	1	-	-	-	-	-	-	-	1	-
C312.2	2	1	-	1	1	-	-	-	-	-	-	-	1	-
C312.3	2	1	2	2	1	1	-	-	-	-	-	-	2	-
C312.4	2	1	2	-	1	1	-	-	-	--	-	-	1	-
C312.5	2	1	2	-	1*	1	1	-	-	-	-	-	1	-
C312	2	1	2	1	1	-	-	-	-	-	-	-	1	-

Course Name: C313PE1A – Design of Electrical Apparatus   **Course Code: EE8002**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C313PE1A.1	3	3	3	-	-	-	-	-	-	-	-	-	2	-
C313PE1A.2	3	3	3	-	-	-	-	-	-	-	-	-	2	-
C313PE1A.3	3	3	3	-	-	-	-	-	-	-	-	-	2	-
C313PE1A.4	3	3	3	-	#2	-	-	-	-	-	-	-	2	-
C313PE1A.5	3	3	3	-	-	-	-	-	-	-	-	-	2	-
C313PE1A	3	3	3	-	-	-	-	-	-	-	-	-	2	-

Course Name: C313PE1B –Power System Stability   **Course Code: EE8003**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C313PE1B.1	3	-	-	-	-	-	-	-	-	-	-	-	3	-
C313PE1B.2	3	3	-	1	-	-	-	-	-	-	-	-	3	-
C313PE1B.3	3	3	-	-	-	-	-	-	-	-	-	-	3	-
C313PE1B.4	3	-	-	-	2*	-	-	-	-	-	-	-	3	-
C313PE1B.5	3	3	-	-	-	-	-	-	-	-	-	-	3	-
C313PE1B	3	3	-	-	1*	-	-	-	-	-	-	-	3	-

Course Name: C314PE2A –Power Quality   **Course Code: EE8006**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C314PE2A.1	3	2	-	-	-	-	-	-	-	-	-	-	3	3
C314PE2A.2	3	2	3	-	-	-	-	-	-	-	-	-	3	3
C314PE2A.3	3	3	-	-	-	-	-	-	-	-	-	-	3	3
C314PE2A.4	3	3	3	3	3*	-	-	-	-	-	-	-	3	3
C314PE2A.5	3	3	-	-	3*	-	-	-	-	-	-	-	3	3
C314PE2A	3	2	1	1	1	-	-	-	-	-	-	-	3	3

Course Name: C314PE2B – Special Electrical Machines   **Course Code: EE8005**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C314PE2B.1	3	2	-	-	1	-	-	-	-	-	-	-	1	-
C314PE2B.2	3	2	-	-	1	-	-	-	-	-	-	-	1	-
C314PE2B.3	3	2	-	-	1	-	-	-	-	-	-	-	1	-
C314PE2B.4	3	2	-	2*	1	-	-	-	-	-	-	-	1	-
C314PE2B.5	3	2	-	2*	1	-	-	-	-	-	-	-	1	-
C314PE2B	3	2	-	1	1	-	-	-	-	-	-	-	1	-

Course Name: C315– Power Electronics and Drives Laboratory   **Course Code: EE8661**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C315.1	2	2	1	1	-	-	-	1	2	1	-	1	1	1
C315.2	2	2	1	1	-	-	-	1	2	1	-	1	1	1
C315.3	2	2	2	1	3#	-	-	1	2	1	-	1	2	2#
C315.4	2	2	1	1	3#	-	-	1	2	1	-	1	1	2#
C315.5	2	2	1	1	3	-	-	1	2	1	-	1	1	1
C315	2	2	1	1	2	-	-	1	2	1	-	1	1	1

Course Name: C316– Microprocessors and Microcontrollers Laboratory   **Course Code: EE8681**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C316.1	2	-	-	2	1	-	-	-	1	-	-	-	1	-
C316.2	1	2	2	2	1	-	-	-	1	-	-	-	2	-
C316.3	1	2	2	2	1	-	-	-	1	-	-	-	2	-
C316.4	2	2	2	2	1	-	-	-	1	-	-	-	2	-
C316.5	2	2	2	2	1	-	-	-	1	-	-	-	2	-
C316	2	2	2	2	1	-	-	-	1	-	-	-	2	-

Course Name: C317– Mini Project **Course Code: EE8611**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C317.1	2	1	-	1		-		-	-	2	2	2	1	1
C317.2	2	1	2	2		-		-	-	2	2	2	1	1
C317.3	2	1	2	2		-		-	-	2	2	2	1	1
C317.4	2	1	2	2		-		-	-	2	-	-	1	1
C317	2	-	1	2		-		-	-	2	2	2	1	1

Course Name: C401—High Voltage Engineering **Course Code: EE8701**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	2	2	-	-	-	-	-	-	-	-	-	-	1	-
C401.2	2	2	-	-	-	-	-	-	-	-	-	-	1	-
C401.3	2	2	-	-	1	-	-	-	-	-	-	-	1	-
C401.4	2	2	-	-	1	-	-	-	-	-	-	-	1	-
C401.5	2	2	-	1*	1	1	1	-	-	-	-	-	1	-
C401	2	2	-	-	1	-	-	-	-	-	-	-	1	-

Course Name: C402 —Power System Operation And Control **Course Code: EE8702**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C402.1	-	3	-	-	-	-	-	-	-	-	-	-	-	-
C402.2	3	3	-	-	-	-	-	-	-	-	-	-	-	-
C402.3	3	3	-	-	-	-	-	-	-	-	-	-	-	-
C402.4	3	3	2	-	-	-	-	-	-	-	-	-	-	-
C402.5	3	3	3	-	-	-	-	-	-	-	-	-	-	-
C402.6	3	3	1	-	3*	-	-	-	3*	3*	-	3*	-	-
C402	3	3	1	-	1*	-	-	-	1*	1*	-	1*	-	-

Course Name: C403 —Renewable Energy System **Course Code: EE8703**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C403.1	3	3	-	-	-	-	3	3	-	-	-	3	3	3
C403.2	3	3	-	-	3*	-	3	3	-	-	-	3	3	3
C403.3	3	2	-	-	3*	-	3	3	-	-	-	3	3	3
C403.4	3	1	-	-	-	-	3	3	-	-	-	3	3	3
C403.5	3	1	-	-	-	-	3	3	-	-	-	3	3	3
C403	3	2	-	-	1	-	3	3	-	-	-	3	3	3

Course Name: C405PE3A —Fibre Optics and Laser Instrumentation **Course Code: EI8075**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C405PE3A.1	3	-	-	-	-	-	-	-	-	-	-	-	1	-
C405PE3A.2	2	2	1*	1	-	-	-	-	-	-	-	-	2	-
C405PE3A.3	3	1	-	-	-	-	-	-	-	-	-	-	1	-
C405PE3A.4	3	-	-	-	-	-	-	-	-	-	-	-	1	-
C405PE3A.5	2	1	1	1	-	-	-	-	-	-	-	-	2	-
C405PE3A	3	1	-	1	-	-	-	-	-	-	-	-	2	-

Course Name: C406PE4A — Power System Transients **Course Code: EE8010**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C406PE4A.1	3	2	-	-	-	-	-	-	-	-	-	-	2	-
C406PE4A.2	3	2	-	-	-	-	1	-	-	-	-	-	2	-
C406PE4A.3	3	1	-	-	-	1	1	-	-	-	-	-	1	-
C406PE4A.4	3	1	-	-	-	-	-	-	-	-	-	-	1	-
C406PE4A.5	3	1	-	-	2*	-	-	-	-	-	-	-	1	-
C406PE4A	3	1	-	-	-	-	-	-	-	-	-	-	1	-

Course Name: C406PE4B — Total Quality Management **Course Code: GE8077**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C406PE4B.1	-	-	1	1	3	2	2	3	2	3	2	3	-	3
C406PE4B.2	-	-	1	1	3	2	2	3	2	3	2	3	-	3
C406PE4B.3	-	-	1	1	3	2	2	3	2	3	2	3	-	3
C406PE4B.4	-	-	1	1	3	2	2	3	2	3	2	3	-	3
C406PE4B.5	-	-	1#	1#	3	2	2	3	2	3	2	3	-	3
C406PE4B	-	-	1	1	3	2	2	3	2	3	2	3	-	3

Course Name: C406PE4C— VLSI Design **Course Code: EC8095**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C406PE4C.1	3	2	2	2	1	-	-	-	-	-	-	-	3	1
C406PE4C.2	3	2	2	2	1	-	-	-	-	-	-	-	3	1
C406PE4C.3	3	2	2	2	1	-	-	-	-	-	-	-	3	1
C406PE4C.4	3	2	2	2	1#	-	-	-	-	-	-	-	3	1
C406PE4C.5	3	2	2	2	1	-	-	-	-	-	-	-	3	1
C406PE4C	3	2	2	2	1	-	-	-	-	-	-	-	3	1

Course Name: C407 — Power system simulation Laboratory **Course Code: EE 8711**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C407.1	3	3	1	1	1	-	-	-	1	-	-	1	2	1
C407.2	3	3	1	#1	#1	-	-	-	1	-	-	1	2	1
C407.3	3	3	1	1	1	-	-	-	1	-	-	1	2	1
C407.4	3	3	1	1	1	-	-	-	1	-	-	1	2	1
C407.5	3	3	1	1	1	-	-	-	1	-	-	1	2	1
C407	3	3	1	1	1	-	-	-	1	-	-	1	2	1

Course Name: C408—Renewable Energy Systems Laboratory **Course Code: EE8712**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C408.1	3	3	3	3	3	-	3	3	3	-	-	3	3	3
C408.2	3	3	3	3	3	-	3	3	3	-	-	3	3	3
C408.3	3	3	3	3	3	-	3	3	3	-	-	3	3	3
C408.4	3	3	3	3	3	-	3	3	3	-	-	3	3	3
C408.5	3	3	3	3	3	-	3	3	3	-	-	3	3	3
C408	3	3	3	3	3	-	3	3	3	-	-	3	3	3

Course Name: C409PE5A— Electric Energy Generation, Utilization and Conservation **Course Code: EE8015**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C409PE5A.1	2	2	1	-	1	-	#1	-	-	-	-	-	1	-
C409PE5A.2	2	2	-	-	1	-	-	-	-	-	-	-	1	-
C409PE5A.3	2	2	-	-	-	-	#1	-	-	-	-	-	1	-
C409PE5A.4	2	2	-	-	1	-	1	-	-	-	-	-	1	-
C409PE5A.5	2	2	-	-	1	-	1	-	-	-	-	1	1	-
C409PE5A	2	2	-	-	1	-	1	-	-	-	-	-	1	-

Course Name: C409PE5C—Principles of Management **Course Code: MG8591**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C409PE5C.1	-	-	-	-	-	1	-	1	2	1	3	3	-	1
C409PE5C.2	-	-	-	-	-	1	-	1	2	1	3	3	-	1
C409PE5C.3	-	-	-	-	-	1	-	1	2	1	3	3	-	1
C409PE5C.4	-	-	-	-	-	1	-	1#	2	2	3	3	-	1
C409PE5C.5	-	-	-	-	-	1	-	1	2	1	3	3	-	1
C409PE5C	-	-	-	-	-	1	-	1#	2	1	3	3	-	1

Course Name: C410PE6A—Biomedical Instrumentation **Course Code: EI8073**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C410PE6A.1	2	2	-	-	-	-	-	-	-	-	-	-	1	-
C410PE6A.2	2	2	-	-	-	-	-	-	-	-	-	-	1	-
C410PE6A.3	2	2	-	-	1	-	-	-	-	-	-	-	1	-
C410PE6A.4	2	2	#1	#1	1	-	-	-	-	-	-	-	1	-
C410PE6A.5	2	2	-	-	1	-	-	-	-	-	-	-	1	-
C410PE6A	2	2	-	-	1	-	-	-	-	-	-	-	1	-

Course Name: C410PE6B—Microcontroller Based System Design **Course Code: EE8018**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C410PE6B.1	2	1	-	-	-	-	-	-	-	-	-	-	2	-
C410PE6B.2	2	1	1	-	-	-	-	-	-	-	-	-	2	1
C410PE6B.3	2	1	1	-	1	-	-	-	-	-	-	-	2	1
C410PE6B.4	2	1	-	-	-	-	-	-	-	-	-	-	1	-
C410PE6B.5	2	1	1	-	1*	-	-	-	-	-	-	-	1	1
C410PE6B	2	1	1	-	-	-	-	-	-	-	-	-	2	1

Course Name: C411— Project Work **Course Code: EE8811**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C411.1	2	1	-	1	-	1	1	-	3	2	2	2	1	1
C411.2	2	1	2	2	-	1	1	-	3	2	2	2	1	1
C411.3	2	1	2	2	-	1	1	-	3	2	2	2	1	1
C411.4	2	1	1	2	2	1	1	-	3	2	2	2	1	1
C411.5	2	1	2	2	-	1	1	2	3	2	2	2	1	1
C411	2	1	2	2	1	1	1	-	3	2	2	2	1	1

Course – Program Outcome Matrix

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C102	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C103	2	2	1	-	1	-	1	-	-	-	-	1	2	1
C104	3	2	1	-	-	-	1	2	-	1	-	2	-	-
C105	3	2	1	-	2	1	-	-	-	-	-	1	2	1
C106	1	2	-	-	1	-	-	-	1	-	-	-	1	1
C107	3	2	1	-	2	1	-	-	2	-	-	1	2	2
C108	2	2	-	-	1	1	-	1	-	-	-	1	-	-
C109	-	-	-	-	-	-	-	-	3	3	-	2	-	-
C110	3	3	3	-	-	-	-	-	-	-	-	2	-	-
C111	3	2	2	-	2	-	1	-	-	-	-	2	2	1
C112	3	2	2	2	-	-	-	-	-	-	-	-	2	-
C113	3	2	1	1	1	-	-	-	-	-	-	1	1	-
C114	-	-	3	1	-	1	2	2	-	1	-	2	-	-
C115	1	1	1	-	1	-	-	-	1	-	-	1	1	1
C116	3	-	2	1	1	1	-	-	-	1	-	1	1	1
C201	3	3	-	-	3	-	-	-	-	-	-	2		-
C202	2	2	2	1	-	-	-	-	-	-	-	-	2	-
C203	3	1	-	-	-	-	-	-	-	-	-	-	3	-
C204	3	2	-	1	1	-	-	-	-	-	-	-	1	-
C205	2	3	-	1	-	-	-	-	-	-	-	-	2	-
C206	2	2	-	-	-	2	2	2	-	-	-	-	2	-
C207	2	1	-	2	-	-	-	-	-	-	-	-	2	-
C208	3	2	-	3	1	-	-	-	-	-	-	-	1	-
C209	3	3	3	-	-	-	-	-	-	-	-	2		-
C210	3	3	2	-	-	-	-	-	-	-	-	-	2	-
C211	3	3	-	-	1*	3	-	-	-	-	-	-	2	1
C212	2	2	-	-	-	1	-	-	-	-	-	1	2	-
C213	2	3	-	-	-	-	-	-	-	-	-	-	2	-
C214	3	2	-	-	1#	2	-	-	-	-	-	1	3	-
C215	2	2	1	3	-	1	-	-	1	-	-	-	2	-
C216	2	2	2	2	-	-	-	-	-	-	-	-	2	-
C217	2	2	-	-	-	-	-	-	2	3#	-	-	-	-
C301	3	3	-	-	1*	-	-	-	-	-	-	-	3	-
C302	2	2	2	-	#1	-	-	-	-	-	-	-	2	-
C303	3	2	2	2	-	-	1	-	-	-	-	-	2	1
C304	3	2	-	-	**1**	-	-	-	-	-	-	1	2	**1**
C305	2	1	2	2	2	-	-	-	-	-	-	-	2	1
C307	3	1	2	3	2	-	-	-	2	2	2	1	2	1
C308	-	-	-	-	3	-	-	3	3	3	-	3	-	2
C309	2	2	2	2	1	-	-	-	1	-	-	-	2	1
C310	3	1	-	1	-	-	-	-	-	-	-	-	2	-
C311	3	3	1	-	1*	-	-	-	1*	1*	-	-	-	-
C312	2	1	2	1	1	-	-	-	-	-	-	-	1	-
C313PE1A	3	3	3	-	-	-	-	-	-	-	-	-	2	-
C313PE1B	3	3	-	-	1*	-	-	-	-	-	-	-	3	-
C314PE2A	3	2	1	1	1	-	-	-	-	-	-	-	3	3
C314PE2B	3	2	-	1	1	-	-	-	-	-	-	-	1	-
C315	2	2	1	1	2	-	-	1	2	1	-	1	1	1
C316	2	2	2	2	1	-	-	-	1	-	-	-	2	-
C317	2	-	1	2		-		-	-	2	2	2	1	1
C401	2	2	-	-	1	-	-	-	-	-	-	-	1	-
C402	3	3	1	-	1*	-	-	-	1*	1*	-	1*	-	-
C403	3	2	-	-	1	-	3	3	-	-	-	3	3	3

C405PE3A	3	1	-	1	-	-	-	-	-	-	-	-	2	-
C406PE4A	3	1	-	-	-	-	-	-	-	-	-	-	1	-
C406PE4B	-	-	1	1	3	2	2	3	2	3	2	3	-	3
C406PE4C	3	2	2	2	1	-	-	-	-	-	-	-	3	1
C407	3	3	1	1	1	-	-	-	1	-	-	1	2	1
C408	3	3	3	3	3	-	3	3	3	-	-	3	3	3
C409PE5A	2	2	-	-	1	-	1	-	-	-	-	-	1	-
C409PE5C	-	-	-	-	-	1	-	1#	2	1	3	3	-	1
C410PE6A	2	2	-	-	1	-	-	-	-	-	-	-	1	-
C410PE6B	2	1	1	-	-	-	-	-	-	-	-	-	2	1
C411	2	1	2	2	1	1	1	-	3	2	2	2	1	1

R-2017 – B.E-EEE – Course, PO, PSO Matrix (without CBS)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	0	0	0	0	0	0	0	0	3	3	0	2	0	0
C102	3	3	3	0	0	0	0	0	0	0	0	2	0	0
C103	2	2	1	0	1	0	1	0	0	0	0	1	2	1
C104	3	2	1	0	0	0	1	2	0	1	0	2	0	0
C105	3	2	1	0	2	1	0	0	0	0	0	1	2	1
C106	1	2	0	0	1	0	0	0	1	0	0	0	1	1
C107	3	2	1	0	2	1	0	0	2	0	0	1	2	2
C108	2	2	0	0	1	1	0	1	0	0	0	1	0	0
C109	0	0	0	0	0	0	0	0	3	3	0	2	0	0
C110	3	3	3	0	0	0	0	0	0	0	0	2	0	0
C111	3	2	2	0	2	0	1	0	0	0	0	2	2	1
C112	3	2	2	2	0	0	0	0	0	0	0	0	2	0
C113	3	2	1	1	1	0	0	0	0	0	0	1	1	0
C114	0	0	3	1	0	1	2	2	0	1	0	2	0	0
C115	1	1	1	0	1	0	0	0	1	0	0	1	1	1
C116	3	0	2	1	1	1	0	0	0	1	0	1	1	1
C201	3	3	0	0	3	0	0	0	0	0	0	2	0	0
C202	2	2	2	1	0	0	0	0	0	0	0	0	2	0
C203	3	1	0	0	0	0	0	0	0	0	0	0	3	0
C204	3	2	0	1	1	0	0	0	0	0	0	0	1	0
C205	2	3	0	1	0	0	0	0	0	0	0	0	2	0
C206	2	2	0	0	0	2	2	2	0	0	0	0	2	0
C207	2	1	0	2	0	0	0	0	0	0	0	0	2	0
C208	3	2	0	3	1	0	0	0	0	0	0	0	1	0
C209	3	3	3	0	0	0	0	0	0	0	0	2	0	0
C210	3	3	2	0	0	0	0	0	0	0	0	0	2	0
C211	3	3	0	0	0	3	0	0	0	0	0	0	2	1
C212	2	2	0	0	0	1	0	0	0	0	0	1	2	0
C213	2	3	0	0	0	0	0	0	0	0	0	0	2	0
C214	3	2	0	0	0	2	0	0	0	0	0	1	3	0
C215	2	2	1	3	0	1	0	0	1	0	0	0	2	0
C216	2	2	2	2	0	0	0	0	0	0	0	0	2	0
C217	2	2	0	0	0	0	0	0	2	0	0	0	0	0
C301	3	3	0	0	0	0	0	0	0	0	0	0	3	0
C302	2	2	2	0	0	0	0	0	0	0	0	0	2	0
C303	3	2	2	2	0	0	1	0	0	0	0	0	2	1
C304	3	2	0	0	1	0	0	0	0	0	0	1	2	1
C305	2	1	2	2	2	0	0	0	0	0	0	0	2	1
C307	3	1	2	3	2	0	0	0	2	2	2	1	2	1
C308	0	0	0	0	3	0	0	3	3	3	0	3	0	2
C309	2	2	2	2	1	0	0	0	1	0	0	0	2	1
C310	3	1	0	1	0	0	0	0	0	0	0	0	2	0
C311	3	3	1	0	0	0	0	0	0	0	0	0	0	0
C312	2	1	2	1	1	0	0	0	0	0	0	0	1	0
C313PE1	3	3	3	0	0	0	0	0	0	0	0	0	2	0
C313PE1	3	3	0	0	0	0	0	0	0	0	0	0	3	0
C314PE2	3	2	1	1	1	0	0	0	0	0	0	0	3	3
C314PE2	3	2	0	1	1	0	0	0	0	0	0	0	1	0
C315	2	2	1	1	2	0	0	1	2	1	0	1	1	1
C316	2	2	2	2	1	0	0	0	1	0	0	0	2	0
C317	2	0	1	2	0	0	0	0	0	2	2	2	1	1
C401	2	2	0	0	1	0	0	0	0	0	0	0	1	0
C402	3	3	1	0	0	0	0	0	0	0	0	0	0	0
C403	3	2	0	0	1	0	3	3	0	0	0	3	3	3
C405PE3	3	1	0	1	0	0	0	0	0	0	0	0	2	0
C406PE4	3	1	0	0	0	0	0	0	0	0	0	0	1	0
C406PE4	0	0	1	1	3	2	2	3	2	3	2	3	0	3
C406PE4	3	2	2	2	1	0	0	0	0	0	0	0	3	1
C407	3	3	1	1	1	0	0	0	1	0	0	1	2	1
C408	3	3	3	3	3	0	3	3	3	0	0	3	3	3
C409PE5	2	2	0	0	1	0	1	0	0	0	0	0	1	0
C409PE5	0	0	0	0	0	1	0	0	2	1	3	3	0	1
C410PE6	2	2	0	0	1	0	0	0	0	0	0	0	1	0
C410PE6	2	1	1	0	0	0	0	0	0	0	0	0	2	1
C411	2	1	2	2	1	1	1	0	3	2	2	2	1	1
Total	150	118	63	46	45	18	18	20	33	23	11	50	93	35

Max.	195	195	195	195	195	195	195	195	195	195	195	195	195	195
No of Courses	65	65	65	65	65	65	65	65	65	65	65	65	65	65
Weighted level of Mapping	2.31	1.82	0.97	0.71	0.69	0.28	0.28	0.31	0.51	0.35	0.17	0.77	1.43	0.54
Level of Mapping without weight	0.91	0.88	0.55	0.43	0.48	0.2	0.17	0.14	0.26	0.18	0.08	0.45	0.77	0.38

R-2017 – B.E-EEE – Course, PO, PSO Matrix (with CBS)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO1	PO1	PSO1	PSO2
C101	0	0	0	0	0	0	0	0	3	3	0	2	0	0
C102	3	3	3	0	0	0	0	0	0	0	0	2	0	0
C103	2	2	1	0	1	0	1	0	0	0	0	1	2	1
C104	3	2	1	0	0	0	1	2	0	1	0	2	0	0
C105	3	2	1	0	2	1	0	0	0	0	0	1	2	1
C106	1	2	0	0	1	0	0	0	1	0	0	0	1	1
C107	3	2	1	0	2	1	0	0	2	0	0	1	2	2
C108	2	2	0	0	1	1	0	1	0	0	0	1	0	0
C109	0	0	0	0	0	0	0	0	3	3	0	2	0	0
C110	3	3	3	0	0	0	0	0	0	0	0	2	0	0
C111	3	2	2	0	2	0	1	0	0	0	0	2	2	1
C112	3	2	2	2	0	0	0	0	0	0	0	0	2	0
C113	3	2	1	1	1	0	0	0	0	0	0	1	1	0
C114	0	0	3	1	0	1	2	2	0	1	0	2	0	0
C115	1	1	1	0	1	0	0	0	1	0	0	1	1	1
C116	3	0	2	1	1	1	0	0	0	1	0	1	1	1
C201	3	3	0	0	3	0	0	0	0	0	0	2	0	0
C202	2	2	2	1	0	0	0	0	0	0	0	0	2	0
C203	3	1	0	0	0	0	0	0	0	0	0	0	3	0
C204	3	2	0	1	1	0	0	0	0	0	0	0	1	0
C205	2	3	0	1	0	0	0	0	0	0	0	0	2	0
C206	2	2	0	0	0	2	2	2	0	0	0	0	2	0
C207	2	1	0	2	0	0	0	0	0	0	0	0	2	0
C208	3	2	0	3	1	0	0	0	0	0	0	0	1	0
C209	3	3	3	0	0	0	0	0	0	0	0	2	0	0
C210	3	3	2	0	0	0	0	0	0	0	0	0	2	0
C211	3	3	0	0	1	3	0	0	0	0	0	0	2	1
C212	2	2	0	0	0	1	0	0	0	0	0	1	2	0
C213	2	3	0	0	0	0	0	0	0	0	0	0	2	0
C214	3	2	0	0	1	2	0	0	0	0	0	1	3	0
C215	2	2	1	3	0	1	0	0	1	0	0	0	2	0
C216	2	2	2	2	0	0	0	0	0	0	0	0	2	0
C217	2	2	0	0	0	0	0	0	2	3	0	0	0	0
C301	3	3	0	0	1	0	0	0	0	0	0	0	3	0
C302	2	2	2	0	1	0	0	0	0	0	0	0	2	0
C303	3	2	2	2	0	0	1	0	0	0	0	0	2	1
C304	3	2	0	**0**	**1**	0	**0**	**0**	**0**	**0**	**0**	1	2	**1**
C305	2	1	2	2	2	0	0	0	0	0	0	0	2	1
C307	3	1	2	3	2	0	0	0	2	2	2	1	2	1
C308	0	0	0	0	3	0	0	3	3	3	0	3	0	2
C309	2	2	2	2	1	0	0	0	1	0	0	0	2	1
C310	3	1	0	1	0	0	0	0	0	0	0	0	2	0
C311	3	3	1	0	1	0	0	0	1	1	0	0	0	0
C312	2	1	2	1	1	0	0	0	0	0	0	0	1	0
C313PE1A	3	3	3	0	0	0	0	0	0	0	0	0	2	0
C313PE1B	3	3	0	0	1	0	0	0	0	0	0	0	3	0
C314PE2A	3	2	1	1	1	0	0	0	0	0	0	0	3	3
C314PE2B	3	2	0	1	1	0	0	0	0	0	0	0	1	0
C315	2	2	1	1	2	0	0	1	2	1	0	1	1	1
C316	2	2	2	2	1	0	0	0	1	0	0	0	2	0
C317	2	0	1	2	0	0	0	0	0	2	2	2	1	1
C401	2	2	0	0	1	0	0	0	0	0	0	0	1	0
C402	3	3	1	0	1	0	0	0	1	1	0	1	0	0
C403	3	2	0	0	1	0	3	3	0	0	0	3	3	3
C405PE3A	3	1	0	1	0	0	0	0	0	0	0	0	2	0
C406PE4A	3	1	0	0	0	0	0	0	0	0	0	0	1	0
C406PE4B	0	0	1	1	3	2	2	3	2	3	2	3	0	3
C406PE4C	3	2	2	2	1	0	0	0	0	0	0	0	3	1
C407	3	3	1	1	1	0	0	0	1	0	0	1	2	1
C408	3	3	3	3	3	0	3	3	3	0	0	3	3	3
C409PE5A	2	2	0	0	1	0	1	0	0	0	0	0	1	0
C409PE5C	0	0	0	0	0	1	0	1	2	1	3	3	0	1
C410PE6A	2	2	0	0	1	0	0	0	0	0	0	0	1	0
C410PE6B	2	1	1	0	0	0	0	0	0	0	0	0	2	1
C411	2	1	2	2	1	1	1	0	3	2	2	2	1	1
Total	150	118	63	46	52	18	18	21	35	28	11	51	93	35

Max.	195	195	195	195	195	195	195	195	195	195	195	195	195	195
No of Courses	65	65	65	65	65	65	65	65	65	65	65	65	65	65
Weighted level of Mapping	2.31	1.82	0.97	0.71	0.8	0.28	0.28	0.32	0.54	0.43	0.17	0.78	1.43	0.54
Level of Mapping without weight-age	0.91	0.88	0.55	0.43	0.58	0.2	0.17	0.15	0.29	0.23	0.08	0.46	0.77	0.38

Comparison with and without CBS

		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Weighted level of Mapping with CBS	with CBS	2.31	1.82	0.97	0.71	0.8	0.28	0.28	0.32	0.54	0.43	0.17	0.78	1.43	0.54
	without CBS	2.31	1.82	0.97	0.71	0.69	0.28	0.28	0.31	0.51	0.35	0.17	0.77	1.43	0.54
Level of Mapping without weightage	with CBS	0.91	0.88	0.55	0.43	0.58	0.2	0.17	0.15	0.29	0.23	0.08	0.46	0.77	0.38
	without CBS	0.91	0.88	0.55	0.43	0.48	0.2	0.17	0.14	0.26	0.18	0.08	0.45	0.77	0.38

POs to be strengthened: (Correlation level less than 1)

From PO3 to PO6

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Action taken to be strengthen POs

POs	Action Taken
PO3	(i). Conduct of Mini Project (PLT,MJM, RJP, MGK) (ii). Conduct of Technical Symposium (SV, MJ) (iii).InPlant training/Internship/Industrial visit (PLT,MJM, RJP, MGK) (iv).Tutorial/Higher level assignments/Seminar/Video Demonstration (All subject handlers)
PO 4	(i). Conduct of Mini Project (ii). Conduct of Technical Symposium (iii).InPlant training/Internship/Industrial visit (iv). Smart India Hackathon registration (PLT,MJM, RJP, MGK, SV, MJ) – RJP

PO 5	(i). Conduct of Mini Project
	(ii). Conduct of Technical Symposium
	(iii).InPlant training/Internship/Industrial visit
	(iv).NPTEL course registration, Spoken tutorial classes (CC) - MML
	    Conference paper publications (SV,MJ) – CVR, TG/ RJP
	    Symposium(SV,MJ)- TG / RJP,
	    Workshop, Value added courses participation (CVR, KRJ, RJP, MGK) - TG/ RJP

PO 6	(i). Conduct of Mini Project (ii). Conduct of Technical Symposium (iii).InPlant training/Internship/Industrial visit (iv). Smart India Hackathon registration
PO 7	(i). Conduct of Mini Project (ii). Conduct of Technical Symposium (iii).InPlant training/Internship/Industrial visit (iv) Poster presentation on Ethics, environment and sustainability(CC) - TG/ RJP
PO 8	(i). Conduct of Mini Project (ii). Conduct of Technical Symposium (iii).Inplant training/Internship/Industrial visit (iv). Expert talk on ethics, Feedback assessment (CC) (iv) Poster presentation on Ethics, environment and sustainability
PO 9	(i). Conduct of Mini Project (ii). Conduct of Technical Symposium (iii).InPlant training/Internship/Industrial visit (iv).Conduct of Group Discussion (AMJ,JS – III Yr) (iv).NPTEL course registration, Spoken tutorial classes, Conference paper publications, Symposium, Workshop, Value added courses participation
PO 10	(i). Conduct of Mini Project (ii). Conduct of Technical Symposium (iii).InPlant training/Internship/Industrial visit (iv).Conduct of Group Discussion (v).NPTEL course registration, Spoken tutorial classes, Conference paper publications, Symposium, Workshop, Value added courses participation
PO 11	(i). Conduct of Mini Project (ii). Conduct of Technical Symposium (iii).InPlant training/Internship/Industrial visit (iv).NPTEL course registration, Spoken tutorial classes, Conference paper publications, Symposium, Workshop, Value added courses participation
PO 12	(i). Conduct of Mini Project (ii). Conduct of Technical Symposium (iii).InPlant training/Internship/Industrial visit (iv).NPTEL course registration, Spoken tutorial classes, Conference paper publications, Symposium, Workshop, Value added courses participation