

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.	VII	CS8383	Object Oriented Programming Laboratory
26.		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.	VI	EE8412	Technical Seminar
51.		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.	VIII	EE8611	Mini Project
59.			Professional Elective V
60.			Professional Elective VI
61.		EE8811	Project Work

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S.No	Index	Course Code	Course Title
1	C101	HS8151	Communicative English
2	C102	MA8151	Engineering Mathematics - I
3	C103	PH8151	Engineering Physics
4	C104	CY8151	Engineering Chemistry
5	C105	GE8151	Problem Solving and Python Programming
6	C106	GE8152	Engineering Graphics
7	C107	GE8161	Problem Solving and Python Programming Laboratory
8	C108	BS8161	Physics and Chemistry Laboratory
9	C109	HS8251	Technical English
10	C110	MA8251	Engineering Mathematics - II
11	C111	PH8253	Physics for Electronics Engineering
12	C112	BE8252	Basic Civil and Mechanical Engineering
13	C113	EE8251	Circuit Theory
14	C114	GE8291	Environmental Science and Engineering
15	C115	GE8261	Engineering Practices Laboratory
16	C116	EE8261	Electric Circuits Laboratory
17	C201	MA8353	Transforms and Partial Differential Equations
18	C202	EE8351	Digital Logic Circuits
19	C203	EE8391	Electromagnetic Theory
20	C204	EE8301	Electrical Machines - I
21	C205	EC8353	Electron Devices and Circuits
22	C206	ME8792	Power Plant Engineering
23	C207	EC8311	Electronics Laboratory
24	C208	EE8311	Electrical Machines Laboratory - I
25	C209	MA8491	Numerical Methods
26	C210	EE8401	Electrical Machines - II
27	C211	EE8402	Transmission and Distribution
28	C212	EE8403	Measurements and Instrumentation
29	C213	EE8451	Linear Integrated Circuits and Applications
30	C214	IC8451	Control Systems
31	C215	EE8411	Electrical Machines Laboratory - II
32	C216	EE8461	Linear and Digital Integrated Circuits Laboratory
33	C217	EE8412	Technical Seminar

S.No.	Index	Course Code	Course Title
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35	C302	EE8551	Microprocessors and Microcontrollers
36	C303	EE8552	Power Electronics
37	C304	EE8591	Digital Signal Processing
38	C305	CS8392	Object Oriented Programming
39	C306 OE1		Open Elective I*
40	C307	EE8511	Control and Instrumentation Laboratory
41	C308	HS8581	Professional Communication
42	C309	CS8383	Object Oriented Programming Laboratory
43	C310	EE8601	Solid State Drives
44	C311	EE8602	Protection and Switchgear
45	C312	EE8691	Embedded Systems
46	C313 PE1		Professional Elective I a)Design of Electrical apparatus b)Power systems Stability
47	C314 PE2		Professional Elective II a)Power quality b)Special Electrical machines
48	C315	EE8661	Power Electronics and Drives Laboratory
49	C316	EE8681	Microprocessors and Microcontrollers Laboratory
50	C317	EE8611	Mini Project
51	C401	EE8701	High Voltage Engineering
52	C402	EE8702	Power System Operation and Control
53	C403	EE8703	Renewable Energy Systems
54	C404 OE2		Open Elective II*
55	C405 PE3		Professional Elective III a)Fibre optics and Laser Instrumentation
56	C406 PE4		Professional Elective IV a)Power system Transients b)Total Quality Management c)VLSI
57	C407	EE8711	Power System Simulation Laboratory
58	C408	EE8712	Renewable Energy Systems Laboratory
59	C409 PE5		Professional Elective V a)Electric energy generation, utilization and Conservation b)FACTS c)Principles of Management d)Professional ethics in Engineering
60	C410 PE6		Professional Elective VI a)Bio-Medical Instrumentation b)Microcontroller based System design
61	C411	EE8811	Project Work

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

Course Name: C101-Communicative English

Course Code: HS8151

C101.1	Listen and recognize main ideas from different discourses in different accents.
C101.2	Speak clearly, confidently, comprehensively, and communicate with one or many listeners using appropriate communicative strategies.
C101.3	Read different genres of text adopting various reading strategies
C101.4	Write cohesively and coherently by using a wide range of vocabulary and organize ideas logically on a topic without grammatical errors
C101.5	Determine the main and subordinate ideas, draw conclusions and summarize information from written material

Course Name: C102– Engineering Mathematics – I

Course Code: MA8151

C102.1	Use both the limit definition and rules of differentiation to differentiate functions.
C102.2	Apply differentiation to solve maxima and minima problems
C102.3	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.
C102.4	Apply integration to compute multiple integrals, area, volume, integrals in polar Coordinates, in addition to change of order and change of variables.
C102.5	Apply various techniques in solving differential equations.

Course Name: C103– Engineering Physics

Course Code: PH8151

C103.1	Demonstrate the properties of elasticity and measure the different moduli of elasticity.
C103.2	Examine the characteristics of waves, Laser and optical fiber
C103.3	Illustrate different modes of heat transfer through objects.
C103.4	Explain the black body radiation, properties of matter waves and schrodinger equations.
C103.5	Classify the bravais lattices, crystal structures, crystal imperfections and crystal growth techniques

Course Name: C104– Engineering Chemistry

Course Code: CY8151

C104.1	Explain the hardness of water, its types and estimation, boiler troubles and treatment of boiler feed water.
C104.2	Explain adsorption, types and theories of adsorption isotherm and its application in pollution abatement, theories of catalysis and applications
C104.3	Understand the basic concepts of phase rule and its application to one and two component systems, properties, significance and applications of alloys.
C104.4	Relate the significance of solid, liquid and gaseous fuels and to calculate the calorific value of fuels.
C104.5	Illustrate the methods of harvesting energy from non-conventional energy sources.

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.

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.

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.

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.

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

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.

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.

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.

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.

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.

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

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.

C201.1	Solve First, Second order homogeneous and non homogeneous partial differential equations
C201.2	Find the Fourier series of a given function satisfying Dirichlet'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

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.

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

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

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

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

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.

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.

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

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

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.

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 resistor, 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.

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.

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

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 (1 Φ & 3 Φ semi converters, 1 Φ & 3 Φ 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 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 Code: MA8353

[illegible]

Course Code: EE8351

[illegible]

Course Code: EE8391

[illegible]

Course Code: EE8301

[illegible]

[illegible]

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 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 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 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 Code: EE8501

[illegible]**Course Code: EE8551**[illegible]

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 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 Code: EE8601

[illegible]**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 Code: EE8691

[illegible]

Course Code: EE8002

[illegible]

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 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 Code: EE8701[illegible]

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 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 Code: EI8075

[illegible]

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	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	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	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	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	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

K.L.N.COLLEGE OF ENGINEERING,POTTAPALAYAM-630612
DEPARTMENT OF AUTOMOBILE ENGINEERING
COURSE OUTCOMES (AU-2017 REGULATION)

III Semester

Course code/Name: CE 8394-Fluid Mechanics and Machinery [C203]	
C203.1	Illustrate the properties & characteristics of fluid and apply it in control volume problems.
C203.2	Measure friction of laminar and turbulent flow in a circular conduit.
C203.3	Analyze the dimensions of any model and similitude.
C203.4	Examine the performance of reciprocating and rotary pump.
C206.5	Examine the performance of Pelton wheel, Francis and Kaplan turbine.

	Course Code: AT 8301 Spark Ignition Engine [C204]
C204.1	Air fuel mixture requirements for engine for different load conditions, different types of carburetor
C204.2	Petrol Injection system, Need and working of various types of Ignition system, Spark plug operation
C204.3	Stages of combustion, knock, types of combustion chambers, Heat release correlations
C204.4	Liquid fuels, Blends, storage and safety, Performance and Emission Characteristics, Gaseous fuels
C204.5	Emission standards, Emission control measures and measuring techniques for SI Engines.

	Course Code: ME 8392-Manufacturing Technology [C206]
C206.1	Recognize the purpose of casting process and be able to choose the best casting process for a specific product.
C206.2	Describe the joining processes. Be able to choose the proper process for different joining cases.
C206.3	Compare different material removal processes. Understand the cutting parameters and working condition during cutting.
C206.4	Discuss the types of moulding process of plastics and select suitable plastics for different applications.
C206.5	Demonstrate deformation processes. Be able to choose the best forming process for a specific product. Understand in depth the Powder Metallurgy processes and their formation mechanism.

IV Semester

CO	AT8401 – Compression Ignition Engine
CO.I	Students are able to understand the concept of combustion in SI and CI engines and calculate the heat of reactions
CO.II	Students are able to understand the concept of actual cycle and progressive combustion analysis in SI/CI engine and to study the work output ,efficiency and other parameters
CO.III	Students are able to understand the fundamental concept of modeling and simulate the engine cycles in SI and CI engines
CO.IV	Students are able to understand the recent developments in IC engines(Various engines like VCR,Dual engine,free piston engines)
CO.V	Students are able to perform combustion analysis in SI and CI engines and calculate the ignition delay and combustion duration in engines.

Course code/Name:Engineering Metallurgy(ME8491) [C213]	
CO	Course Outcomes
C213.1	Able to distinguish between substitutional and Interstitial solid solutions, able to outline the different phase transformations occurring in Iron Carbide equilibrium diagram with various reactions.
C213.2	Able to select the appropriate heat treatment processes for hardening or softening metals, able to draw the Time Temperature Transformation diagram and posses knowledge of various surface treatment processes of automotive components.
C213.3	Able to identify the types of cast irons through their microstructure, interpret the relationship and properties of different types of steel and cast iron, non ferrous alloys like copper, aluminum and titanium alloys.
C213.4	Able to select suitable polymers for the required application by analyzing their properties, explain the Process and development of composite material for newer applications.
C213.5	Able to explain the principle and mechanism of various testing equipments, to do various tests to find the mechanical properties like tensile, compression strength etc., to explain the effect of fatigue and creep on components.

Course code/Name: AT8402 – Automotive Chassis(C.216)	
C216.1	Distinguish and explain about different types of chassis layout, steering system, steering gear boxes and wheel geometry
C216.2	Explain about the different types of thrusts, working and purposes of transmission members like axles, Joints, propeller shaft, Differential
C216.3	Explain about different types of rear axles, construction, housings, wheel and tyres
C216.4	Explain about the need and different types of suspension systems
C216.5	Explain the theory of braking and different types of braking system

	Course Code: AT 8411 Automotive Components Lab(C207)
C207.1	Ability to dismantle and assemble the components.
C207.2	Understand the different types of frames used in automobiles.
C207.3	Understand the petrol engine fuel feed system.
C207.4	Understand the Diesel engine fuel feed system.
C207.5	Ability to dismantle and assemble the drive line system.

V Semester

Course Code /Name:AT8502-Automobile Electrical and Electronics [C304]	
	Course Outcomes
C304.1	Understand and demonstrate the function of energy storing and stating system.
C304.2	Understand and demonstrate the function of various charging system in automobile.
C304.3	Understand and demonstrate the function of various ignition system in automobile
C304.4	Understand the function of various sensors used in automobile engine management .
C304.5	Understand the function of various safety system in automobile

Course Code: AT 8503 Vehicle Design and Data characteristics [C305]	
Sl. No	Course Outcomes
C305.1	Able to explain the basic concept of automobile design and technical specification of vehicles.
C305.2	Able to differentiate the different types of vehicles based on resistance, driving force and power requirement at various conditions.
C305.3	Able to differentiate the different types of vehicles based on torque and mechanical efficiency
C305.4	Able to explain the crank radius ratio, crank angle and the effect of turning moment and side thrust.
C305.5	Able to determine gear ratio, acceleration and gradability

	Course Code: AT 8511Automotive Electrical and Electronics Lab [C308]
C308.1	Ability to rectify and faults in electrical systems.
C308.2	Ability to rectify and faults in electronic systems.
C308.3	Perform the battery,cranking motor construction and testing methods.
C308.4	Diagnosis of ignition system faults.
C308.5	Fault diagnosis of various sensors.

VI Semester

AT 8601-Automotive Engine Components Design [C312]	
CO	Course Outcomes
C312.1	Explain the stress concentration, inter changeability and endurance limit and also able to select material for various engine components.
C312.2	Design cylinder, piston assembly and connecting rod by applying engineering design principles and basic engineering theories.
C312.3	Design crankshaft by applying engineering design principles and basic engineering theories and also able to explain the significant of firing order, balancing of I.C engine and its effects
C312.4	Design flywheels by applying engineering design principles and basic engineering theories.
C312.5	Design the various parts of valve actuating mechanism by applying engineering design principles and basic engineering theories.

AT 8602-Automotive Chassis Components Design [C313]	
CO	Course Outcomes
C313.1	Able to design and analyze the various types of loads, stresses acting on frame and able to design various types of suspension springs.
C313.2	Able to analysis of loads, moments and stresses at different sections of front axle and design of front axle beam.
C313.3	Able to design the various types of clutches and clutch components based on different conditions of theory.
C313.4	Able to do gear train calculation and able to design and draw the layout of different gearboxes.
C313.5	Able to design the propeller shaft and final drive gearing and able to compare different types of rear axle shaft.

AT 8603-Two and Three wheelers [C314]	
CO	Course Outcomes
C314.1	Explain and compare the working principles of two and four stroke engines
C314.2	Explain different types of ignition systems.
C314.3	Illustrate the functioning of different clutch, gear box and suspension systems
C314.4	Illustrate the functioning of wheels, tyres and braking systems
C314.5	Compare and evaluate the latest models of two wheelers & three wheelers

Course Code:AT 8604/Vehicle Dynamics [C315]	
CO	Course Outcomes
C315.1	Explain the concept of Vibration and develop formulations for Degree of Freedom (D.O.F) such as Single D.O.F , Double D.O.F & Multi D.O.F.
C315.2	Understand and Explain the concept force and vibration on tires.
C315.3	Explain the concept of Vertical Dynamics related to suspension systems.
C315.4	Understand the concept of Longitudinal Dynamics, control, formulating load distribution three and four wheelers.
C315.5	Understand the Concept of Lateral Dynamics related to vehicle handling, vehicle control and vehicle stability.

Two and Three Wheeler Laboratory-AT 8612 [C319]	
CO	Course outcomes
C319. 1	Able to measure the performance of a two wheeler
C319. 2	Able to measure the performance of a two wheeler chain, shock absorber and coil spring
C319. 3	Understand the brake and clutch adjustment of two and three wheeler
C319. 4	Able to dismantle and assemble of two and three wheeler gear box and calculate gear ratio
C.319. 5	Understand three wheeler chassis power transmission system layout.

Course Code/Name:AT8611 –Computer Aided Engine and Chassis design Lab [C318]	
CO	Course Outcomes
C318.1	Ability to use the draft for Automobile engine components design.
C318.2	Ability to use the modeling software for Automobile engine components design.
C318.3	Ability to use the draft for Automobile Chassis components design.
C318.4	Ability to use the modeling software for Automobile chassis components design.
C318.5	Familiarize the students to use modeling software to model engine components and chassis design

VII Semester

Course Code/Name:AT8702 –Vehicle maintenance [C403]	
CO	Course Outcomes
C403.1	Able to prepare various forms and records of maintenance documents and able to know the safety precautions and tools
C403.2	Able to demonstrate the Engine tune up procedure and able to demonstrate the maintenance and servicing of cooling system, lubrication system
C403.3	Able to demonstrate the maintenance and servicing clutch and transmission
C403.4	Able to demonstrate the maintenance and servicing of steering, brake and suspension and also to demonstrate the wheel alignment and wheel balancing
C403.5	Able to demonstrate the maintenance and servicing of electrical components and Ability to diagnoses the fault in the electrical components & modern electronic control.

	Course Code/Name:AT8004 –New Generation Hybrid Vehicle [C405]
CO	Course Outcomes
C405 .1	Understand the Critical comparisons of HEVs with alternatives such as EVs and fuel cell systems.
C405 .2	Define and analyze the fundamental operations of different hybrid engines and the electrochemistry of battery operation.
C405. 3	Explain different approaches to control the vehicles with the aid of computer and Information Technology.
C405 .4	Identify how to prepare and maintain Road network using satellite and GPS control.
C405 .5	Demonstrate the safety features of vehicles and materials used for safety precautions in vehicles.

Course Code/Name:AT8006 –Off Road Vehicles [C406]	
CO	Course Outcomes
C406.1	Understand special type of vehicles based on the need and purpose
C406.2	Understand various types of instrumentation applied to various off road vehicles.
C406.3	Understand the mechanisms used in earth moving machines.
C406.4	Understand the working of power take off shaft& Farm equipments
C406.5	Studying the design aspects of loader &bulldozer linkage mechanism.

AT 8711-ENGINE PERFORMANCE AND EMISSION TESTING LABORATORY [C408]	
CO	Course outcomes
C408. 1	Understand the Valve and Port timing diagram
C408.2	Able to measure the performance and emission testing of a SI and CI engine
C408.3	Able to prepare the Heat balance test on SI and CI engine
C408.4	Able to calculate the frictional power by conducting Retardation Test
C408.5	Able to calculate the individual power development by conducting Morse Test

Course Code/Name:AT8712 –Vehicle Maintenance Lab [C409]	
CO	Course Outcomes
C409.1	Study Tools & instruments, Safety aspects with respect to man, machine and tools servicing and maintenance schedule and wheel alignment procedure.
C409.2	Identify Minor and major tune up of gasoline and diesel engines and fault diagnosis by scan tool Calibrate Fuel injection pump.
C409.3	Know the fault and service of transmission system, driveline system and braking system.
C409.4	Identify the fault and service of Suspension, Steering and Electrical system.
C409.5	Practice the clutch & hand brake, steering wheel play, air bleeding of diesel fuel system & hydraulic brakes, adjustment of head lights and Tyre remover

EIGHT SEMESTER

VIII Semester

AT 6801 – Vehicle Body Engineering [C411]	
CO	Able to explain the details of car body construction and able to compare the safety design and safety equipments of various cars.
C411.2	Able to describe the design concept based on the aerodynamic effect, able to find the lift and drag effect of different models by using wind tunnel testing Rig. and able to compare the different stream lining of vehicle bodies.
C411.3	Able to compare the various types of bus body construction details based on regulations and comfort, able to select the suitable material for bus body construction.
C411.4	Able to compare the various types of heavy vehicle body construction details and able to measure the driver visibility and cabin design of different vehicles.
C411.5	Able to distinguish the corrosion and anticorrosion materials and able to explain the various painting techniques and body trim mechanisms

KLN COLLEGE OF ENGINEERING
B.E. Computer Science and Engineering
Choice Based Credit System Regulation–2017
I-VIII Semesters Course Outcomes

I YEAR / I SEMESTER

COURSE CODE / SUBJECT CODE & NAME: C105 / GE8151 & Problem Solving & Python Programming

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 CODE / SUBJECT CODE & NAME: C107 / GE8161 & Problem Solving & Python Programming Laboratory

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 and dictionaries for representing compound data.
C107.5	Develop Python programs using files.

I YEAR / II SEMESTER

COURSE CODE / SUBJECT CODE & NAME: C114 / CS8251 & Programming in C

C114.1	Develop simple applications in C using basic constructs
C114.2	Design and implement applications using arrays and strings
C114.3	Develop and implement applications in C using functions and pointers.
C114.4	Develop applications in C using structures.
C114.5	Design applications using sequential and random access file processing.

COURSE CODE / SUBJECT CODE & NAME: C116 / CS8261 & C Programming Laboratory

C116.1	Develop C programs for simple applications making use of basic constructs
C116.2	Develop C programs using Arrays and Strings
C116.3	Develop C programs involving functions, recursion
C116.4	Develop C programs involving pointers and structures.
C116.5	Design applications using sequential and random access file processing.

II YEAR / III SEMESTER

COURSE CODE / SUBJECT CODE & NAME: C203 / CS8391& Data Structures

C203.1	Explain the fundamental data structures concept and ADT
C203.2	Summarize the various lines data structure operations and applications
C203.3	Discuss about trees operations and applications
C203.4	Discuss about graph operations and applications
C203.5	Demonstrate the sorting, searching and hashing techniques in Data Structures

KLN COLLEGE OF ENGINEERING
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I-VIII Semesters Course Outcomes

COURSE CODE / SUBJECT CODE & NAME: C204 / CS8392 & Object Oriented Programming

C204.1	Explain the Concepts of Object Oriented Programming & the Fundamentals of Java Program.
C204.2	Explain the Principles of inheritance & interfaces.
C204.3	Discuss the Concept of Exception handling mechanism & I/O Streams.
C204.4	Use the Concept of multi/threading & generics classes in java
C204.5	Apply the AWT & Swing concepts to build GUI application.

II YEAR / IV SEMESTER

COURSE CODE / SUBJECT CODE & NAME: C215 / CS8494 & Software Engineering

C215.1	Explain the software process and agile development
C215.2	Demonstrate the software requirements and analysis
C215.3	Apply the software design procedure
C215.4	Compare and contrast various the various software testing and implementation techniques
C215.5	Estimate the software project cost and effort

III YEAR / V SEMESTER

COURSE CODE / SUBJECT CODE & NAME: C304 / CS8501 & Theory of Computation

C304.1	Design finite automata and regular expression for any pattern
C304.2	Design of context free grammar and push down automaton model for the given language
C304.3	Translate the context free grammar into its various normal forms
C304.4	Solve simple computational problems by using Turing machine
C304.5	Explain decidability or undecidability of various problems

III YEAR / VI SEMESTER

COURSE CODE / SUBJECT CODE & NAME: C313 / CS8602 & Compiler Design

C313.1	Explain the structure of the compiler and tokenization in lexical analysis.
C313.2	Illustrate the translation of tokens into Parse tree in syntax analyzer.
C313.3	Construct the intermediate representation considering the type systems
C313.4	Understand the storage allocation and organization for code generation.
C313.5	Apply code optimization techniques on the generated machine code.

KLN COLLEGE OF ENGINEERING
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Choice Based Credit System Regulation–2017
I-VIII Semesters Course Outcomes
IV YEAR / VII SEMESTER

COURSE CODE / SUBJECT CODE & NAME: C402 / CS8792 & Cryptography and Network Security

C402.1	Understand Cryptography Theories, Algorithms and Systems
C402.2	Understand the symmetric key approaches and evaluate the strength of the various techniques
C402.3	Apply the mathematical concept of asymmetric key cryptography in public key cryptography
C402.4	Apply various message authentication functions and secure algorithms.
C402.5	Demonstrate different levels of security through various applications and create protection mechanisms in order to secure computer networks.

COURSE CODE / SUBJECT CODE & NAME: C403 / CS8791 & Cloud Computing

C403.1	Discuss the concept of cloud computing.
C403.2	Explain the evolution of cloud from the existing technologies.
C403.3	Explain the various issues in cloud computing.
C403.4	Infer the lead players in cloud.
C403.5	Explain the emergence of cloud as the next generation computing paradigm.

IV YEAR / VIII SEMESTER

COURSE CODE / SUBJECT CODE & NAME: CE410 / CS8080 & Information Retrieval Techniques

CE410.1	Understand the basic concept of information retrieval
CE410.2	Classify the modeling and retrieval evaluation
CE410.3	Apply appropriate method of classification or clustering
CE410.4	Design and implement innovative features in a web search engine
CE410.5	Design and implement a recommender system

COURSE CODE / SUBJECT CODE & NAME: C411 / CS8811 & PROJECT WORK

C411.1	Identify the problem by applying acquired knowledge.
C411.2	Analyze and categorize executable project modules after considering risks.
C411.3	Choose efficient tools for designing project modules.
C411.4	Combine all the modules through effective team work after efficient testing.
C411.5	Elaborate the completed task and compile the project report.

KLN COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
III-VIII Semesters Course Outcomes (AU-2017 REGULATION)

III SEMESTER

COURSE CODE / SUBJECT CODE &NAME: EC8351 ElectronicCircuits- I

C203.1	Explain various methods of transistor biasing.
C203.2	Design of single stage and multistage BJT amplifiers.
C203.3	Analyze the single stage FET, MOSFET amplifiers
C203.4	Discuss the frequency of amplifiers.
C203.5	Design and testing of power supplies.

IV SEMESTER

COURSE CODE / SUBJECT CODE &NAME: EC8452 Electronic CircuitsII

C211.1	Explain the concepts of feedback amplifiers
C211.2	Classify the various types of oscillators.
C211.3	Design different types of tuned amplifiers and analyze its performance.
C211.4	Discuss wave shaping circuits and multivibrators
C211.5	To study about Power amplifiers, Power MOSFET, MOSFET, buck booster and DC-DC converter

V SEMESTER

COURSE CODE / SUBJECT CODE &NAME: EC8553 Discrete-Time Signal Processing

C302.1	Apply Discrete Fourier Transform (DFT) for the analysis of digital signals & systems
C302.2	Design an analog to digital Infinite Impulse Response (IIR) filters and its realization.
C302.3	Design of digital Finite Impulse Response (FIR) filters using the windowing technique & frequency sampling method and to realize their structure.
C302.4	Illustrate the finite word length effects on filters.
C302.5	Explain the fundamentals of DSP Processor Architecture and its programming.

VI SEMESTER

COURSE CODE / SUBJECT CODE &NAME: EC8095 VLSI Design

C309.1	Realize the concepts of digital building blocks using MOS transistor.
C309.2	Design combinational MOS circuits and power strategies
C309.3	Design and construct Sequential Circuits and Timing systems
C309.4	Design arithmetic building blocks and memory subsystems.
C309.5	Apply and implement FPGA design flow and testing.

KLN COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
III-VIII Semesters Course Outcomes (AU-2017 REGULATION)

VII SEMESTER

COURSE CODE / SUBJECT CODE &NAME: EC8791 Embedded andReal Time Systems

C403.1	Outline the concepts of embedded systems.
C403.2	Describe the architecture and programming of ARM processor
C403.3	Explain the basic concepts of embedded programming
C403.4	Explain the basic concepts of real time operating system design.
C403.5	Model real-time applications using embedded-system concepts.

VIII SEMESTER

COURSE CODE / SUBJECT CODE &NAME: EC8093 Digital ImageProcessing

C4PE12.1	Explain the fundamentals of digital image processing techniques
C4PE12.2	Explain the various image enhancement techniques in spatial and frequency domain.
C4PE12.3	Analyze the various filtering methods for image restoration.
C4PE12.4	Learn the basics of segmentation, features extraction and different segmentation techniques.
C4PE12.5	Use various coding techniques for image compression and image Recognition

K.L.N. College of Engineering
Department of Electronics and Instrumentation Engineering
Criterion II – Teaching - Learning and Evaluation

2.6.1 - Program outcomes, program specific outcomes and course outcomes for all programs offered by the institution are stated and displayed on website and communicated to teachers and students

II year

COURSE OUTCOMES: After the course, the student should be able to:

EC8353 ELECTRON DEVICES AND CIRCUITS

III SEM

Course	Course Outcome	PO	PSO
C202.1	Explain the working of semiconductor diodes, rectifiers and other type of special diodes	1,5	1,2
C202.2	Explain the working of BJT, different configurations and biasing of BJT, UJT, Thyristors and IGBT	1,3	1,2
C202.3	Calculate the gain of various amplifier circuits and design the small signal model of BJT circuits	1,2,3,4,5	1,2
C202.4	Explain the operation of differential amplifier, classify the power amplifier circuits	1,2,3,4,5,9,11,12	1,2
C202.5	Derive the parameters of feedback amplifier circuit and design different types of oscillator.	1,3,4,5,9,11,12	1,2

EE 8451 LINEAR INTEGRATED CIRCUITS AND APPLICATION

IV SEM

CO	Course Outcomes	POs	PSOs
C213.1	Explain the procedure for the fabrication of IC.	1,2,3,6,12	1,2
C213.2	Explain the DC & AC characteristics of Operational amplifier.	1,2,3,6,12	1,2
C213.3	Discuss the applications of Operational amplifier.	1,2,3,6,12	1,2
C213.4	Describe the internal functional blocks of special ICs like Timer	1,2,3,6,12	1,2
C213.5	Classify types of voltage regulators and describe the special ICs.	1,2,3,6,12	1,2

III year

EI 8551 Analytical Instruments

V SEM

Course	Course Outcomes	PO	PSO
C304.1	Know the Knowledge of Spectrophotometers.	1,2,3,4,7,11	1,2
C304.2	Explain the basics of Chromatography.	2,3,4,6,7	1,2
C304.3	Describe the different types of Gas Analyzers.	3,4,6,7,9,10,11	1,2
C304.4	Understand the working principle of Ion Selective Electrodes, PH electrodes and conductivity meters.	3,4,6,7,9,10,11	1,2
C304.5	Discuss the NMR Spectrometers and radiations techniques.	1,2,3,4,6,7,11,12	1,2

Course	Course Outcome	PO	PSO
C312.1	Explain and discuss soft computing techniques and their roles in building intelligent machines.	1,2,3,4,5,6,9,12	1,2
C312.1	Apply neural networks to pattern classification and real time problems	1,2,3,4,5,6,9,12	1,2
C312.1	Explain the fuzzy logic set theory and neuro fuzzy system	1,2,3,4,5,6,9,12	1,2
C312.1	Analyze fuzzy logic control and reasoning to handle uncertainty and solve engineering problems	1,2,3,4,5,6,9,12	1,2
C312.1	Apply genetic algorithms to combinational optimization problems	1,2,3,4,5,6,9,12	1,2

IV year

OME754 Industrial Safety

VII SEM

CO	Course Outcomes	Knowledge Level	POs	PSOs
C4OE1.1	Identify and prevent environmental mechanical, fire hazard.	K1	PO1,PO2,PO4,PO6	PSO1,PSO3
C4OE1.2	Identify chemical hazard, toxicity fire, explosion in work place and study preventive measures	K1	PO1,PO2,PO4,PO6,PO9	PSO1,PSO3
C4OE1.3	Record, analyze and interpret the accidents data based on various safety techniques.	K1	PO1,PO2,PO4,PO9	PSO1,PSO3
C4OE1.4	Associate proper safety techniques on safety engineering and management	K2	PO1,PO2,PO3,PO7,PO8,PO9,PO10	PSO1,PSO3
C4OE1.5	Predict the present industry scenario on the performance of hazard analysis.	K2	PO1,PO2,PO3,PO6,PO7,	PSO1,PSO3
C4OE1.6	Infer the system with environmental consciousness by implementing safety regulation.	K2	PO2,PO3,PO6,PO8,PO9,PO10,PO11,PO12	PSO3

EI 8091 Instrumentation in petrochemical industries

VIII SEM

Course	Course Outcomes	PO	PSO
C401.1	Gain knowledge on oil gas production process and important unit operations in a refinery	2, 3, 5,11,12	1,2
C401.2	Having gained the process knowledge, ability to develop and analyze mathematical model of selective processes.	1,4,6,9	1,2
C401.3	Able to develop, analyze and select appropriate control strategy for selective unit operations in a refinery.	2,4,6,11,12	1,2
C401.4	Gain knowledge on the most important chemical derivatives obtained from petroleum products.	3,9,10,12	1,2
C401.5	Understand safety instrumentation followed in process industries.	2,3,10,12	1,2

KLN COLLEGE OF ENGINEERING
B.Tech Information Technology
Choice Based Credit System Regulation–2017
I-VIII Semesters Course Outcomes

I YEAR / I SEMESTER

COURSE CODE / SUBJECT CODE &NAME: C105 / GE8151 &Problem Solving & Python Programming

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.

I YEAR / II SEMESTER

COURSE CODE / SUBJECT CODE &NAME:C114 / CS8251&Programming in C

C114.1	Develop simple applications in C using basic constructs
C114.2	Design and implement applications using arrays and strings
C114.3	Develop and implement applications in C using functions and pointers.
C114.4	Develop applications in C using structures.
C114.5	Design applications using sequential and random access file processing.

II YEAR / III SEMESTER

COURSE CODE / SUBJECT CODE &NAME:C203 / CS8391& Data Structures

C203.1	Explain the fundamental data structures concept and ADT
C203.2	Summarize the various lines data structure operations and applications
C203.3	Discuss about trees operations and applications
C203.4	Discuss about graph operations and applications
C203.5	Demonstrate the sorting, searching and hashing techniques in Data Structures

II YEAR / IV SEMESTER

COURSE CODE / SUBJECT CODE &NAME: C211 / CS8491 & Computer Architecture

C211.1	Discuss the basic components of computers, operations and instructions
C211.2	Outline the circuits required to perform operations in Arithmetic Logic Unit
C211.3	Describe the importance of basic data path, pipelined executions and hazards
C211.4	Identify parallel processing architectures with instruction level parallelism, multi core processing and graphics processing units
C211.5	Explain the performance of memory systems and input/output system

KLN COLLEGE OF ENGINEERING
B.Tech Information Technology
Choice Based Credit System Regulation–2017
I-VIII Semesters Course Outcomes
III YEAR / V SEMESTER

COURSE CODE / SUBJECT CODE &NAME: C305 / CS8594 & Software Engineering

C305.1	Identify the key activities in managing project and compare different process model
C305.2	To learn Concepts of requirements engineering and analysis modeling
C305.3	Apply systematic procedure for software design and deployment
C305.4	Compare and contrast the various testing and maintenance
C305.5	Manage project schedule, estimate project cost and effort required

III YEAR / VI SEMESTER

COURSE CODE / SUBJECT CODE &NAME: C312 / IT8602 & Mobile Communication

C312.1	Explain the basics of mobile telecommunication system
C312.2	Illustrate the generations of telecommunication systems in wireless network
C312.3	Understand the architecture of Wireless LAN technologies
C312.4	Determine the functionality of network layer and Identify a routing protocol for a given Ad hoc networks
C312.5	Explain the functionality of Transport and Application layer

IV YEAR / VII SEMESTER

COURSE CODE / SUBJECT CODE &NAME: C402 / CS8792 & Cryptography and Network Security

C402.1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
C402.2	Apply the different cryptographic operations of symmetric cryptographic algorithms
C402.3	Apply the different cryptographic operations of public key cryptography
C402.4	Understand the various Authentication schemes to simulate different applications.
C402.5	Understand various Security practices and System security standards.

IV YEAR / VIII SEMESTER

COURSE CODE / SUBJECT CODE &NAME: C411 / CS8811 & PROJECT WORK

C411.1	Identify the problem by applying acquired knowledge.
C411.2	Analyze and categorize executable project modules after considering risks.
C411.3	Choose efficient tools for designing project modules.
C411.4	Combine all the modules through effective team work after efficient testing.
C411.5	Elaborate the completed task and compile the project report.

Degree/Program: B.E / Mech. Engg.

Semester: III

Course Code & Name: CE8394-Fluid Mechanics and Machinery

Course	Course Outcome
C203.1	Calculate fluid properties and characteristics of flow using mathematical knowledge.
C203.2	Compute losses in circular conduits using conservation laws.
C203.3	Perform dimensional analysis of a given set of variables using Buckingham's π theorem and relate the model and prototype.
C203.4	Analyze the performance of pumps.
C203.5	Analyze the performance of hydraulic machines.

Semester: 1V

Course Code & Name: ME 8493 Thermal Engineering-I

Course	Course Outcome
CO 215.1	Apply thermodynamic concepts to different air standard cycles and solve problems
CO 215.2	Solve problems in single stage and multistage air compressors
CO 215.3	Explain the functioning and features of IC engines, components and auxiliaries
CO 215.4	Calculate performance parameters of IC Engines
CO 215.5	Explain the flow in Gas turbines and solve problems

Semester: V

Course Code & Name: ME 8501 Metrology Measurements

Course	Course Outcome
C304.1	Discuss the measurement systems, errors in measurements, precision and accuracy
C304.2	Explain the various linear and angular measurement systems and understand the concept of interchangeability
C304.3	Describe the working principle of CMM, Machine Vision System and list the applications of them.
C304.4	Explain the various form measurements like thread, gear, roundness and surface finish.
C304.5	Discuss the working of miscellaneous measuring equipments for measuring temperature, flow and power.

Semester: VICourse Code & Name: ME 8691 **Computer aided design and manufacturing**

Course	Course Outcome
CO 310.1	Describe the 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics.
CO 310.2	Explain the various types of parametric curves, surfaces and solids
CO 310.3	Describe the different types of standard systems used in CAD
CO 310.4	Develop part program for Lathe & Milling machines
CO 310.5	Compare the different types of techniques used in Cellular Manufacturing and FMS

Semester: VIICourse Code & Name: **ME8793 Process Planning and Cost Estimation**

Course	Course Outcome
C402.1	Select material, process, production equipment, tooling and process parameters for the given product.
C402.2	Prepare a process planning sheet from a design drawing considering various production and design parameters.
C402.3	Apply the step by step procedure for estimating the cost of any product.
C402.4	Express the different elements of cost of a product and compute the total cost of a given product.
C402.5	Calculate machining time for different lathe operations, drilling, boring, milling, shaping, planning and grinding

Semester: VIIICourse Code & Name: **GE8076- Professional Ethics in Engineering**

Course	Course Outcome
CO411E.1	Explain Moral, Values, Integrity and Ethics.
CO411E.2	Explain the various theories and models with respect to moral issues and ethical dilemmas.
CO411E.3	Discuss the result of the engineering projects by applying ethical theories.
CO411E.4	Compare the various professional rights, employee rights and intellectual property rights, safety and risk involved in engineering projects.
CO411E.5	Summarize the role of engineer in environmental issues, computer applications, weapons development, multinational corporations and Corporate Social Responsibility.

K.L.N. College of Engineering
Course Outcome
Academic Year : 2020 - 2021, Session : Winter

Name : DR. K.S. HARIHARAN

Dept: M.B.A. Sem : 3

Subject : INTERNATIONAL BUSINESS MANAGEMENT(BA 5301)

Sl.No.	Question
1	I am Familiar with the basic concepts of international business and its forms
2.	I am Familiar with the role of GATT/WTO, Challenges for global business and theories of international trade and theories of international investment
3.	I was able to understand about Global portfolio management,controlling of international business and performance of global business
4.	I was able to know the concept of Production, Marketing, Financial and Human Resource Management of Global Business
5.	I did understood the Conflict in international business, the role of international agencies and Ethics in international business

Name : DR. K.S. HARIHARAN

Dept: M.B.A. Sem : 3

Subject : INDUSTRIAL RELATIONS & LABOUR WELFARE(BA 5015)

Sl.No.	Question
1	I am able to understand the concept of Industrial Relations and Trade Union
2.	I learnt the different Industrial Conflicts - Strikes, Disputes and Government Machinery to resolve
3.	I am able to differentiate Voluntary and Statutory Welfare Measures and Welfare funds
4.	I have learnt the Industrial safety procedures which is mentioned statutorily in the act
5.	I learnt the welfare measures of Special Categories of labour -- child, female, contract and construction labour

Name : DR. K.S. HARIHARAN

Dept: M.B.A. Sem : 3

Subject : ORGANIZATIONAL THEORY DESIGN & DEVELOPMENT(BA 5018)

Sl.No.	Question
1	I have understood the principles of organizational theories to design and enhance the organizational effectiveness
2.	I am able to design the organization by addressing the challenges to create high performing organizational structure
3.	I am able to associate the Organizational Culture in line with organization's strategy for achieving effectiveness
4.	I am able to understand the Change Management and synergize the people according to change

5.	I have learnt about the organizational life cycle and capable of making decision for transformation
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Name : DR. R.S. BALASENTHIL

Dept: M.B.A. Sem : 3

Subject : MATERIALS MANAGEMENT(BA 5026)

Sl.No.	Question
1	I understood the Operating environment-aggregate planning-role, need, strategies, costs techniques, approaches-master scheduling-manufacturing planning and control system-manufacturing resource planning-enterprise resource planning-making the production plan
2.	I am aware of Materials requirements planning-bill of materials-resource requirement planning-manufacturing resource planning-capacity management-scheduling orders-production activity control-codification.
3.	I learned Policy Decisions“objectives-control -Retail Discounting Model, Newsvendor Model; EOQ and EBQ models for uniform and variable demand With and without shortages -Quantity discount models. Probabilistic inventory models.
4.	I can use - Establishing specifications-selecting suppliers-price determination-forward buying-mixed buying strategy-price forecasting-buying seasonal commodities-purchasing under uncertainty-demand management-price forecasting-purchasing under uncertainty-purchasing of capital equipment-international purchasing
5.	I can apply the Warehousing functions “ types - Stores management-stores systems and procedures-incoming materials control-stores accounting and stock verification-Obsolete, surplus and scrap-value analysis-material handling-transportation and traffic management -operational efficiency-productivity-cost effectiveness-performance measurement

Name : DR. R.S. BALASENTHIL

Dept: M.B.A. Sem : 3

Subject : MERCHANT BANKING AND FINANCIAL SERVICES(BA 5011)

Sl.No.	Question
1	I understood the basics of Indian financial system and Recent developments & challenges ahead & understood legal and regulatory framework of Merchant bankers
2.	I am aware of Pre-issue management activities of merchant bankers, such as Project appraisal, designing instruments, pricing, book building, etc. & aware of various methods in Offer for sale, Green shoe option, Private placement, Off shore issue, etc.
3.	I understood the process of Merger & Acquisition, Portfolio management services, credit syndication, credit rating & understood the business valuation process of Mutual funds
4.	I learned the methods and issues in Leasing and Hire purchasing and understood the legal framework and financial evaluation methods in leasing an hire purchasing

5.	I am aware of various types of consumer credit, such as credit cards, Real estate financing, Bill discounting & understood the meaning of Factoring & Forfeiting and Venture capital
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Name : DR. R.S. BALASENTHIL

Dept: M.B.A. Sem : 3

Subject : SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT(BA 5012)

Sl.No.	Question
1	I learned the various types of investment alternatives & understood how to choose and evaluate various investments based on risk & return.
2.	I am aware of various participants in financial market & know the regulations and roles of Primary and Secondary market
3.	I can apply the techniques of fundamental analysis & Economic/Industry/Company analysis in stock investment decision & can use applied valuation techniques & Graham&Dodds Investor Ratios in stock valuation.
4.	I can use technical analysis & Charting& Trend analysis to forecast the price movements of securities & understood various forms of Efficient Market Theory in stock market
5.	I understood the 'Capital asset pricing model' in portfolio analysis and selection & learned the techniques of portfolio evaluation and revision.

Name : DR. T. JOTHI MURUGAN

Dept: M.B.A. Sem : 3

Subject : SUMMER TRAINING PRESENTATION(BA 5311)

Sl.No.	Question
1	Are you aware of Industrial Practices you studied in your Curriculum
2.	Are you familiar with Organizational structure and its core functions
3.	Do you understand Organizational hierarchy and its related power and responsibilities
4.	Are you aware of the Role and benefits Stakeholders of an Organization
5.	Are you aware of Writing a Report on Organizational Study

Name : DR. T. JOTHI MURUGAN

Dept: M.B.A. Sem : 3

Subject : ENTREPRENEURSHIP DEVELOPMENT(BA 5014)

Sl.No.	Question
1	Are you able to understand the concept of Entrepreneurship & Knowledge and Skills of Entrepreneur

2.	Are you aware of Characteristics of Successful Entrepreneur & the Role of Family & Society and Schemes of Govt in Entrepreneurship
3.	Do you understand the Sources of Product for Business and preparation of Business plan and also understood the process of International Business.
4.	Are you learned the methods for Selection of Product & Market
5.	Are you aware of various methods of Monitoring and Evaluation of Business & understood the meaning of Effective Management of small Business
Total Average	

K.L.N. College of Engineering
Course Outcome Appraisal of Faculty Members by Students
Academic Year : 2020 - 2021, Session : Winter

Name : PALANIVEL RAJAN B

Dept: M.B.A. Sem : 3

Subject : STRATEGIC MANAGEMENT(BA 5302)

Sl.No.	Question
1	Familiar with the Conceptual framework for strategic management, the Concept of Strategy and the Strategy Formation Process “ Stakeholders in business “ Vision, Mission and Purpose “ Business definition, Objectives and Goals - Corporate Governance and Social responsibility
2.	Understood about the External Environment - Porter’s Five Forces Model-Strategic Groups Competitive Changes during Industry Evolution-Globalisation and Industry Structure - National Context and Competitive advantage Resources- Capabilities and competencies “core competencies- Low cost and differentiation Generic Building Blocks of Competitive Advantage- Distinctive Competencies- Resources and Capabilities durability of competitive Advantage- Avoiding failures and sustaining competitive advantage
3.	Learnt The generic strategic alternatives “ Stability, Expansion, Retrenchment and Combination strategies - Business level strategy- Strategy in the Global Environment-Corporate Strategy- Vertical Integration-Diversification and Strategic Alliances- Building and Restructuring the corporation- Strategic analysis and choice - Environmental Threat and Opportunity Profile (ETOP) - Organizational Capability Profile - Strategic Advantage Profile - Corporate Portfolio Analysis - SWOT Analysis - GAP Analysis - Mc Kinsey's 7s Framework - GE 9 Cell Model “ Distinctive competitiveness - Selection of matrix - Balance Score
4.	Familiar with The implementation process, Resource allocation, Designing organisational structure- Designing Strategic Control Systems- Matching structure and control to strategy-Implementing Strategic change-Politics-Power and Conflict-Techniques of strategic evaluation & control
5.	Understood about the Managing Technology and Innovation-Strategic issues for Non Profit organisations. New Business Models and strategies for Internet Economy

Name : PALANIVEL RAJAN B

Dept: M.B.A. Sem : 3

Subject : RETAIL MARKETING(BA 5005)

Sl.No.	Question
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1	Familiar with An overview of Global Retailing “ Challenges and opportunities “ Retail trends in India “ Socio economic and technological Influences on retail management “ Government of India policy implications on retails.
2.	Understood about the Organized and unorganized formats “ Different organized retail formats “ Characteristics of each format “ Emerging trends in retail formats “ MNC's role in organized retail formats.
3.	Learnt about the Choice of retail locations - internal and external atmospherics “ Positioning of retail shops “ Building retail store Image - Retail service quality management “ Retail Supply Chain Management “ Retail Pricing Decisions. Mercandising and category management “ buying
4.	Understood with the Visual Merchandise Management “ Space Management “ Retail Inventory Management “ Retail accounting and audits - Retail store brands “ Retail advertising and promotions “ Retail Management Information Systems - Online retail “ Emerging trends
5.	Understood about the retail shopper behavior “ Shopper Profile Analysis “ Shopping Decision Process - Factors influencing retail shopper behavior “ Complaints Management - Retail sales force Management “ Challenges in Retailing in India.

Name : RAMKUMAR T S

Dept: M.B.A. Sem : 3

Subject : PROJECT MANAGEMENT(BA 5028)

Sl.No.	Question
1	students are able to understand project management life cycle,portfolio and role of project manager and his responsibilities
2.	students are able to understand project planning and budgeting
3.	students are able to understand project scheduling and resource allocation
4.	students are able to understand project control and it's completion
5.	students are able to understand project organization,conflict management ,it's origin and resolving methods

K.L.N. College of Engineering
Course Outcome Appraisal of Faculty Members by Students
Academic Year : 2020 - 2021, Session : Winter

Name : RAMKUMAR T S

Dept: M.B.A. Sem : 3

Subject : SUPPLY CHAIN MANAGEMENT(BA 5030)

Sl.No.	Question
1	students are able to understand evolution,strategy and performance of supply chain.
2.	students are able to understand strategic sourcing for effective supply chain
3.	students are able to understand supply chain network,it's influencing factors and design

4.	students are able to understand demand planning and inventory management for supply chain.
5.	students are able to understand the current trends like IT in supply chain, agile supply chain, agro supply chain etc.,

Name : SHANTHI B

Dept: M.B.A. Sem : 3

Subject : INTERNATIONAL TRADE FINANCE(BA 5031)

Sl.No.	Question
1	Understood the fundamentals of international trade and role of WTO in International Trade
2.	Understood about the Incoterms for export pricing & transit and well known about the financing for capital goods.
3.	Understood the foreign exchange management and Hedging against foreign exchange risk.
4.	Know well about international trade documents for Transport, Commercial, financial, risk covering and quality.
5.	Know well about the export promotion schemes and Special economic zones.

Name : SHOBANA DEVI T

Dept: M.B.A. Sem : 3

Subject : SERVICES MARKETING(BA 5006)

Sl.No.	Question
1	Understood the Evolution and growth of service sector & aware of Challenges and issues in Services Marketing.
2.	Understood how to Assess service market potential & understood targeting and positioning
3.	Learnt the Expanded marketing mix & aware of Service Life Cycle.
4.	Learnt the methods GAP model of service quality & understood Designing service delivery System
5.	Aware of Service marketing triangle & understood the meaning of Service Marketing Strategies

Name : SHOBANA DEVI T

Dept: M.B.A. Sem : 3

Subject : INTEGRATED MARKETING COMMUNICATION(BA 5004)

Sl.No.	Question
1	Understood the Concept “definition-scope-objectives-functions-principles of advertisement” social, economic and legal implications of advertisements “ setting advertisement objectives “ advertisement agencies “ selection and remuneration “ advertisement campaigns
2.	Understood the Media plan “ type and choice criteria “ reach and frequency of advertisements “ cost of advertisements - related to sales “ media strategy and scheduling. Design and execution of

	advertisements -message development â€“ different types of advertisements â€“ layout â€“ design appeal â€“ copy structure â€“ advertisement production â€“ print â€“ radio. TV. And web advertisements â€“ media research â€“ testing validity and reliability of ads â€“ measuring impact of advertisements
3.	Learnt Scope and role of sale promotion â€“ definition â€“ objectives of sales promotion - sales promotion techniques â€“ trade oriented and consumer oriented. Sales promotion â€“ requirement identification â€“ designing of sales promotion campaign â€“ involvement of salesmen and dealers â€“ out sourcing sales promotion national and international promotion strategies â€“ integrated promotion â€“ coordination within the various promotion techniques â€“ online sales promotions
4.	Learnt Introduction â€“ Meaning â€“ Functions- Personal selling process â€“ Evaluation â€“ Compensation â€“ Motivation- Territory Management â€“ Sales Report Preparation and Presentation- Ethical Issues
5.	Aware of Introduction â€“ Meaning â€“ Objectives â€“ Scope-Functions-integrating PR in to Promotional Mix-Marketing Public Relation function- Process of Public Relations-advantages and disadvantages of PR-Measuring the Effectiveness of PR- PR tools and techniques. Difference between Marketing, PR and Publicity -- Social publicity â€“ Web Publicity and Social media â€“ Publicity Campaigns

K.L.N. College of Engineering
Course Outcome
Academic Year : 2020 - 2021, Session : Summer

Name : DR. K.S. HARIHARAN

Dept: M.B.A. Sem : 2

Subject : BUSINESS RESEARCH METHODS(20MB202)

Sl.No.	Question
1	I am familiar with the Business Research concept and its types and understood the business research process
2.	I have learnt the way to prepare for a research project & selection of research design.
3.	I am able to prepare a questionnaire and validate it for data collection and learnt the methods of choosing a sample from a population using sampling techniques
4.	I learnt the statistical techniques and research applications in Marketing, HR and Finance
5.	I understood the methods of report writing for research and ethics of a researcher in business research
6.	I am analytically skillful and familiar with Business Research

Name : DR. R.S. BALASENTHIL

Dept: M.B.A. Sem : 2

Subject : BUSINESS DATA ANALYSIS - 2(20MB2E1)

Sl.No.	Question
1	Understood Descriptive Statistics, Hypothesis - Parametric, Hypothesis, Non-parametric
2.	Understood Correlation & Regression, Forecasting techniques
3.	Understood Portfolio Selection and Risk Analysis & Sensitivity Analysis
4.	Understood Revenue Management
5.	Understood Transportation & Assignment, Networking Models
6.	Understood Queuing Theory, Inventory Models

Name : PALANIVEL RAJAN B

Dept: M.B.A. Sem : 2

Subject : HUMAN RESOURCE MANAGEMENT(20MB204)

Sl.No.	Question
1	I am familiar with the concepts, objectives and functions of HRM and I understand the Roles and Qualities of HR Manager
2.	I am able to formulate and analyze the HRP Methods and I know how to recruit the Right person for a right job at right time, right place (I know how to develop selection process)
3.	I know how to train the employees and I understand methods of EDP
4.	I know how to motivate the employees and I am familiar with the Career Management Process
5.	I understand the methods of Performance evaluation Process and I am familiar with the grievances redressal system

6.	I understand the importance of HR practices in current scenario
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Name : RAMKUMAR T S

Dept: M.B.A. Sem : 2

Subject : OPERATIONS MANAGEMENT(20MB205)

Sl.No.	Question
1	I have understood the role of organization management, challenges and trends, also the operation strategy and supply chain management
2.	I am able to apply qualitative and quantitative demand forecasting techniques for forecasting the future demand and Develop an appropriate capacity of the organization based on the demand and well known in selecting facility location and draw the facility layout
3.	I have Understood the concept of product and process design and capable of designing products by considering various factors and approaches in designing the product and I am capable of improving productivity through work study, method study and work measurement.
4.	I have Understood the material management concept and applying techniques to maintain material supply and cost and Understood the role of Just in Time concept and capable of applying stores and inventory management concepts to maintain and to plan inventories accordingly
5.	I am capable of applying PERT, CPM and Scheduling techniques in managing projects. And Understand the resource allocation techniques and capable of applying Johnsons Algorithms, gantt charts, shop scheduling and personnel scheduling in services

Name : SHANTHI B

Dept: M.B.A. Sem : 2

Subject : FINANCIAL MANAGEMENT(20MB203)

Sl.No.	Question
1	Understood the relationship between risk return and details of mutual fund investment in portfolio investment and I understand the importance of bonds and shares
2.	Understood the nature of capital budgeting and cash flow and The concepts of Net Present Value, Internal Rate of Return and Project Selection are understandable
3.	Understood the importance of Financial leverage and Operating leverage is familiar. And I can understand the concepts of Dividend Policy and share split
4.	Understood the concepts, needs, determinants and issues of Working Capital Management is easy for me and I can understand the Inventory Management Trade Credit, Bank Finance and Commercial Paper
5.	Understood the concepts of Lease, Hire Purchase, Venture Capital and Private Equity is simple for me and I have attained a practical knowledge in Stock Market New Issues, Long Term Finance and Debentures.
6.	Possess the techniques of managing finance in an organization

Name : SHOBANA DEVI T

Dept: M.B.A. Sem : 2

Subject : MARKETING MANAGEMENT(20MB206)

Sl.No.	Question
1	I am familiar with the concepts, objectives and conceptual framework of marketing and I understand the meaning of marketing interface and prospects and challenges of Global Marketing Environment
2.	I am able to formulate and analyze Marketing Strategies for Consumer, Industrial and Service Marketing and I know how to analyze the competitor with the Strategic Marketing Mix components
3.	I know how to develop new product and to segment target and positioning and I know how to produce advertisement in different media and I understand pricing objectives policies and methods
4.	I understand individual and industrial, online buyer behavior models and I know how to build and measure customer satisfaction, acquisition, retaining and defection
5.	I am familiar with the Marketing Information system and Research Process in retail and sales promotion and I understand ethics in Marketing and online marketing Trends

Name : SOWNTHARIYA T

Dept: M.B.A. Sem : 2

Subject : OPERATIONS RESEARCH FOR MANAGEMENT(20MB201)

Sl.No.	Question
1	Understood the graphical and simplex method
2.	Understood about transportation and assignment models
3.	Know well about game theory, dominance and graphical technique
4.	Understood the inventory models, EOQ and EBQ
5.	Know well about queueing theory, replacement model and group replacement model

K.L.N. College of Engineering
Course Outcome
Academic Year : 2020 - 2021, Session : Winter

Name : DR. K.S. HARIHARAN

Dept: M.B.A. Sem : 1

Subject : ECONOMIC ANALYSIS FOR BUSINESS(20MB101)

Sl.No.	Question
1	I have understood the concepts of Micro and Macro Economics
2.	I learnt the association between Consumer and Producer Behavior with Cost and Production Function
3.	I have learnt the relation between Product and Factor Market consists of Land, Labor, Capital and Technology
4.	I have understood the concept of Macro Economics and its performance with Aggregate Demand and National Income
5.	I have understood the concept of Aggregate Supply with Okunâ€™s Law and Philips Curve

Name : DR. K.S. HARIHARAN

Dept: M.B.A. Sem : 1

Subject : BUSINESS DATA ANALYSIS - 1(20MB1E1)

Sl.No.	Question
1	I have learnt the purpose and application of Excel
2.	I understood the concept of Cell Reference and Basic Macros in Excel
3.	I have learnt Excel Documentation and Troubleshooting in Excel
4.	I have learnt and understood the logical functions in Excel
5.	I have learnt the Cell Formatting functions and data analysis using Excel

Name : DR. R.S. BALASENTHIL

Dept: M.B.A. Sem : 1

Subject : BUSINESS DATA ANALYSIS - 1(20MB1E1)

Sl.No.	Question
1	I have learned the purpose and application of Excel
2.	I understood the concept of cell reference and basic macros in Excel
3.	I have learned Excel documentation and troubleshooting in Excel
4.	I have learned and understood the logical functions in Excel
5.	I have learned the cell formatting functions and Data analysis using Excel

Name : DR. R.SELVARANI

Dept: M.B.A. Sem : 1

Subject : STATISTICS FOR MANAGEMENT(20MB105)

Sl.No.	Question
1	understand basic concepts of probability, random variables and apply probability distributions in problems arise in business

2.	Apply the concept of testing of hypothesis for large samples using z-test in real life problem
3.	Apply the concept of testing hypothesis for large samples using t-test, F-test in real life problems
4.	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
5.	Apply the non-parametric tests for testing the independence of attributes between samples and to test whether two samples are derived from the same population.

Name : DR. S.N.R. SRIKUMAR

Dept: M.B.A. Sem : 1

Subject : LEGAL ASPECTS OF BUSINESS(20MB104)

Sl.No.	Question
1	Understood the essentials elements and types of a contract & aware of Contract Of Agency
2.	Understood Negotiable Instruments Act 1881 & understood Nature and types of companies
3.	Learned the provisions of Industrial Law
4.	Learned the concepts of Corporate Tax Planning & GST
5.	Aware of Consumer Protection Act, Intellectual Property Rights and Cyber Law

Name : PALANIVEL RAJAN B

Dept: M.B.A. Sem : 1

Subject : MANAGEMENT CONCEPTS & ORGANIZATIONAL BEHAVIOR(20MB102)

Sl.No.	Question
1	Able to understand the general principles of management and planning function
2.	Able to understand the organizational structure and controlling functions
3.	Understood the concept of organisational behaviour and individual behaviour
4.	Understood about the Team building and group dynamics, culture and changes in organisation
5.	Learnt about styles and theories of leadership and motivation

Name : RAMKUMAR T S

Dept: M.B.A. Sem : 1

Subject : MANAGEMENT CONCEPTS & ORGANIZATIONAL BEHAVIOR(20MB102)

Sl.No.	Question
1	Able to understand the general principles of management and planning function
2.	Able to understand the organizational structure and controlling functions
3.	Understood the concept of organizational behavior and individual behavior
4.	Understood about the Team building and group dynamics, culture and changes in organization
5.	Learnt about styles and theories of leadership and motivation

Name : SHANTHI B

Dept: M.B.A. Sem : 1

Subject : ACCOUNTING FOR MANAGEMENT(20MB103)

Sl.No.	Question
1	Able to understand the Accounting concepts & able to calculate the Profit & Loss Accounts of the company
2.	Able to calculate Current Assets and Current Liabilities Ratios & can do the project in Performance analysis of the company by using ratio analysis
3.	Learnt the cost sheet & able to ascertain the cost per unit
4.	Able to take a decision whether we have to go for purchase / production the goods (Make or Buy Decision)
5.	Learnt about TALLY & know to operate the TALLY regarding the company accounts

Name : SHANTHI B

Dept: M.B.A. Sem : 1

Subject : MANAGEMENT CONCEPTS & ORGANIZATIONAL BEHAVIOR(20MB102)

Sl.No.	Question
1	Able to understand the general principles of management and planning function
2.	Able to understand the organizational structure and controlling functions
3.	Understood the concept of organisational behaviour and individual behaviour
4.	Understood about the Team building and group dynamics, culture and changes in organisation
5.	Learnt about styles and theories of leadership and motivation

Name : SOMAS KANDAN R

Dept: M.B.A. Sem : 1

Subject : INFORMATION MANAGEMENT(20MB106)

Sl.No.	Question
1	Able to understand the concept of Information Management
2.	Able to perform database Management systems
3.	Able to identify the Cyber crimes for Computer
4.	Able to understand the concept of ERP
5.	Able to explain the applications of SCM

MCA Regulation 2020 - Syllabus

I SEMESTER MCA

Sl. No.	Course Code	Course Name	Course Outcome (CO)
1	20MC101	MATHEMATICAL FOUNDATIONS FOR COMPUTER APPLICATIONS	• Understand the basic knowledge of matrix, Rank of a Matrix, Find inverse of a Matrix. • Apply the set theory, functions and relations concepts needed for designing and solving problems. • Acquire the knowledge of logical operations needed for computing skill. • Find PCNF & PDNF and conversion. Apply predicate calculus. • Analyse the acquired knowledge of formal languages to the engineering areas like Compiler Design. • Apply finite automata theory and design discrete problems to solve by computers.
2	20MC102	DATABASE MANAGEMENT SYSTEMS	• Distinguish different data models and analyze how data is represented in each model • Design database using ER diagram and mapping ER diagram into relations • Construct simple database applications using normalization • Analyze the requirements of transaction processing and implementing concurrency control among transactions • Create indexing structures for quick retrieval of data • Demonstrate the use of modern tools for special purpose databases
3	20MC103	COMPUTER ORGANIZATION	• Solve using laws of Boolean algebra and Karnaugh map method • Construct various combinational and sequential circuits

			• Examine the various addressing modes • Illustrate the flow of Pipelines and their Hazards • Compare the various mapping policies used in cache memories • Analyze the various types of I/O transfers
4	20MC104	OPERATING SYSTEMS	• Apply the concept of OS services, process concepts and process synchronization. • Examine classical problems of synchronization. • Analyse CPU scheduling algorithms and Deadlock concepts. • Apply memory management concepts and techniques for an appropriate OS. • Analyse disk structure and their disk scheduling algorithms. • Apply the concepts of file and directories for the relevant OS.
5	20MC105	PROGRAMMING IN JAVA	• Interpret Java programs using Object Oriented Programming principles • Create simple applications using class hierarchy, Interfaces, packages • Apply parallel processing using threads and analyse runtime exceptions arise in applications • Apply I/O, Util packages, database connectivity for computing • Design Window based applications • Analyze and apply suitable Sockets for client and Server Programming
6	20RM101	RESEARCH METHODOLOGY AND IPR	• Understand research problem formulation. • Analyze research related information. • Follow research ethics. • Understand that today's world is controlled by Computer,

			Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity. • Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasize the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular. • Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.
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MCA Regulation 2020 - Syllabus

II SEMESTER MCA

Sl. No.	Course Code	Course Name	Course Outcome (CO)
1	20MC201	COMPUTER NETWORKS	• Analyse about functionalities and protocols of various layers of networks using different topologies. • Analyse Local Area network with various connecting components using transmission media. • Apply appropriate technologies to connect the hosts to network. • Examine suitable internetworking routing algorithms for a given network. • Apply suitable end-to-end protocols using congestion control mechanism. • Analyse various application protocols and assess its security issues in network
2	20MC202	SOFTWARE ENGINEERING	• Understand the problem domain to choose process models and to develop SRS

			• Analyze the software projects models using appropriate design notations • Measure the product and process performance using various metrics • Analyze the importance of software testing • Evaluate the system with various testing techniques, strategies and to identify how the SCM tools are used in software development. • Analyze, design, verify, validate, implement, and maintain software systems.
3	20MC203	PYTHON PROGRAMMING	• Understand and Implement OOP techniques in Python • Apply various Data Structures in a simplified way • Use Python with Databases • Apply Modules Files in Python Programs • Design Window based applications • Design and Solve Problems and explore real world challenges.
4	20MC204	DATA STRUCTURES AND ALGORITHMS	• Demonstrate the operations of Linear and Non Linear Data Structures • Construct Linear and Non Linear Data Structure based according to user needs • Compare the various sorting and searching techniques • Examine different algorithm design strategies • Analyse and calculate the Efficiency of given algorithm. • Apply the Algorithm design techniques to real world problems
5	20MC2E1	WEB PROGRAMMING ESSENTIALS	• Outline the basic concepts of information and web architecture. • Understand the skills that will enable to design and build high level web applications. • Study Hyper Text Markup language and create website using

			Html, CSS. - Analyze the latest programming language for the implementation of object based and - procedure based applications. - Understand the applicability of Java Script. - Implement PHP language to develop real world complex applications.
6	20MC2E5	HUMAN RESOURCE MANAGEMENT	- Illustrate the primary external influences affecting HRM. - Use the components and the goals of staffing, training and development. - Sequence the Recruitment and selection procedure in various organizations. - Apply Performance Evaluation Methods for Employees in an Organization - Use the Rewards and Benefits of the Employee in the Organization. - Examine the Issues involved in Safe and Health Work Environment

MCA Regulation 2020 - Syllabus

III SEMESTER MCA

Sl. No.	Course Code	Course Name	Course Outcome (CO)
1	20MC301	WEB APPLICATION DEVELOPMENT	- Implement web applications using J2EE technologies for the given problem - Compare the architecture of Spring, Struts Hibernate and Django Framework - Use frameworks to Design applications according to customer needs - Implement better Web apps more quickly and with less code using frameworks - Examine the main features of

			Spring, Struts Hibernate and Django Framework • Construct Internet systems for enhancing education and engineering design
2	20MC302	MOBILE COMPUTING	• Illustrate the Wireless Communication Fundamentals and their Architectures • Apply the WLAN Equipment, Topologies and their Technologies for short range Networks • Examine the Bluetooth Architecture and their Protocols • Use Packet Delivery and Handover Management in IP Network Layer • Compare the different types of TCP • Apply Mobile Application Development using Android
3	20MC303	CLOUD AND BIG DATA ANALYTICS	• Identify the architecture, infrastructure, models and services of cloud computing, • virtualization concept, security in cloud computing, apply suitable virtualization concept and • analyze appropriate services for cloud environment. • Understand big data platform, big data framework, data analysis tools, statistical concepts and • analyze the various mining streams and apply for big data. • Analyze the big data analytic techniques and apply for Real Time Sentiment Analysis, Stock • Market Predictions. • Analyze the HADOOP and Map Reduce technologies associated with big data analytics.
4	20MC304	SOFTWARE PROJECT MANAGEMENT	• Apply the activities during the project scheduling of any software application • Analyze the risk management activities and the resource allocation for the projects

			• Evaluate the software estimation and recent quality standards for evaluation of the software • projects • Assess the knowledge and skills needed for the construction of highly reliable software • project • Create reliable, replicable cost estimation that links to the requirements of project planning and managing • Compare various Globalization issues in project management
5	20MC3E2	DATA MINING AND DATA SCIENCE	• Apply data mining tools and techniques in building intelligent machines • Analyze various data mining algorithms in applying in real time • Demonstrate the data mining algorithms to combinatorial optimization problems • Evaluate mining techniques like association, classification and clustering on transactional databases. • Apply various Machine learning Algorithms to different applications • □ □ Outline various clustering methods and Analyze
6	20MC3E5	SERVICE ORIENTED ARCHITECTURE	• Illustrate the need of various XML Technologies in SOA • Demonstrate the Serviced Oriented Architecture and the composition of Web Service in it • Illustrate how the various Web Service Standards are related to each other in SOA • Compare SOA support in .NET and J2EE • Construct web services according to user needs using J2EE and .NET

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V SEMESTER MCA

Sl. No.	Course Code	Course Name	Course Outcome (CO)
1	MC5501	Cloud Computing	• Compare the strengths and limitations of cloud computing • Identify the architecture, infrastructure and delivery models of cloud computing • Apply suitable virtualization concept. • Choose the appropriate cloud player, Programming Models and approach. • Address the core issues of cloud computing such as security, privacy and interoperability.Design Cloud Services and Set a private cloud
2	MC5502	BIG DATA ANALYTICS	• Work with big data platform and Understand the fundamentals of various big data analysis techniques • Analyze the big data analytic techniques for useful business applications. • Design efficient algorithms for mining the data from large volumes. • Analyze the HADOOP and Map Reduce technologies associated with big data analytics Explore the applications of Big Data
3	MC5503	SOFTWARE TESTING AND QUALITY ASSURANCE	• Able to test the software by applying various testing techniques. • Able to debug the project and to test the entire computer based systems at all levels. • Able to test the applications in the specialized environment using various automation tools. • Able to evaluate the web

			applications using bug tracking tools. • Able to apply quality and reliability metrics to ensure the performance of the software
4	MC5009	HUMAN RESOURCE MANAGEMENT	• Identify the primary external influences affecting HRM. • Outline the components and the goals of staffing, training and development. • Understand the selection procedure in various organizations. • Understand the practices used to retain the employees and able to evaluate their performance. • Able to identify the stress and the cause of burn out
5	MC5012	SERVICE ORIENTED ARCHITECTURE	• Able to know the structure of XML and to design and store data in XML • Able to apply SOAP , HTTP and UDDI services in the web applications. • Able to apply SOA architecture and the underlying design principles for the web projects • Able to understand the role of SOA in J2EE and .NET. • Able to know the cloud computing architecture and the types of clouds