



M.V.S.R ENGINEERING COLLEGE, NADERGUL
Department of Electrical & Electronics Engineering
CO Statements

ACADEMIC YEAR: 2017-18	
I SEM (I YEAR I SEM)	
COURSE CODE	COURSE NAME
BS 101 MT	ENGINEERING MATHEMATICS.I
BS 101 MT.1	Solve some problems based on the concept of convergence and divergence of infinite series and apply the various tests of convergence to determine the nature of an infinite series
BS 101 MT.2	Solve problems based on the fundamental theorems of differential calculus, expanding functions using Taylor's & McLaurin's series and solve problems on finding Radius of curvature, evolutes and envelopes
BS 101 MT.3	Evaluate limits, Continuity and derivatives of functions of two variables, Maxima & Minima for functions of two or more variables arising in Engineering Problems.
BS 101 MT.4	Evaluate double and triple integrals and solve problems based on vector differentiation and vector integration.
BS 101 MT.5	Solve problems based on the concepts of rank of a matrix, Eigen values, vectors and some concepts of linear algebra such as vector spaces, basis, dimension and linear transformations.
BS 102 PH	ENGINEERING PHYSICS.I
BS 102 PH.1	Define, Classify and Illustrate the phenomena of interference and diffraction of light.
BS 102 PH.2	Define polarization of light, optical activity and apply their principles to construct Nicol's Prism and Polarimeter; Explain the principle of Laser & Holography;
BS 102 PH.3	Explain the principle and application of optical fibers; Classify optical fibers; Summarize the production, detection, properties and applications of Ultrasonics.
BS 102 PH.4	Define and Compare statistical distribution laws; Extend to black body radiation.
BS 102 PH.5	Recall the principles of quantum mechanics and apply them to solve particle in a box; List the fundamental laws of electricity and magnetism; Make use of these laws to derive Maxwell's electromagnetic wave equation and Poynting theorem.
BS 103 CH	ENGINEERING CHEMISTRY.I
BS 103 CH.1	Apply the knowledge of thermodynamic principles to determine the feasibility of chemical and physical processes.
BS 103 CH.2	Extend the concept of the phase rule in separation of pure metals from alloys and molten solutions and identify alloy as safety fuses and solders.
BS 103 CH.3	Identify the impurities present in water, the problems associated with hard water and utilize the principles and techniques involved in water treatment (analysis) to purify water for domestic and industrial purposes.
BS 103 CH.4	of polymers and the need for replacement of conventional materials with Polymers in engineering applications.
BS 103 CH.5	Classify Lubricants; Refractories, clay products and explain their properties, their use in engineering applications.

ES 104 CE	ENGINEERING MECHANICS.I
ES 104 CE.1	Resolve forces acting on a body,obtain resultant force or moment acting due to set of forces and moments acting on a body and determine unknown forces from equations of equilibrium of forces and moments
ES 104 CE.2	Obtain location of centres of mass of regular and composite shapes, use Pappus theorems to calculate surface areas and volumes of composite structures
ES 104 CE.3	Distinguish between static and kinematic friction, determine effect of static or kinematic friction forces acting on a single or a system of connected bodies,effect of friction in screw jack,wedge,brakes and belt transmission
ES 104 CE.4	Compute area moment of inertia and products of inertia for simple and composite elements using integration methods and transform theorem, calculate mass MI and radius of gyration for regular and composite structures
ES 104 CE.5	Obtain displacement, velocity and acceleration relations of particles in rectilinear and curvilinear motion including projectiles,write equations of motion under influence of forces for particles and connected bodies and for plane motion of rigid bodies
ES 104 CE.6	Apply Principles of work and energy to motion of particle or connected bodies to evaluate the velocities and angular velocities of bodies in connected systems and involving plane motion
ES 104 CE.7	Apply Principle of conservation of Momentum and impulse force/moment to evaluate the velocities of a body after application of force/moment, and of bodies in impact/collision considering Coefficient of Restitution
ES 105 CS	COMPUTER PROGRAMMING AND PROBLEMS SOLVING
ES 105 CS.1	Understand the architecture of a computer; design strategies for solving basic programming problems; concepts of primitive datatypes, operators.
ES 105 CS.2	Apply concepts of selection statements, loops and functions to write C programs.
ES 105 CS.3	Understand the concepts of arrays and apply them to implement searching and sorting applications.
ES 105 CS.4	Understand the dynamic of the memory through pointers and distinguish between call by value and call by reference
ES 105 CS.5	learn concepts of strings.
ES 105 CS.6	Understand the concepts of derived data types and write programs on structures and unions
ES 105 CS.7	Apply the concepts of file handling operations.
MC 106 EG	ENGINEERING ENGLISH
MC 106 EG.1	Learn the importance of communication Skills and its role and Importance and usage in verbal and non-verbal communication appropriately.
MC 106 EG.2	Able to understand the Importance of listening skills in the effective communication and the models of interpersonal development.
MC 106 EG.3	Able to apply writing techniques to develop a passage, draft an essay, make a précis and construct general reports, Business communication
MC 106 EG.4	use appropriate idiomatic expressions, one-word substitutes, Development of vocabulary.
MC 106 EG.5	improve reading comprehension skills by reading inspirational texts and infer information.
BS 151 PH	ENGINEERING PHYSICS LAB.I
BS 151 PH.1	Demonstrate the phenomena of interference and determine the wavelength of a given light source.

BS 151 PH.2	Demonstrate the phenomena of diffraction and determine the wavelength of a given light source .
BS 151 PH.3	Explain the principle of laser and determine the wavelength of a given laser source.
BS 151 PH.4	losses of a given fiber.
BS 151 PH.5	Illustrate Malus law of polarization of light.
BS 151 PH.6	Determine the specific rotatory power of an optically active substance using polarimeter.
BS 152 CH	ENGINEERING CHEMISTRY LAB.I
BS 152 CH.1	Utilize analytical laboratory skills for performing chemical analysis and its data compilation individually or in teams for resolving related problems in day to day life.
BS 152 CH.2	Make use of titrimetric principles in preparation, standardisation and estimation of unknown chemical samples.
BS 152 CH.3	Identify and determine hardness causing impurities present in hard water by complexometric method.
BS 152 CH.4	Explain causes for carbonate and bicarbonate alkalinity of water and estimate their concentration in alkaline water.
BS 152 CH.5	Estimate quantitatively species like Fe ⁺² , Fe ⁺³ , Cr ⁺³ , Mn, present in unknown complex mixtures like ores, alloys by titrimetric methods.
ES 153 CE	ENGINEERING GRAPHICS.I
ES 153 CE.1	The student would be able to recall the mathematical concepts related to scales, conic sections, involutes, etc and demonstrate proficiency in construction of these using the various methods described in literature.
ES 153 CE.2	The student would be able to analyse the various tools in AUTOCAD and utilize them for drawing of problems related to scales, conic sections, cycloids, etc..
ES 153 CE.3	The student would be able to analyse the position of points and lines when placed in different orientations with respect to reference planes and reproduce them using AUTOCAD.
ES 153 CE.4	The student would be able to draw the various views of planes when in simple position and in oblique positions using AUTOCAD.
ES 153 CE.5	The student would be able to assess the shapes of objects such as prisms, pyramids and solids of revolution and analyse their projections when they are placed in different orientations with reference planes. Subsequently the students would be able to draw these projections using AUTOCAD.
ES 154 CS	COMPUTER PROGRAMMING LAB
ES 154 CS.1	Understand the procedure to create, compile and execute C program for different inputs.
ES 154 CS.2	Apply concepts of selection and looping statements
ES 154 CS.3	apply concepts of functions to increase the modularity of the program and re usability.
ES 154 CS.4	Apply array concepts to implement different concepts like searching, sorting, matrix multiplication and many more.
ES 154 CS.5	Apply pointers concepts to access variables through address and understand the dynamic memory allocation.
ES 154 CS.6	Apply derived data types using structures and unions.

ES 155 ME	ENGINEERING WORKSHOP.I
ES 155 ME.1	The student would be able to utilize the various tools of smithy namely forge, tongs, fullers, flatters, swage block, chisels, anvil, hammers, etc to perform various forging operations on the work piece (job) like flattering, bending, upsetting, fullering, etc.
ES 155 ME.2	The student would be able to understand the different types of welding techniques like arc welding, gas welding, brazing, soldering, etc and prepare various weld joints like lap joint, butt joint, T joint, etc.
ES 155 ME.3	The student would be able to utilize the various tools of machining namely lathe machine, cutting tools (single point cutting tool, knurling tool, parting tool, etc) to perform various machining operations like turning, facing, drilling, boring, threading, knurling, etc.
ES 155 ME.4	The student would be able to utilize the various tools of plumbing namely pipe vice, hack saw, pipe cutter, wrench, dies, pipe fittings, etc to prepare various pipe joints.
MC 156 EG	ENGINEERING ENGLISH LAB
MC 156 EG.1	Learn the sound system of English Language with the knowledge of IPA-classification & description
MC 156 EG.2	earn the word stress & aspects of connected speech
MC 156 EG.3	learn the Rhythm & Intonation of English language
MC 156 EG.4	Improve the fluency in the spoken form of the language by participating in Presentation skills, Public speaking, Group Discussion and Debate.
MC 156 EG.5	learn to dictionary and thesaurus effectively in an appropriate way.
II SEM (I YEAR II SEM)	
COURSE CODE	COURSE NAME
BS 201 MT	ENGINEERING MATHEMATICS.II
BS 201 MT.1	Solve various types of First ordered ordinary differential equations and apply these techniques for solving some problems in Geometry, Electricity, Heat transfer and Radio activity.
BS 201 MT.2	Solve higher ordered linear O.D.Es with constant Coefficients using various techniques.
BS 201 MT.3	Solve linear O.D.Es using power series and Frobenius methods and apply these methods for solving Legendres D.E.
BS 201 MT.4	Evaluate improper integrals using Beta and Gamma functions and solve Bessel's differential equations.
BS 201 MT.5	Solve some problems using the properties of Legendre polynomial and Bessel's functions.
BS 201 MT.6	Evaluate Laplace Transforms and inverse Laplace transforms of various functions and solve linear ordinary differential equations using Laplace transforms.
BS 202 PH	ENGINEERING PHYSICS.II
BS 202 PH.1	Explain Crystal structures, Crystal defects and Energy band formation in solids.
BS 202 PH.2	Classify magnetic materials and Explain properties; Identify applications of
BS 202 PH.3	Explain and Illustrate semiconducting materials along with their applications; Summarize dielectric materials and its applications.
BS 202 PH.4	Explain different techniques for characterization of materials; Outline the preparation methods of thin films and its applications.
BS 202 PH.5	Explain various properties of nanomaterials; Contrast their preparation methods and list out various applications of nanomaterials.derive Maxwell's electromagnetic wave equation and Poynting theorem.

BS 203 CH	ENGINEERING CHEMISTRY.II
BS 203 CH.1	Recall,relate and apply various parameters of electrodes and electrolytes such as conductance, conductivity, molar, equivalent conductance, electrode potentials, emf, pH and their measurements by constructing electrochemical cells using suitable
BS 203 CH.2	Explain the basic operating principles of primary, secondary batteries, fuel cells, solar cells – their design, similarities, differences and applications.
BS 203 CH.3	List types of corrosion; explain their mechanism, factors affecting the rate of corrosion and apply the knowledge of various corrosion control methods for protection of metals.
BS 203 CH.4	Classify chemical fuels, calculate calorific value, air quantities required for combustion of fuels, explain analysis of coal, refining of petroleum, cracking of
BS 203 CH.5	List types of composites; liquid crystals,identify their advantages, engineering applications in day to day life and relate concept and principles of green chemistry for design and manufacturing of engineering materials.
HS 204 EG	BUSINESS COMMUNICATION AND PRESENTATION SKILLS
HS 204 EG.1	know the importance of Business Communication, ABC of Technical Communication, and Channels of Communication appropriately
HS 204 EG.2	learn models of Interpersonal Communication, Styles of Communication, Teamwork, Persuasion Techniques, Mobile phone and E-mail Etiquette and Time management
HS 204 EG.3	learn the differences between Technical and General writing, Report-writing, and drafting Scientific Papers.
HS 204 EG.4	learn how to draft an SoP, Job application, Cover letter, Business letters, Agenda, and Minutes of Meeting.
HS 204 EG.5	plan and prepare to face Interviews and participate in Group Discussions
ES 965 ME	ELEMENTS OF MECHANICAL ENGINEERING
ES 965 ME.1	The student would be able to correlate the laws of thermodynamics with the fundamental conceptual terminologies like properties, systems, processes, cycles, states, different types of equilibrium, energy, etc and solve related problems..
ES 965 ME.2	Classify the different modes of heat transfer, analyze the governing equations, understand the applications of heat exchangers and solve related problems.
ES 965 ME.3	The student would be able to assess the relevance of different refrigeration systems with respect to their eco
ES 965 ME.4	Classify different manufacturing processes like forging, welding, forming, machining, etc and recognize their suitability.
ES 965 ME.5	The student would be able to understand the different types of power transmission systems like gears, gear trains, belts, ropes etc with emphasis on their kinematic mechanisms and solve related problems.
ES 933 EC	ELECTRONIC ENGINEERING.I
ES 933 EC.1	Interpret the characteristics of diodes to evaluate the diode parameters and apply diode models to analyze the applications of diodes.
ES 933 EC.2	Identify the merits and demerits of various filters, formulate and design rectifier circuits with filters.
ES 933 EC.3	Discriminate the BJT configurations to recognize appropriate transistor configuration for any given application and design the biasing circuits with good stability.
ES 933 EC.4	Analyze and compare the performance of BJT amplifiers with various biasing
ES 933 EC.5	Distinguish the principles of BJT & FET, comprehend the characteristics of FET and design biasing circuits for FET amplifiers.

BS 251 PH	ENGINEERING PHYSICS LAB.II
BS 251 PH.1	Examine the nature of ferromagnetic materials using B-H curve experiment.
BS 251 PH.2	Analyze the semiconducting device and calculate temperature co-efficient of resistance.
BS 251 PH.3	Inspect the characteristics of photo voltaic cell and evaluate the efficiency.
BS 251 PH.4	Analyze the semiconducting device and calculate the energy gap.
BS 251 PH.5	Experiment with a junction diode and calculate its resistance under forward and reverse bias.
BS 251 PH.6	Examine the nature of dielectric materials and evaluate their related parameter.
BS 252 CH	ENGINEERING CHEMISTRY LAB.II
BS 252 CH.1	Extend the knowledge of electroanalytical techniques like Conductometry, Potentiometry, pHmetry and Colorimetry for performing chemical analysis and its data compilation individually or in teams for analyzing physical properties of engineering materials used in daily life.
BS 252 CH.2	Estimate strength of weak acids, strong acids or acids present in mixtures by Conductometric, Potentiometric titrations.
BS 252 CH.3	Determine the strength of reducing agents like Fe ⁺² present in unknown sample solutions by Potentiometry.
BS 252 CH.4	Analyze acids quickly and accurately using pHmetry.
BS 252 CH.5	Test and determine chemical species like Iron and Manganese present in unknown complex mixtures or ores by Colorimetric method.
ES 930 CS	COMPUTER SKILLS LAB
ES 930 CS.1	Identify assemble and disassemble the components of Personal Computer (PC) System.
ES 930 CS.2	Install the operating system.
ES 930 CS.3	Create Documents using MS WORD and spread sheets using MS EXCEL
ES 930 CS.4	Design presentations using MS POWER POINT
ES 930 CS.5	Develop a website using HTML
ES 930 CS.6	Use Documentation Tool LATEX to create reports, books, articles in standard formats.
HS 253 EG	COMMUNICATION SKILLS LAB LAB
HS 253 EG.1	use dialogues in a variety of situations and settings such as Role Play
HS 253 EG.2	make effective Presentations using multi-media and overcome stage fright
HS 253 EG.3	learn the art of planning and making a Public Speech.
HS 253 EG.4	participate in Group Discussions and Debates
HS 253 EG.5	face Interviews effectively.
ES 255 ME	ENGINEERING WORKSHOP.II
ES 255 ME.1	The student would be able to utilize the various tools of smithy namely forge, tongs, fullers, flatters, swage block, chisels, anvil, hammers, etc to perform various forging operations on the work piece (job) like flatterring, bending, upsetting, fullering, etc
ES 255 ME.2	The student would be able to understand the different types of welding techniques like arc welding, gas welding, brazing, soldering, etc and prepare various weld joints like lap joint, butt joint, T joint, etc.
ES 255 ME.3	The student would be able to utilize the various tools of machining namely lathe machine, cutting tools (single point cutting tool, knurling tool, parting tool, etc) to perform various machining operations like turning, facing, drilling, boring, threading, knurling, etc.

ES 255 ME.4	The student would be able to utilize the various tools of plumbing namely pipe vice, hack saw, pipe cutter, wrench, dies, pipe fittings, etc to prepare various pipe joints. Subsequently the student would be able to estimate how to prepare pipe connections for domestic and industrial applications.
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III SEM (II YEAR I SEM)

COURSE CODE	COURSE NAME
BS 301 MT	ENGINEERING MATHEMATICS.III
BS 301 MT.1	Solve problems based on differentiation and line integration of complex functions.
BS 301 MT.2	Develop Taylor's and Laurent's series for a given complex function and explain some standard conformal transformations and application of the theory of residues.
BS 301 MT.3	Develop a Fourier series for a given function in various Intervals.
BS 301 MT.4	Solve problems on formation of partial differential equations and on some standard first ordered and higher ordered linear partial differential equations.
BS 301 MT.5	Apply the theory of Fourier series to some boundary value problems associated with one - dimensional wave, heat and Laplace's Equation.
ES 322 EC	ELECTRONIC ENGINEERING.II
ES 322 EC.1	Identify the type of negative feedback, Analyze and design negative feedback amplifiers
ES 322 EC.2	Design Audio Frequency and Radio Frequency oscillators using BJT.
ES 322 EC.3	Explain the working of differential amplifier, and importance of CMRR.
ES 322 EC.4	Distinguish the classes of Power Amplifiers and their design considerations.
ES 322 EC.5	Differentiate the performance of non linear and linear wave shaping circuits like Integrator, Differentiator, Clipper and clamper circuits.
ES 323 ME	PRIME MOVERS AND PUMPS
ES 323 ME.1	The student would be able to get a quick look into the fundamental aspects of fluid mechanics with basic knowledge required to conduct preliminary calculations applied to fluid machinery.
ES 323 ME.2	The student would be able to understand the basic types of hydraulic turbines, their components, operation and their rated and off design performance characteristics.
ES 323 ME.3	The student would be able to understand the working principle of reciprocating pumps and centrifugal pumps, their performance over wide range of operations and about the negative effects of cavitation on pump performance.
ES 323 ME.4	The student would be able to explain the basic principles involved in the steam formation, types of steam boilers and principles of steam engines.
ES 323 ME.5	The student would be able to familiarize with the basic knowledge of working of steam turbine, gas turbine and methods of improving their efficiency.
PC 301 EE	ELECTRICAL CIRCUITS.I
PC 301 EE.1	Apply circuit analysis methods to solve electrical circuits.
PC 301 EE.2	Apply sinusoidal phasor concepts to solve AC circuits.
PC 301 EE.3	Analyze three phase balanced and unbalanced circuits.
PC 301 EE.4	Apply network theorems to solve circuits. Formulate different matrices based on Graph theory
PC 301 EE.5	Understand resonance, mutually induced EMF concepts and solve electrical circuits.

PC 302 EE	ELECTROMAGNETIC FIELDS
PC 302 EE.1	Apply Electrostatic laws to calculate electric field due to different configurations.
PC 302 EE.2	Find electric field and capacitance including dielectric media effect.
PC 302 EE.3	Apply Magneto static laws and calculate inductance of different configurations.
PC 302 EE.4	Modify Maxwell's equations for time varying fields and their applications to solve problems.
PC 302 EE.5	Formulate wave equations and estimate Electromagnetic power.
PC 303 EE	DIGITAL ELECTRONICS AND LOGIC DESIGN
PC 303 EE.1	Apply basic Boolean Operators and construct Karnaugh Maps to simplify Boolean expressions.
PC 303 EE.2	Understand principles of IC families and construct combinational logic circuits.
PC 303 EE.3	Understand and apply different number systems to perform mathematical operations required for digital circuits
PC 303 EE.4	Design Asynchronous and Synchronous sequential circuits using flip-flops
PC 303 EE.5	to analyze various Digital to Analog Convertor circuits using Op-amps, various Analog to Digital Convertor methods.
MC 916 CE	ENVIRONMENTAL SCIENCES
MC 916 CE.1	To know the importance of natural resources (Water and land), Energy resources, floods, drought, impact of modern agriculture, land degradation.
MC 916 CE.2	To understand basic concepts of an ecosystem and its importance
MC 916 CE.3	To understand importance of biodiversity and need for its conservation
MC 916 CE.4	To study different types of environmental pollution, their causes, effects and control measures and need for environmental legislation.
MC 916 CE.5	To critically analyze global environmental issues, social aspects including population growth, disaster management.
ES 361 ME	MECHANICAL ENGINEERING LAB
ES 361 ME.1	To correlate the performance parameters of 4-stroke petrol engines, 4- stroke diesel engines and reciprocating air compressors with respect to theoretical analysis and experimental values.
ES 361 ME.2	To assess the variation in flow measurements with respect to theoretical and actual values for venturimeters, orifice meters and pitot tubes.
ES 361 ME.3	To assess the variation of viscosity of various oils with temperature and also determine their flash and fire points
ES 361 ME.4	Analyze the performance parameters related to various modes of heat transfer and compare with their theoretical values.
ES 361 ME.5	Evaluate the performance parameters of rotodynamic pumps and Turbines and compare with their theoretical values.
ES 362 EC	ELECTRONICS ENGINEERING LAB
ES 362 EC.1	Analyze V-I characteristics of two terminal diode and three terminal BJT, FET.
ES 362 EC.2	Design and analyze various applications of diode like rectifier with and without filter, clipper and clamper circuits to generate required waveforms.
ES 362 EC.3	Analyze frequency response of single and two stage RC coupled amplifier at low frequency, mid frequency and high frequency and compare their bandwidths
ES 362 EC.4	Differentiate Negative feed amplifiers at low frequency, mid frequency and high frequency and compare their bandwidths
ES 362 EC.5	Distinguish various oscillator circuits with respect to frequency of oscillations

IV SEM (II YEAR II SEM)

COURSE CODE	COURSE NAME
BS 401 MT	ENGINEERING MATHEMATICS.IV
BS 401 MT.1	Evaluate Fourier Transforms and inverse Fourier sine and cosine transforms of various functions.
BS 401 MT.2	Apply the basic definitions and properties of Z-n transforms for solving difference equations.
BS 401 MT.3	Apply the Numerical methods for solving algebraic, transcendental equations, system of linear equations and initial value problems for first ordered ordinary differential equations.
BS 401 MT.4	Apply interpolation methods for estimation.
BS 401 MT.5	Apply method of least squares for curve fitting, computing correlation coefficient and obtain lines of regression for given data.
BS 401 MT.6	Solve problems based on conditional probability, Baye's theorem, some continuous distributions and Tests of significance for small samples.
PC 401 EE	ELECTRICAL CIRCUITS.II
PC 401 EE.1	Explain Crystal structures, Crystal defects and Energy band formation in solids.
PC 401 EE.2	Classify magnetic materials and Explain properties; Identify applications of ferromagnetic materials and superconducting materials.
PC 401 EE.3	Explain and Illustrate semiconducting materials along with their applications; Summarize dielectric materials and its applications.
PC 401 EE.4	Explain different techniques for characterization of materials; Outline the preparation methods of thin films and its applications.
PC 401 EE.5	Explain various properties of nanomaterials; Contrast their preparation methods and list out various applications of nanomaterials.derive Maxwell's electromagnetic wave equation and Poynting theorem.
PC 402 EE	ELECTRICAL MACHINES.I
PC 402 EE.1	Student will have a thorough understanding about the energy conversion principles.
PC 402 EE.2	Illustrate construction, operation and winding diagrams of DC machines.
PC 402 EE.3	Illustrate the characteristics of DC generators and DC motors and judge their applications.
PC 402 EE.4	Demonstrate starting and speed control methods on DC motors
PC 402 EE.5	Evaluate performance of dc machines by conducting suitable tests
PC 403 EE	POWER SYSTEMS.I
PC 403 EE.1	List and analyze various conventional Energy Sources such as Thermal, Hydal, Nuclear and Gas Turbine Power Plants, describe their Operating Principles.
PC 403 EE.2	List and analyze different Nonconventional Energy Sources like Solar Energy and Wind Energy, describe their Operating Principles.
PC 403 EE.3	Differentiate various factors of Economics of power generation and analyze different Tariffs, determine voltage drops and losses in AC & DC Distributors.
PC 403 EE.4	Analyze sags on overhead lines, Determine insulator string efficiency.
PC 403 EE.5	List and assess inductance, capacitance of Single phase and Three Phase Over Head Transmission Lines.
PC 404 EE	POWER ELECTRONICS
PC 404 EE.1	Differentiate construction, working and characteristics of various power electronic devices
PC 404 EE.2	Classify and apply triggering circuits , protection methods of SCR

PC 404 EE.3	Analyze single phase and three phase controlled rectifiers for R, RL and RLE loads
PC 404 EE.4	Illustrate and analyze various types of D.C choppers , a.c voltage controllers and cyclo converters.
PC 404 EE.5	Analyze single phase inverter , three phase inverter in 120degrees and 180degrees mode.
PC 405 EE	LINEAR INTEGRATED CIRCUITS
PC 405 EE.1	Understand the terminal characteristics of op-amps and design /analyze fundamental circuits based on op-amps.
PC 405 EE.2	Realize various linear and non-linear applications of Op-Amp.
PC 405 EE.3	Design and Formulate Op-Amp oscillators, Analyze the operation of the most commonly used D/A and A/D converter types.
PC 405 EE.4	Analyze a fixed voltage regulator and adjustable voltage regulators.
PC 405 EE.5	Design and compare Low pass, High pass, Band Pass and Band stop active filters.
HS 401 BM	MANAGERIAL ECONOMICS AND ACCOUNTANCY
HS 401 BM.1	There will be general exposure to the student about the business, economic, cultural and social environment and the structural aspects of Managerial Economics.
HS 401 BM.2	After analytically studied about different principles and laws of managerial economics student will be able to examine the consumer behaviour and take various managerial decisions, such as forecasting demand for new and existing goods and
HS 401 BM.3	By analyzing and examining various production function alternatives, the student will able to suggest the best profit maximizing production function to the producers/entrepreneurs.
HS 401 BM.4	With the knowledge of capital budgeting methods and techniques, the student can evaluate different business proposals and identify the best among them for prudent investment.
HS 401 BM.5	Different sources of capital shall be explored to the business and also students determine the financial viable sources of capital.
HS 401 BM.6	With the help of the accounting knowledge student will be able to analyse the business financial statements and interpret them for taking ideal managerial decisions.
PC 451 EE	DIGITAL ELECTRONICS AND INTEGRATED CIRCUITS LAB
PC 451 EE.1	Students will be able to Design circuits using operational amplifiers such as Clippers, Clampers and Filter circuits
PC 451 EE.2	Students will be able to Design and analyze pulse generator and delay using 555 timer
PC 451 EE.3	Students will be able to Design and explain OP Amp to generate sine waveform, Square wave form, Triangular waveforms
PC 451 EE.4	Students will be able to Design various combinational circuits using logic gates, sequential circuits using Flip-Flops.
PC 451 EE.5	Students will be able to Design A/D Converters.
PC 452 EE	COMPUTER AIDED ELECTRICAL DRAWING LAB
PC 452 EE.1	Identify and draw different components of electrical systems
PC 452 EE.2	Draw different control and wiring diagrams
PC 452 EE.3	Draw winding diagrams of electrical machines
PC 452 EE.4	Acquire knowledge on various Electrical Engineering Softwares

COURSE CODE	COURSE NAME
EE 301	POWER SYSTEMS.II
EE 301.1	Discriminate different transmission line models and find the performance of transmission lines.
EE 301.2	Compare and assess the reactive power compensation for voltage control.
EE 301.3	Change Single line diagram to p.u. system and perform balanced fault calculations.
EE 301.4	Apply symmetrical components to convert unbalanced power system faults and obtain sequence networks and perform fault calculations.
EE 301.5	Construct bewley lattice diagram to analyze transients in power systems.
EE 302	ELECTRICAL MACHINERY.II
EE 302.1	Judge the applications of 3-phase transformers and auto transformers
EE 302.2	Estimate the load shared by transformers under different conditions.
EE 302.3	Illustrate the principle of operation, characteristics of induction motor and estimate its performance.
EE 302.4	Justify various starting methods and perform speed control methods.
EE 302.5	Assess the effects of unbalanced operation and single phasing on electrical machines.
EE 303	POWER ELCTRONICS
EE 303.1	Differentiate construction, working and characteristics of various power electronic devices
EE 303.2	Classify and apply triggering circuits , protection methods of SCR
EE 303.3	Analyze single phase and three phase controlled rectifiers for R, RL and RLE loads
EE 303.4	Illustrate and analyze various types of D.C choppers , a.c voltage controllers and cyclo converters.
EE 303.5	Analyze single phase inverter , three phase inverter in 120degrees and 180degrees mode.
EE 304	DIGITAL ELECTRONICS AND LOGIC DESIGN
EE 304.1	Apply basic Boolean Operators and construct Karnaugh Maps to simplify Boolean expressions.
EE 304.2	Understand and apply different number systems to perform mathematical operations required for digital circuits.
EE 304.3	Understand principles of IC families and construct combinational logic circuits.
EE 304.4	Design Asynchronous and Synchronous sequential circuits using flip-flops
EE 304.5	Design Melay and Moore machine models and understand programmable logic devices
EE 305	LINEAR INTEGRATED CIRCUITS
EE 305.1	Understand the terminal characteristics of op-amps and design /analyze fundamental circuits based on op-amps.
EE 305.2	Realize various linear and non-linear applications of Op-Amp.
EE 305.3	Design and Formulate Op-Amp oscillators, Analyze the operation of the most commonly used D/A and A/D converter types.
EE 305.4	Analyze a fixed voltage regulator and adjustable voltage regulators.
EE 305.5	Design and compare Low pass, High pass, Band Pass and Band stop active filters.
EE 306	LINEAR CONTROL SYSTEMS
EE 306.1	Develop and analyze mathematical models open& closed loop systems
EE 306.2	Measure the Stability of Linear Control Systems using Time Domain and S-Plane based Approaches.
EE 306.3	Decide the Stability of Linear Control Systems using Frequency Domain Approach.

EE 306.4	Construct State space model and its solution using State Transition Matrix.
EE 306.5	Solving Discrete Control Systems using Z-Transform Models.
EE 331	ELECTRICAL MACHINES LAB.I
EE 331.1	Identify the conditions for voltage build up in a DC generator
EE 331.2	Compare the performance characteristics of various types of generators
EE 331.3	Compare the performance characteristics of various types of DC motors and judge their applications
EE 331.4	Demonstrate speed control methods on DC motors
EE 331.5	Perform the direct and indirect tests on DC motors and transformers to evaluate the performance.
EE 332	CONTROL SYSTEMS LAB
EE 332.1	Able to analyze the physical systems represented in Transfer function.
EE 332.2	Able to apply the control components like ac servo motor, synchro pair.
EE 332.3	Able to understand and comprehend the controller design both in time domain and frequency domain.
EE 332.4	and D.C position control systems.

III YEAR II SEM	
COURSE CODE	COURSE NAME
EE 351	DIGITAL SIGNAL PROCESSING
EE 351.1	Understand the basic operations on Discrete Time Signals and Classify a system as Linear Time-invariant/Variant, Stable/Unstable, causal/non-causal.
EE 351.2	Conclude DTFT to evaluate frequency response. Determine DFT using direct and FFT methods. Analyze Circular and Linear convolution and apply for linear filtering operations.
EE 351.3	Evaluate Z-transforms, Construct different forms of IIR and FIR filters.
EE 351.4	Formulate & apply Digital IIR filter design using Butterworth & Chebyshev approximations to Verify the characteristics of LPF, HPF, BPF & BEF
EE 351.5	Design & compare Digital FIR filters using various windows, Analyze the characteristics of various windows.
EE 352	ELECTRICAL MACHINERY.III
EE 352.1	Describe types of windings used in AC machines, define winding factors and explain suppression of harmonics in generated e m f .
EE 352.2	Demonstrate various tests on salient and non-salient type Synchronous generators to evaluate its performance.
EE 352.3	Compare asynchronous and synchronous motors and evaluate the performance with the help of circuit model.
EE 352.4	Assess transient behavior of synchronous generators and its stability.
EE 352.5	Analyze the characteristics of different types of single phase motors
EE 353	SWITCHGEAR AND PROTECTION
EE 353.1	Understand and describe need of protection for power system. Define protective relay and compare different types of protective relays.
EE 353.2	Describe phase and amplitude comparator and analyze the dual input comparator.
EE 353.3	Understand distance protection scheme and compare different types of distance relays to protect the transmission line from the different faults
EE 353.4	Understand need of protection of generator and transformer and to analyze different types of protection schemes for generator and transformer against various faults

EE 353.5	Describe the function of circuit breaker and operation. Understand arc phenomenon and discuss different arc extinction methods and compare different types of Circuit Breakers.
EE 354	MICRO PROCESSORS AND MICRO CONTROLLERS
EE 354.1	Identify the architectural features of 8086 and Conceptualize its interrupt structure
EE 354.2	Develop the assembly language programming using 8086
EE 354.3	Comprehend the operation of various peripheral devices like 8254 A programmable timer/counter, 8279 Keyboard/Display and their interfacing with 8086.
EE 354.4	Differentiate between microprocessor and microcontroller in their architectural features and develop the assembly language programming using the timers/counters
EE 354.5	Develop programs for UART along with interrupts and Extend the memory and I/O ports of 8051 and Program 8051 for real time applications.
CM 371	MANAGERIAL ECONOMICS & ACCOUNTANCY
CM 371.1	There will be general exposure to the student about the business, economic, cultural and social environment and the structural aspects of Managerial Economics.
CM 371.2	After analytically studied about different principles and laws of managerial economics student will be able to examine the consumer behaviour and take various managerial decisions, such as forecasting demand for new and existing goods and
CM 371.3	By analyzing and examining various production function alternatives, the student will able to suggest the best profit maximizing production function to the producers/entrepreneurs.
CM 371.4	With the knowledge of capital budgeting methods and techniques, the student can evaluate different business proposals and identify the best among them for prudent investment.
CM 371.5	Different sources of capital shall be explored to the business and also students determine the financial viable sources of capital.
CM 371.6	With the help of the accounting knowledge student will be able to analyse the business financial statements and interpret them for taking ideal managerial decisions.
EE 381	ELECTRICAL MACHINES LAB.II
EE 381.1	Able to analyze the phase conversion of transformer and performance of three Induction Motor by circle diagram.
EE 381.2	Able to distinguish various speed control methods of three phase Induction Motor and voltage regulation of alternator
EE 381.3	Able to describe performance characteristics of single phase Induction Motor and Synchronous Motor.
EE 381.4	Able to understand P.F. improvement of Induction Motor by using capacitors
EE 382	POWER ELECTRONICS LAB
EE 382.1	Determine and identify the characteristic points of power electronic devices
EE 382.2	Design and Verify the triggering circuits
EE 382.3	Estimate the performance of converter circuits
EE 382.4	Application of converters to control electrical machines
EE 383	INTIGRATED CIRCUITS LAB
EE 383.1	Students will be able to Design circuits using operational amplifiers such as Clippers, Clampers and Filter circuits
EE 383.2	Students will be able to Design and analyze pulse generator and delay using 555 timer

EE 383.3	Students will be able to Design and explain OP Amp to generate sine waveform, Square wave form, Triangular waveforms
EE 383.4	Students will be able to Design various combinational circuits using logic gates, sequential circuits using Flip-Flops.
EE 384	INDUSTRIAL VISIT
EE 384.1	Forecast about the technical approach in different industries
EE 384.2	Integrate their knowledge about different technologies and to apply them in problem solving techniques.
EE 384.3	Predict different problems that disturb the environment and solve them.
EE 384.4	Construct different Projects with the knowledge acquired.

IV YEAR I SEM

COURSE CODE	COURSE NAME
EE 401	POWER SYSTEMS OPERATION AND CONTROL
EE 401.1	Construct mathematical model for power systems and networks.
EE 401.2	Evaluate different methods of solving nonlinear algebraic equations and perform load flow solutions.
EE 401.3	Recognize the need for economic load dispatch, design the strategies and perform optimal load dispatch.
EE 401.4	Recognize need for frequency control, analyze the effects of the variation in frequency and implement the mathematical models for single and two area control.
EE 401.5	Recognize rotor angle stability, Identify and analyze approaches to solve stability problems.
EE 402	ELECTRIC DRIVES AND STATIC CONTROL
EE 402.1	Learn the concept and classification of electric drives, dynamics of motor-load combination and stability aspects of an electric drive system.
EE 402.2	Explain the characteristics of electric drives, starting methods of electric motors and methods to improve the starting Efficiency.
EE 402.3	Summarize the concept of Electric Braking, its advantages & types of Electric braking and it's implementation through illustration.
EE 402.4	Acquire the knowledge of speed control using ac-dc and dc-dc converters for dc shunt and dc series motors, also control-loop implementation of a dc drive.
EE 402.5	Summarize the working of phase controlled converters, voltage source inverters and cyclo-converters used in control of induction motor drives.
EE 403	ELECTRICAL MACHINE DESIGN
EE 403.1	Examine the types of materials used for electrical machines
EE 403.2	Determine the specific permeance for magnetic loading, obtain temperature rise of machines
EE 403.3	Determine the main dimensions of d.c machine and transformer
EE 403.4	Determine the main dimensions of 3-phase induction motor and alternator
EE 403.5	Recall computer aided techniques used for design of 3 phase induction motor
EE 411	HIGH VOLTAGE DC TRANSMISSION
EE 411.1	To compare and contrast the AC and DC transmission systems and understand the practical utility of HVDC transmission system
EE 411.2	To understand the analysis of converter circuits with grid control, with and without overlap angle

EE 411.3	To understand the purpose of control and study the controlling methods of HVDC transmission system
EE 411.4	To study the various faults in converters, harmonics introduced in the system and to understand the protection for these faults
ME 411	ENTERPRENUERSHIP
ME 411.1	To develop distinct entrepreneurial traits and ability to recognize business opportunities to build entrepreneurial career.
ME 411.2	Students can develop and systematically apply entrepreneurial way of thinking that will allow them to identify and create business opportunities for commercialized
ME 411.3	To design and develop a well presented successful business plan that is feasible and to gain the advantage of Project financing.
ME 411.4	To effectively plan projects through CPM/Pert techniques. To understand human
ME 411.5	This helps the entrepreneur to manage his human resources and time effectively.
EE 431	ELECTRICAL SIMULATION LAB
EE 431.1	Develop and test MATLAB m-code for Power systems studies
EE 431.2	Simulate and analyze the control system experiments
EE 431.3	Analyze circuits using MATLAB an P-Spice
EE 431.4	Design Lag-Lead Compensators
EE 432	MICRO PROCESSORS AND MICRO CONTROLLERS LAB
EE 432.1	Develop the logic using instruction set of 8086 in different addressing modes to carry out arithmetic, logical and string operations using MASM
EE 432.2	Interface ADC, 8254, Traffic Signal with 8086 microprocessors.
EE 432.3	Demonstrate various arithmetical, logical programs using 8051 trainer kit
EE 432.4	Comprehend the usage of on-chip timers and serial communication of 8051 and their interrupts using programs
EE 433	POWER SYSTEMS LAB
EE 433.1	Able to comprehend and analyze the regulation, efficiency and ABCD constants of transmission lines
EE 433.2	Able to analyze and study the characteristics of different protective relays to know performance
EE 433.3	Able to observe and analyze parallel operation of alternator and differential protection of Transformer to the performance
EE 433.4	Able to apply different methods to find sequence impedances of transformer ,alternator and to measure the capacitance of 3-core cable
EE 434	PROJECT SEMINAR
EE 434.1	Carryout Literature survey in the area of interest.
EE 434.2	Interact with industry environment/faculty for the selection of problem relevant to current technology.
EE 434.3	Understand and discuss the problem to provide possible solutions
EE 434.4	Organize the presentation in the form of a report

IV YEAR II SEM

COURSE CODE	COURSE NAME
EE 451	UTILIZATION
EE 451.1	Able to Differentiate and Distinguish various heating and welding process and discuss the different methods.

EE 451.2	able to identify various switches used in motors and discuss the various motor control circuits.
EE 451.3	able to Identify various lamps used in lightening schemes, calculate and design the lightening scheme for given area.
EE 451.4	Ability to plot the speed time curves, determine and calculate the tractive effort, torque required and specific energy consumption.
EE 451.5	Ability to distinguish types of drives used in traction.
CE 452	DISASTER MITIGATION & MANAGEMENT
CE 452.1	Ability to analyze and critically examine existing programs in disaster management regarding vulnerability, risk and capacity at local level.
CE 452.2	Ability to choose the appropriate activities and tools and set up priorities to build a coherent and adapted disaster management plan.
CE 452.3	Ability to understand various mechanisms and consequences of natural and human induced disasters for the participatory role of engineers in disaster management
CE 452.4	Develop an awareness of the chronological phases of disaster response and relief operations for formulating effective disaster management plans.
CE 452.5	Ability to understand the concept of remote sensing and geographical information systems for their effective applications in disaster management.
EE 471	RENEWABLE ENERGY SOURCES
EE 471.1	Memorize the statistics of non-conventional sources
EE 471.2	Describe about solar radiation and solar cell fabrication
EE 471.3	Determine the maximum power developed by the wind power plant
EE 471.4	Recall the operation of bio gasifiers
EE 471.5	Summarize the operation of a wave, tidal and OTEC plants
ME 472	INDUSTRIAL ADMINISTRATION & FINANCIAL MANAGEMENT
ME 471.1	On completion of this unit learner (student) will be able to, (a) define business, objectives of business and types of business organization such as private undertakings, public undertakings and joint sector. (b) Describe factors influencing the choice of suitable form of organization. (c) Explain organization structures and advantage of organization chart. (d) Describe principles of organization structure. (e)
ME 471.2	On completion of this unit student will be able to, (a) State definitions and objectives of work study, method study and time study. (b) Discuss applications of work study and its advantages. (c) Know the contributions of F.W Taylor & Frank Gilbreth. (d)
ME 471.3	On completion of this unit student will be able to, (a) Define inspection and quality and their differences. (b) Discuss the objectives of inspection and kinds of inspections. (c) Summarize SQC and techniques used in SQC. (d) Explain sampling inspection – sampling by attributes and variables. (e) Prepare sampling plans – single, double and multiple sampling plans. (f) Draw various control charts and work out problems related to x-R chart, P. chart and C. chart. (g) Describe Quality Circles and ISO 9001 quality system. (h) Summarize production planning and control – principles and functions. (i) Describe types of manufacture and production. (j) Draw various production control charts.
ME 471.4	On completion of this unit student will be able to, (a) Define optimization and operations research. (b) Solve problems on LPP using graphical solution. (c) Compute

ME 471.5	On completion of this unit student will be able to, (a) Express types of cost and elements of cost. (b) Describe over heads, types of over heads and allocation of over heads. (c) Define depreciation, methods of depreciation and compute depreciation. (d) Explain break even analysis and calculate breakeven point. (e) Express techniques of capital budgeting. (f) Describe time value of money, valuation concepts. (g) Define financial leverage, types of leverages. (h) Summarize importance of cost of capital and classification of cost of capital.
EE 481	DIGITAL SIGNAL PROCESSING LAB
EE 481.1	Generate Basic Analog and Discrete time Signals
EE 481.2	Evaluate frequency response, output response, Linear & circular convolution using DFT. Appreciate efficient implementation of DFT using FFT.
EE 481.3	Design & Interpret FIR and IIR Filters using various techniques
EE 481.4	Devise the above concepts using MATLAB & CCS tools. Acquire knowledge to
EE 482	GENERAL SEMINAR
EE 482.1	Carryout Literature survey in the area of interest.
EE 482.2	Interact with faculty and choose the topic for presentation related to recent trends in electronics and communication discipline.
EE 482.3	Prepare, organize the presentation and Present effectively that helps to acquire good organizing and communicating skills
EE 482.4	Organize the presentation in the form of a report.
EE 483	PROJECT
EE 483.1	Understand and analyze the problem to provide an optimal solution
EE 483.2	Implement the project using hardware and software tools
EE 483.3	Analyze the performance of implemented results with existing work
EE 483.4	Organize the project work in the form of report/Thesis

ACADEMIC YEAR: 2016-17

I SEM (I YEAR I SEM)

COURSE CODE	COURSE NAME
BS 101 MT	ENGINEERING MATHEMATICS.I
BS 101 MT.1	Solve some problems based on the concept of convergence and divergence of infinite series and apply the various tests of convergence to determine the nature of an infinite series
BS 101 MT.2	Solve problems based on the fundamental theorems of differential calculus, expanding functions using Taylor's & Maclaurin's series and solve problems on finding Radius of curvature, evolutes and envelopes
BS 101 MT.3	Evaluate limits, Continuity and derivatives of functions of two variables, Maxima & Minima for functions of two or more variables arising in Engineering Problems.
BS 101 MT.4	Evaluate double and triple integrals and solve problems based on vector differentiation and vector integration.
BS 101 MT.5	Solve problems based on the concepts of rank of a matrix, Eigen values, vectors and some concepts of linear algebra such as vector spaces, basis, dimension and linear transformations.

BS 102 PH	ENGINEERING PHYSICS.I
BS 102 PH.1	Define, Classify and Illustrate the phenomena of interference and diffraction of light.
BS 102 PH.2	Define polarization of light, optical activity and apply their principles to construct Nicol's Prism and Polarimeter; Explain the principle of Laser & Holography; Summarize the different types of laser sources; List out their applications.
BS 102 PH.3	Explain the principle and application of optical fibers; Classify optical fibers; Summarize the production, detection, properties and applications of Ultrasonics.
BS 102 PH.4	Define and Compare statistical distribution laws; Extend to black body radiation.
BS 102 PH.5	Recall the principles of quantum mechanics and apply them to solve particle in a box; List the fundamental laws of electricity and magnetism; Make use of these laws to derive Maxwell's electromagnetic wave equation and Poynting theorem.
BS 103 CH	ENGINEERING CHEMISTRY.I
BS 103 CH.1	Apply the knowledge of thermodynamic principles to determine the feasibility of chemical and physical processes.
BS 103 CH.2	Extend the concept of the phase rule in separation of pure metals from alloys and molten solutions and identify alloy as safety fuses and solders.
BS 103 CH.3	Identify the impurities present in water, the problems associated with hard water and utilize the principles and techniques involved in water treatment (analysis) to purify water for domestic and industrial purposes.
BS 103 CH.4	List types of the polymers; explain the influence of chemical structure on properties of polymers and the need for replacement of conventional materials with Polymers in engineering applications.
BS 103 CH.5	Classify Lubricants; Refractories, clay products and explain their properties, their use in engineering applications.
ES 104 CE	ENGINEERING MECHANICS.I
ES 104 CE.1	Resolve forces acting on a body, obtain resultant force or moment acting due to set of forces and moments acting on a body and determine unknown forces from equations of equilibrium of forces and moments
ES 104 CE.2	Obtain location of centres of mass of regular and composite shapes, use Pappus theorems to calculate surface areas and volumes of composite structures
ES 104 CE.3	Distinguish between static and kinematic friction, determine effect of static or kinematic friction forces acting on a single or a system of connected bodies, effect of friction in screw jack, wedge, brakes and belt transmission
ES 104 CE.4	Compute area moment of inertia and products of inertia for simple and composite elements using integration methods and transform theorem, calculate mass MI and radius of gyration for regular and composite structures
ES 104 CE.5	Obtain displacement, velocity and acceleration relations of particles in rectilinear and curvilinear motion including projectiles, write equations of motion under influence of forces for particles and connected bodies and for plane motion of rigid bodies
ES 104 CE.6	Apply Principles of work and energy to motion of particle or connected bodies to evaluate the velocities and angular velocities of bodies in connected systems and involving plane motion
ES 104 CE.7	Apply Principle of conservation of Momentum and impulse force/moment to evaluate the velocities of a body after application of force/moment, and of bodies in impact/collision considering Coefficient of Restitution

ES 105 CS	COMPUTER PROGRAMMING AND PROBLEMS SOLVING
ES 105 CS.1	Understand the architecture of a computer; design strategies for solving basic programming problems; concepts of primitive datatypes, operators.
ES 105 CS.2	Apply concepts of selection statements, loops and functions to write C programs.
ES 105 CS.3	Understand the concepts of arrays and apply them to implement searching and sorting applications.
ES 105 CS.4	Understand the dynamic of the memory through pointers and distinguish between call by value and call by reference
ES 105 CS.5	learn concepts of strings.
ES 105 CS.6	Understand the concepts of derived data types and write programs on structures and unions
ES 105 CS.7	Apply the concepts of file handling operations.
MC 106 EG	ENGINEERING ENGLISH
MC 106 EG.1	Learn the importance of communication Skills and its role and Importance and usage in verbal and non-verbal communication appropriately.
MC 106 EG.2	Able to understand the Importance of listening skills in the effective communication and the models of interpersonal development.
MC 106 EG.3	Able to apply writing techniques to develop a passage, draft an essay, make a précis and construct general reports, Business communication
MC 106 EG.4	use appropriate idiomatic expressions, one-word substitutes, Development of vocabulary.
MC 106 EG.5	improve reading comprehension skills by reading inspirational texts and infer information.
BS 151 PH	ENGINEERING PHYSICS LAB.I
BS 151 PH.1	Demonstrate the phenomena of interference and determine the wavelength of a given light source.
BS 151 PH.2	Demonstrate the phenomena of diffraction and determine the wavelength of a given light source .
BS 151 PH.3	Explain the principle of laser and determine the wavelength of a given laser source.
BS 151 PH.4	Experiment with optical fiber and determine the Numerical Aperture and various losses of a given fiber.
BS 151 PH.5	Illustrate Malus law of polarization of light.
BS 151 PH.6	Determine the specific rotatory power of an optically active substance using polarimeter.
BS 152 CH	ENGINEERING CHEMISTRY LAB.I
BS 152 CH.1	Utilize analytical laboratory skills for performing chemical analysis and its data compilation individually or in teams for resolving related problems in day to day life.
BS 152 CH.2	Make use of titrimetric principles in preparation, standardisation and estimation of unknown chemical samples.
BS 152 CH.3	Identify and determine hardness causing impurities present in hard water by complexometric method.
BS 152 CH.4	Explain causes for carbonate and bicarbonate alkalinity of water and estimate their concentration in alkaline water.
BS 152 CH.5	Estimate quantitatively species like Fe ⁺² , Fe ⁺³ , Cr ⁺³ , Mn, present in unknown complex mixtures like ores, alloys by titrimetric methods.

ES 153 CE	ENGINEERING GRAPHICS.I
ES 153 CE.1	The student would be able to recall the mathematical concepts related to scales, conic sections, involutes, etc and demonstrate proficiency in construction of these using the various methods described in literature.
ES 153 CE.2	The student would be able to analyse the various tools in AUTOCAD and utilize them for drawing of problems related to scales, conic sections, cycloids, etc..
ES 153 CE.3	The student would be able to analyse the position of points and lines when placed in different orientations with respect to reference planes and reproduce them using AUTOCAD.
ES 153 CE.4	The student would be able to draw the various views of planes when in simple position and in oblique positions using AUTOCAD.
ES 153 CE.5	The student would be able to assess the shapes of objects such as prisms, pyramids and solids of revolution and analyse their projections when they are placed in different orientations with reference planes. Subsequently the students would be able to draw these projections using AUTOCAD.
ES 154 CS	COMPUTER PROGRAMMING LAB
ES 154 CS.1	Understand the procedure to create, compile and execute C program for different inputs.
ES 154 CS.2	Apply concepts of selection and looping statements
ES 154 CS.3	apply concepts of functions to increase the modularity of the program and re usability.
ES 154 CS.4	Apply array concepts to implement different concepts like searching, sorting, matrix multiplication and many more.
ES 154 CS.5	Apply pointers concepts to access variables through address and understand the dynamic memory allocation.
ES 154 CS.6	Apply derived data types using structures and unions.
ES 155 ME	ENGINEERING WORKSHOP.I
ES 155 ME.1	The student would be able to utilize the various tools of smithy namely forge, tongs, fullers, flatters, swage block, chisels, anvil, hammers, etc to perform various forging operations on the work piece (job) like flatterring, bending, upsetting, fullering, etc.
ES 155 ME.2	The student would be able to understand the different types of welding techniques like arc welding, gas welding, brazing, soldering, etc and prepare various weld joints like lap joint, butt joint, T joint, etc.
ES 155 ME.3	The student would be able to utilize the various tools of machining namely lathe machine, cutting tools (single point cutting tool, knurling tool, parting tool, etc) to perform various machining operations like turning, facing, drilling, boring, threading, knurling, etc.
ES 155 ME.4	The student would be able to utilize the various tools of plumbing namely pipe vice, hack saw, pipe cutter, wrench, dies, pipe fittings, etc to prepare various pipe joints.
MC 156 EG	ENGINEERING ENGLISH LAB
MC 156 EG.1	Learn the sound system of English Language with the knowledge of IPA-classification & description
MC 156 EG.2	earn the word stress & aspects of connected speech
MC 156 EG.3	learn the Rhythm & Intonation of English language

MC 156 EG.4	Improve the fluency in the spoken form of the language by participating in Presentation skills, Public speaking, Group Discussion and Debate.
MC 156 EG.5	learn to dictionary and thesaurus effectively in an appropriate way.
II SEM (I YEAR II SEM)	
COURSE CODE	COURSE NAME
BS 201 MT	ENGINEERING MATHEMATICS.II
BS 201 MT.1	Solve various types of First ordered ordinary differential equations and apply these techniques for solving some problems in Geometry, Electricity, Heat transfer and Radio activity.
BS 201 MT.2	Solve higher ordered linear O.D.Es with constant Coefficients using various techniques.
BS 201 MT.3	Solve linear O.D.Es using power series and Frobenius methods and apply these methods for solving Legendres D.E.
BS 201 MT.4	Evaluate improper integrals using Beta and Gamma functions and solve Bessel's differential equations.
BS 201 MT.5	Solve some problems using the properties of Legendre polynomial and Bessel's functions.
BS 201 MT.6	Evaluate Laplace Transforms and inverse Laplace transforms of various functions and solve linear ordinary differential equations using Laplace transforms.
BS 202 PH	ENGINEERING PHYSICS.II
BS 202 PH.1	Explain Crystal structures, Crystal defects and Energy band formation in solids.
BS 202 PH.2	Classify magnetic materials and Explain properties; Identify applications of
BS 202 PH.3	Explain and Illustrate semiconducting materials along with their applications; Summarize dielectric materials and its applications.
BS 202 PH.4	methods of thin films and its applications.
BS 202 PH.5	Explain various properties of nanomaterials; Contrast their preparation methods and list out various applications of nanomaterials.derive Maxwell's electromagnetic wave
BS 203 CH	ENGINEERING CHEMISTRY.II
BS 203 CH.1	Recall,relate and apply various parameters of electrodes and electrolytes such as conductance, conductivity, molar, equivalent conductance, electrode potentials, emf, pH and their measurements by constructing electrochemical cells using suitable electrodes with the knowledge of standard reduction potential data.
BS 203 CH.2	Explain the basic operating principles of primary, secondary batteries, fuel cells, solar cells – their design, similarities, differences and applications.
BS 203 CH.3	List types of corrosion; explain their mechanism, factors affecting the rate of corrosion and apply the knowledge of various corrosion control methods for protection of metals.
BS 203 CH.4	Classify chemical fuels, calculate calorific value, air quantities required for combustion of fuels, explain analysis of coal, refining of petroleum, cracking of petroleum, engine knocking , fuel rating , identify uses of solid , liquid , gaseous fuels and the importance of renewable energy sources such as bio-diesel.
BS 203 CH.5	List types of composites; liquid crystals,identify their advantages, engineering applications in day to day life and relate concept and principles of green chemistry for design and manufacturing of engineering materials.

HS 204 EG	BUSINESS COMMUNICATION AND PRESENTATION SKILLS
HS 204 EG.1	know the importance of Business Communication, ABC of Technical Communication, and Channels of Communication appropriately
HS 204 EG.2	learn models of Interpersonal Communication, Styles of Communication, Teamwork,
HS 204 EG.3	learn the differences between Technical and General writing, Report-writing, and drafting Scientific Papers.
HS 204 EG.4	learn how to draft an SoP, Job application, Cover letter, Business letters, Agenda, and Minutes of Meeting.
HS 204 EG.5	plan and prepare to face Interviews and participate in Group Discussions
ES 965 ME	ELEMENTS OF MECHANICAL ENGINEERING
ES 965 ME.1	Correlate the laws of thermodynamics with the fundamental conceptual
ES 965 ME.2	Classify the different modes of heat transfer, analyze the governing equations,
ES 965 ME.3	The student would be able to assess the relevance of different refrigeration systems with respect to their eco
ES 965 ME.4	Classify different manufacturing processes like forging, welding, forming, machining, etc and recognize their suitability.
ES 965 ME.5	The student would be able to understand the different types of power transmission systems like gears, gear trains, belts, ropes etc with emphasis on their kinematic mechanisms and solve related problems.
ES 933 EC	ELECTRONIC ENGINEERING.I
ES 933 EC.1	Interpret the characteristics of diodes to evaluate the diode parameters and apply diode models to analyze the applications of diodes.
ES 933 EC.2	Identify the merits and demerits of various filters, formulate and design rectifier circuits with filters.
ES 933 EC.3	Discriminate the BJT configurations to recognize appropriate transistor configuration for any given application and design the biasing circuits with good stability.
ES 933 EC.4	Analyze and compare the performance of BJT amplifiers with various biasing circuits.
ES 933 EC.5	Distinguish the principles of BJT & FET, comprehend the characteristics of FET and design biasing circuits for FET amplifiers.
BS 251 PH	ENGINEERING PHYSICS LAB.II
BS 251 PH.1	Examine the nature of ferromagnetic materials using B-H curve experiment.
BS 251 PH.2	Analyze the semiconducting device and calculate temperature co-efficient of resistance.
BS 251 PH.3	Inspect the characteristics of photo voltaic cell and evaluate the efficiency.
BS 251 PH.4	Analyze the semiconducting device and calculate the energy gap.
BS 251 PH.5	Experiment with a junction diode and calculate its resistance under forward and reverse bias.
BS 251 PH.6	Examine the nature of dielectric materials and evaluate their related parameter.
BS 252 CH	ENGINEERING CHEMISTRY LAB.II
BS 252 CH.1	Extend the knowledge of electroanalytical techniques like Conductometry, Potentiometry, pHmetry and Colorimetry for performing chemical analysis and its data compilation individually or in teams for analyzing physical properties of engineering materials used in daily life.

BS 252 CH.2	Estimate strength of weak acids, strong acids or acids present in mixtures by Conductometric, Potentiometric titrations.
BS 252 CH.3	Determine the strength of reducing agents like Fe ⁺² present in un known sample solutions by Potentiometry.
BS 252 CH.4	Analyze acids quickly and accurately using pHmetry.
BS 252 CH.5	Test and determine chemical species like Iron and Manganese present in unknown complex mixtures or ores by Colorimetric method.
ES 930 CS	COMPUTER SKILLS LAB
ES 930 CS.1	Identify assemble and disassemble the components of Personal Computer (PC)
ES 930 CS.2	Install the operating system.
ES 930 CS.3	Create Documents using MS WORD and spread sheets using MS EXCEL
ES 930 CS.4	Design presentations using MS POWER POINT
ES 930 CS.5	Develop a website using HTML
ES 930 CS.6	Use Documentation Tool LATEX to create reports, books, articles in standard formats.
HS 253 EG	COMMUNICATION SKILLS LABLAB
HS 253 EG.1	use dialogues in a variety of situations and settings such as Role Play
HS 253 EG.2	make effective Presentations using multi-media and overcome stage fright
HS 253 EG.3	learn the art of planning and making a Public Speech.
HS 253 EG.4	participate in Group Discussions and Debates
HS 253 EG.5	face Interviews effectively.
ES 255 ME	ENGINEERING WORKSHOP.II
ES 255 ME.1	The student would be able to utilize the various tools of smithy namely forge, tongs, fullers, flatters, swage block, chisels, anvil, hammers, etc to perform various forging operations on the work piece (job) like flattering, bending, upsetting, fullering, etc
ES 255 ME.2	The student would be able to understand the different types of welding techniques like arc welding, gas welding, brazing, soldering, etc and prepare various weld joints like lap joint, butt joint, T joint, etc.
ES 255 ME.3	The student would be able to utilize the various tools of machining namely lathe machine, cutting tools (single point cutting tool, knurling tool, parting tool, etc) to perform various machining operations like turning, facing, drilling, boring, threading, knurling, etc.
ES 255 ME.4	The student would be able to utilize the various tools of plumbing namely pipe vice, hack saw, pipe cutter, wrench, dies, pipe fittings, etc to prepare various pipe joints. Subsequently the student would be able to estimate how to prepare pipe connections for domestic and industrial applications.

II SEM (I YEAR II SEM)

COURSE CODE	COURSE NAME
BS 201 MT	ENGINEERING MATHEMATICS.II
BS 201 MT.1	Solve various types of First ordered ordinary differential equations and apply these techniques for solving some problems in Geometry, Electricity, Heat transfer and Radio activity.
BS 201 MT.2	Solve higher ordered linear O.D.Es™ with constant Coefficients using various techniques.

BS 201 MT.3	Solve linear O.D.E's using power series and Frobenius methods and apply these methods for solving Legendre's D.E.
BS 201 MT.4	Evaluate improper integrals using Beta and Gamma functions and solve Bessel's
BS 201 MT.5	Solve some problems using the properties of Legendre polynomial and Bessel's functions.
BS 201 MT.6	Evaluate Laplace Transforms and inverse Laplace transforms of various functions and solve linear ordinary differential equations using Laplace transforms.
BS 202 PH	ENGINEERING PHYSICS.II
BS 202 PH.1	Explain Crystal structures, Crystal defects and Energy band formation in solids.
BS 202 PH.2	Classify magnetic materials and Explain properties; Identify applications of ferromagnetic materials and superconducting materials.
BS 202 PH.3	Explain and Illustrate semiconducting materials along with their applications; Summarize dielectric materials and its applications.
BS 202 PH.4	Explain different techniques for characterization of materials; Outline the preparation methods of thin films and its applications.
BS 202 PH.5	Explain various properties of nanomaterials; Contrast their preparation methods and list out various applications of nanomaterials.derive Maxwell's electromagnetic wave equation and Poynting theorem.
BS 203 CH	ENGINEERING CHEMISTRY.II
BS 203 CH.1	Recall,relate and apply various parameters of electrodes and electrolytes such as conductance, conductivity, molar, equivalent conductance, electrode potentials, emf, pH and their measurements by constructing electrochemical cells using suitable electrodes with the knowledge of standard reduction potential data.
BS 203 CH.2	Explain the basic operating principles of primary, secondary batteries, fuel cells, solar cells – their design, similarities, differences and applications.
BS 203 CH.3	List types of corrosion; explain their mechanism, factors affecting the rate of corrosion and apply the knowledge of various corrosion control methods for protection of metals.
BS 203 CH.4	Classify chemical fuels, calculate calorific value, air quantities required for combustion of fuels, explain analysis of coal, refining of petroleum, cracking of petroleum, engine knocking , fuel rating , identify uses of solid , liquid , gaseous fuels and the importance of renewable energy sources such as bio-diesel.
BS 203 CH.5	List types of composites; liquid crystals,identify their advantages, engineering applications in day to day life and relate concept and principles of green chemistry for design and manufacturing of engineering materials.
II YEAR I SEM	
COURSE CODE	COURSE NAME
MT 201	MATHEMATICS.III
MT 201.1	Solve problems on formation of partial differential equations and on some standard first ordered partial differential equations.
MT 201.2	Develop a Fourier series for a given function in various intervals and apply the theory of Fourier series to some boundary value problems associated with one - dimensional wave, heat and Laplace Equation.
MT 201.3	Classify and solve problems associated with discrete and continuous probability distributions.

MT 201.4	Identify and solve problems associated with Normal, Gamma, Poisson and Chi-Square distributions.
MT 201.5	Apply Chi-square test, t-test and F-test for analyzing experimental data.
MT 201.6	Apply method of least squares for curve fitting , computing correlation Coefficient and obtain lines of regression for given data.
EE 201	ELECTRICAL CIRCUITS.I
EE 201.1	Apply circuit analysis methods to solve electrical circuits.
EE 201.2	Apply sinusoidal phasor concepts to solve AC circuits.
EE 201.3	Analyze three phase balanced and unbalanced circuits.
EE 201.4	Apply network theorems to solve circuits. Formulate different matrices based on Graph theory
EE 201.5	Understand resonance, mutually induced EMF concepts and solve electrical circuits.
CE 222	ENVIRONMENTAL STUDIES
CE 222.1	To know the importance of natural resources (Water and land), Energy resources, floods, drought, impact of modern agriculture, land degradation.
CE 222.2	To understand basic concepts of an ecosystem and its importance
CE 222.3	To understand importance of biodiversity and need for its conservation
CE 222.4	To study different types of environmental pollution, their causes, effects and control measures and need for environmental legislation.
CE 222.5	To critically analyze global environmental issues, social aspects including population growth, disaster management.
EE 204	ELECTRICAL MEASUREMENTS AND INSTRUMENTS
EE 204.1	Define measurement, error, correction, accuracy and precision and list the methods the various effects used for measurement
EE 204.2	Demonstrate measurement of electrical parameters current, voltage, power and energy
EE 204.3	Describe the methods of measuring R L C
EE 204.4	Perform experiments to measure flux density and assess iron loss.
EE 204.5	Implement calibration methods for various instruments. Design the experimental work with minimum error which is used for planning and implementation
EC 221	ELECTRICAL ENGINEERING.I
EC 221.1	Interpret the characteristics of diodes to evaluate the diode parameters and apply diode models to analyze the applications of diodes.
EC 221.2	Identify the merits and demerits of various filters, formulate and design rectifier circuits with filters.
EC 221.3	Discriminate the BJT configurations to recognize appropriate transistor configuration
EC 221.4	Analyze and compare the performance of BJT amplifiers with various biasing circuits.
EC 221.5	Distinguish the principles of BJT & FET, comprehend the characteristics of FET and design biasing circuits for FET amplifiers.
ME 221	PRINCIPLES OF MECHANICAL ENGINEERING
ME 221.1	Formulate the steady flow energy equations for different flow processes, calculate different modes of heat transfer.
ME 221.2	Explain the principle of IC Engines, distinguish between 2-stroke and 4-stroke cycle engines, compute mechanical and thermal efficiencies of IC Engines

ME 221.3	Explain Steam generation processes in fire tube and water tube boilers, explain closed and open cycle gas turbines schematically
ME 221.4	Classify various types of gear trains and calculate velocity ratios. Explain different arrangements of belt drive systems, and formulate expressions for length of belts, ratio of tensions.
ME 221.5	Derive Bernoulli's equation and calculate flow rates in venturimeter, orifice meter, derive Darcy's equation, explain working principles of positive displacement and rotodynamic pumps
EC 241	ELECTRONIC ENGINEERING LAB.I
EC 241.1	Analyze the characteristics of various semiconductor diodes, SCR, UJT
EC 241.2	Determine the input and output characteristics of transistor in CB, CE, CC
EC 241.3	Design the rectifiers with and without filters and verify them.
EC 241.4	Measure voltage, frequency and phase of any waveform using CRO.
EC 241.5	Design amplifiers using BJT, FET and determine their frequency response.
EE 242	CIRCUITS AND MEASUREMENTS LAB
EE 242.1	Demonstrate the verification of various theorems.
EE 242.2	Define error and calibrate the instruments using potentiometer
EE 242.3	Demonstrate the measurement of electrical parameters like resistance, inductance and capacitance using various types of bridges.
EE 242.4	Analyze the behavior of R L C Circuits with different sources.
EE 242.5	Demonstrate direct and phantom loading methods to assess the error in energy measurement
II YEAR II SEM	
COURSE CODE	COURSE NAME
EE 251	ELECTRICAL CIRCUITS.II
EE 251.1	Analyze single and double transient circuits and solve them by using Differential Equations for various excitations
EE 251.2	Identify Laplace Transform properties and solve single and double transient circuits with different excitations
EE 251.3	Solve two port networks
EE 251.4	Analyze harmonic frequency behavior of linear networks and determine the harmonic power
EE 251.5	Test the realizability of transfer function and synthesize the network
CE 223	SOLID MECHANICS
CE 223.1	Understand the basic concepts of stresses and strains for different materials.
CE 223.2	Know the mechanism of the development of shear force and bending moment diagrams in beams
CE 223.3	Know the theory of simple bending ,analyse the bending stresses, shear stresses and direct and bending stresses for rectangular, circular and standard structural sections.
CE 223.4	Study the deflections and its applications and know the strain energy concepts.
CE 223.5	Analyze torsional stresses and spring applications.
EE 253	POWER SYSTEMS.I
EE 253.1	List and analyze various conventional Energy Sources such as Thermal, Hydal, Nuclear and Gas Turbine Power Plants, describe their Operating Principles.

EE 253.2	List and analyze different Nonconventional Energy Sources like Solar Energy and Wind Energy, describe their Operating Principles.
EE 253.3	Differentiate various factors of Economics of power generation and analyze different Tariffs, determine voltage drops and losses in AC & DC Distributors.
EE 253.4	Analyze sags on overhead lines, Determine insulator string efficiency.
EE 253.5	List and assess inductance, capacitance of Single phase and Three Phase Over Head Transmission Lines.
EC 271	ELECTRONIC ENGINEERING.II
EC 271.1	Identify the type of negative feedback, Analyze and design negative feedback amplifiers
EC 271.2	Design Audio Frequency and Radio Frequency oscillators using BJT.
EC 271.3	Explain the working of differential amplifier, and importance of CMRR.
EC 271.4	Distinguish the classes of Power Amplifiers and their design considerations.
EC 271.5	Differentiate the performance of non linear and linear wave shaping circuits like Integrator, Differentiator, Clipper and clamper circuits.
EE 252	ELECTROMAGNETIC THEORY
EE 252.1	Apply Electrostatic laws to calculate electric fields of different configurations
EE 252.2	Find electric field and capacitance including dielectric media effect
EE 252.3	Apply Magneto static laws and calculate inductance of different configurations
EE 252.4	Modify Maxwell's equations for time varying fields and their applications to solve problems
EE 252.5	Formulate wave equations and estimate Electromagnetic power
EE 254	ELECTRICAL MACHINES.I
EE 254.1	Have a thorough understanding about the energy conversion principles
EE 254.2	Illustrate construction, operation and winding diagrams of DC machines.
EE 254.3	Illustrate the characteristics of DC generators and DC motors and judge their applications
EE 254.4	Demonstrate speed control evaluate performance of dc machines by conducting suitable tests
EE 254.5	Explain construction, principle of operation of single phase transformers, describe circuit model and demonstrate various testing methods to determine the efficiency and regulation
EC 291	ELECTRONIC ENGINEERING LAB.II
EC 291.1	Analyze frequency response of two stage RC coupled at low frequency, mid frequency and high frequency and compare their bandwidths.
EC 291.2	Differentiate Negative feed amplifiers at low frequency, mid frequency and high frequency and compare their bandwidths.
EC 291.3	Distinguish various oscillator circuits with respect to frequency of oscillations.
EC 291.4	Analyze power amplifiers with their efficiency.
EC 291.5	Design clipper and clamper circuits to generate required waveforms.
ME 291	MECHANICAL TECHNOLOGY LAB
ME 291.1	To correlate the performance parameters of 4-stroke petrol engines, 4- stroke diesel engines and reciprocating air compressors with respect to theoretical analysis and experimental values.
ME 291.2	To assess the variation in flow measurements with respect to theoretical and actual values for venturimeters, orifice meters and pitot tubes.

ME 291.3	To assess the variation of viscosity of various oils with temperature and also determine their flash and fire points
ME 291.4	Analyze the performance parameters related to various modes of heat transfer and compare with their theoretical values.
ME 291.5	Evaluate the performance parameters of rotodynamic pumps and Turbines and compare with their theoretical values.
III YEAR I SEM	
COURSE CODE	COURSE NAME
EE 301	POWER SYSTEMS.II
EE 301.1	Discriminate different transmission line models and find the performance of transmission lines.
EE 301.2	Compare and assess the reactive power compensation for voltage control.
EE 301.3	Change Single line diagram to p.u. system and perform balanced fault calculations.
EE 301.4	Apply symmetrical components to convert unbalanced power system faults and obtain sequence networks and perform fault calculations.
EE 301.5	Construct bewley lattice diagram to analyze transients in power systems.
EE 302	ELECTRICAL MACHINERY.II
EE 302.1	Judge the applications of 3-phase transformers and auto transformers
EE 302.2	Estimate the load shared by transformers under different conditions.
EE 302.3	Illustrate the principle of operation, characteristics of induction motor and estimate its performance.
EE 302.4	Justify various starting methods and perform speed control methods.
EE 302.5	Assess the effects of unbalanced operation and single phasing on electrical machines.
EE 303	POWER ELECTRONICS
EE 303.1	Differentiate construction, working and characteristics of various power electronic devices
EE 303.2	Classify and apply triggering circuits , protection methods of SCR
EE 303.3	Analyze single phase and three phase controlled rectifiers for R, RL and RLE loads
EE 303.4	Illustrate and analyze various types of D.C choppers , a.c voltage controllers and cyclo converters.
EE 303.5	Analyze single phase inverter , three phase inverter in 120degrees and 180degrees mode.
EE 304	DIGITAL ELECTRONICS AND LOGIC DESIGN
EE 304.1	Apply basic Boolean Operators and construct Karnaugh Maps to simplify Boolean expressions.
EE 304.2	Understand and apply different number systems to perform mathematical operations required for digital circuits.
EE 304.3	Understand principles of IC families and construct combinational logic circuits.
EE 304.4	Design Asynchronous and Synchronous sequential circuits using flip-flops
EE 304.5	Design Melay and Moore machine models and understand programmable logic devices
EE 305	LINEAR INTEGRATED CIRCUITS
EE 305.1	Understand the terminal characteristics of op-amps and design /analyze fundamental circuits based on op-amps.
EE 305.2	Realize various linear and non-linear applications of Op-Amp.

EE 305.3	Design and Formulate Op-Amp oscillators, Analyze the operation of the most commonly used D/A and A/D converter types.
EE 305.4	Analyze a fixed voltage regulator and adjustable voltage regulators.
EE 305.5	Design and compare Low pass, High pass, Band Pass and Band stop active filters.
EE 306	LINEAR CONTROL SYSTEMS
EE 306.1	Develop and analyze mathematical models open & closed loop systems
EE 306.2	Measure the Stability of Linear Control Systems using Time Domain and S-Plane based Approaches.
EE 306.3	Decide the Stability of Linear Control Systems using Frequency Domain Approach.
EE 306.4	Construct State space model and its solution using State Transition Matrix.
EE 306.5	Solving Discrete Control Systems using Z-Transform Models.
EE 331	ELECTRICAL MACHINES LAB.I
EE 331.1	Identify the conditions for voltage build up in a DC generator
EE 331.2	Compare the performance characteristics of various types of generators
EE 331.3	Compare the performance characteristics of various types of DC motors and judge their applications
EE 331.4	Demonstrate speed control methods on DC motors
EE 331.5	Perform the direct and indirect tests on DC motors and transformers to evaluate the performance.
EE 332	CONTROL SYSTEMS LAB
EE 332.1	Able to analyze the physical systems represented in Transfer function.
EE 332.2	Able to apply the control components like ac servo motor, synchro pair.
EE 332.3	Able to understand and comprehend the controller design both in time domain and frequency domain.
EE 332.4	Able to distinguish and will have knowledge of Feedback control systems like A.C and D.C position control systems.
III YEAR II SEM	
COURSE CODE	COURSE NAME
EE 351	DIGITAL SIGNAL PROCESSING
EE 351.1	Understand the basic operations on Discrete Time Signals and Classify a system as Linear Time-invariant/Variant, Stable/Unstable, causal/non-causal.
EE 351.2	Conclude DTFT to evaluate frequency response. Determine DFT using direct and FFT methods. Analyze Circular and Linear convolution and apply for linear filtering operations.
EE 351.3	Evaluate Z-transforms, Construct different forms of IIR and FIR filters.
EE 351.4	Formulate & apply Digital IIR filter design using Butterworth & Chebyshev approximations to Verify the characteristics of LPF, HPF, BPF & BEF
EE 351.5	Design & compare Digital FIR filters using various windows, Analyze the characteristics of various windows.
EE 352	ELECTRICAL MACHINERY.III
EE 352.1	Describe types of windings used in AC machines, define winding factors and explain suppression of harmonics in generated e m f .
EE 352.2	Demonstrate various tests on salient and non-salient type Synchronous generators to evaluate its performance.
EE 352.3	Compare asynchronous and synchronous motors and evaluate the performance with the help of circuit model.
EE 352.4	Assess transient behavior of synchronous generators and its stability.

EE 352.5	Analyze the characteristics of different types of single phase motors
EE 353	SWITCHGEAR AND PROTECTION
EE 353.1	Understand and describe need of protection for power system. Define protective relay and compare different types of protective relays.
EE 353.2	Describe phase and amplitude comparator and analyze the dual input comparator.
EE 353.3	Understand distance protection scheme and compare different types of distance relays to protect the transmission line from the different faults
EE 353.4	Understand need of protection of generator and transformer and to analyze different types of protection schemes for generator and transformer against various faults
EE 353.5	Describe the function of circuit breaker and operation. Understand arc phenomenon
EE 354	MICRO PROCESSORS AND MICRO CONTROLLERS
EE 354.1	Identify the architectural features of 8086 and Conceptualize its interrupt structure
EE 354.2	Develop the assembly language programming using 8086
EE 354.3	Comprehend the operation of various peripheral devices like 8254 A programmable timer/counter, 8279 Keyboard/Display and their interfacing with 8086.
EE 354.4	Differentiate between microprocessor and microcontroller in their architectural features and develop the assembly language programming using the timers/counters 8051.
EE 354.5	Develop programs for UART along with interrupts and Extend the memory and I/O ports of 8051 and Program 8051 for real time applications.
CM 371	MANAGERIAL ECONOMICS & ACCOUNTANCY
CM 371.1	There will be general exposure to the student about the business, economic, cultural and social environment and the structural aspects of Managerial Economics.
CM 371.2	After analytically studied about different principles and laws of managerial economics student will be able to examine the consumer behaviour and take various managerial decisions, such as forecasting demand for new and existing goods and services. Student will be able to appraise of the firm's behavior in different market structures with respect to the competition, price fixation of product.
CM 371.3	By analyzing and examining various production function alternatives, the student will able to suggest the best profit maximizing production function to the producers/entrepreneurs.
CM 371.4	With the knowledge of capital budgeting methods and techniques, the student can evaluate different business proposals and identify the best among them for prudent investment.
CM 371.5	Different sources of capital shall be explored to the business and also students determine the financial viable sources of capital.
CM 371.6	With the help of the accounting knowledge student will be able to analyse the business financial statements and interpret them for taking ideal managerial decisions.

EE 381	ELECTRICAL MACHINES LAB.II
EE 381.1	Able to analyze the phase conversion of transformer and performance of three Induction Motor by circle diagram.
EE 381.2	Able to distinguish various speed control methods of three phase Induction Motor and voltage regulation of alternator
EE 381.3	Able to describe performance characteristics of single phase Induction Motor and Synchronous Motor.
EE 381.4	Able to understand P.F. improvement of Induction Motor by using capacitors
EE 382	POWER ELECTRONICS LAB
EE 382.1	Determine and identify the characteristic points of power electronic devices
EE 382.2	Design and Verify the triggering circuits
EE 382.3	Estimate the performance of converter circuits
EE 382.4	Application of converters to control electrical machines
EE 383	INTIGRATED CIRCUITS LAB
EE 383.1	Students will be able to Design circuits using operational amplifiers such as Clippers,
EE 383.2	Students will be able to Design and analyze pulse generator and delay using 555 timer
EE 383.3	Students will be able to Design and explain OP Amp to generate sine waveform, Square wave form, Triangular waveforms
EE 383.4	Students will be able to Design various combinational circuits using logic gates, sequential circuits using Flip-Flops.
EE 384	INDUSTRIAL VISIT
EE 384.1	Forecast about the technical approach in different industries
EE 384.2	Integrate their knowledge about different technologies and to apply them in problem solving techniques.
EE 384.3	Predict different problems that disturb the environment and solve them.
EE 384.4	Construct different Projects with the knowledge acquired.
IV YEAR I SEM	
COURSE CODE	COURSE NAME
EE 401	POWER SYSTEMS OPERATION AND CONTROL
EE 401.1	Construct mathematical model for power systems and networks.
EE 401.2	Evaluate different methods of solving nonlinear algebraic equations and perform load flow solutions.
EE 401.3	Recognize the need for economic load dispatch, design the strategies and perform optimal load dispatch.
EE 401.4	Recognize need for frequency control, analyze the effects of the variation in frequency and implement the mathematical models for single and two area control.
EE 401.5	Recognize rotor angle stability, Identify and analyze approaches to solve stability problems.
EE 402	ELECTRIC DRIVES AND STATIC CONTROL
EE 402.1	Learn the concept and classification of electric drives, dynamics of motor-load combination and stability aspects of an electric drive system.
EE 402.2	Explain the characteristics of electric drives, starting methods of electric motors and methods to improve the starting Efficiency.
EE 402.3	Summarize the concept of Electric Braking, its advantages & types of Electric braking and it's implementation through illustration.
EE 402.4	Acquire the knowledge of speed control using ac-dc and dc-dc converters for dc shunt and dc series motors, also control-loop implementation of a dc drive.

EE 402.5	Summarize the working of phase controlled converters, voltage source inverters and cyclo-converters used in control of induction motor drives.
EE 403	ELECTRICAL MACHINE DESIGN
EE 403.1	Examine the types of materials used for electrical machines
EE 403.2	Determine the specific permeance for magnetic loading, obtain temperature rise of machines
EE 403.3	Determine the main dimensions of d.c machine and transformer
EE 403.4	Determine the main dimensions of 3-phase induction motor and alternator
EE 403.5	Recall computer aided techniques used for design of 3 phase induction motor
EE 411	HIGH VOLTAGE DC TRANSMISSION
EE 411.1	To compare and contrast the AC and DC transmission systems and understand the practical utility of HVDC transmission system
EE 411.2	To understand the analysis of converter circuits with grid control, with and without overlap angle
EE 411.3	To understand the purpose of control and study the controlling methods of HVDC transmission system
EE 411.4	To study the various faults in converters, harmonics introduced in the system and to understand the protection for these faults
ME 411	ENTERPRENUERSHIP
ME 411.1	To develop distinct entrepreneurial traits and ability to recognize business opportunities to build entrepreneurial career.
ME 411.2	Students can develop and systematically apply entrepreneurial way of thinking that will allow them to identify and create business opportunities for commercialized success.
ME 411.3	To design and develop a well presented successful business plan that is feasible and to gain the advantage of Project financing.
ME 411.4	To effectively plan projects through CPM/Pert techniques. To understand human aspects of business and helps to assess and evaluate tax burden.
ME 411.5	This helps the entrepreneur to manage his human resources and time effectively.
EE 431	ELECTRICAL SIMULATION LAB
EE 431.1	Develop and test MATLAB m-code for Power systems studies
EE 431.2	Simulate and analyze the control system experiments
EE 431.3	Analyze circuits using MATLAB an P-Spice
EE 431.4	Design Lag-Lead Compensators
EE 432	MICRO PROCESSORS AND MICRO CONTROLLERS LAB
EE 432.1	Develop the logic using instruction set of 8086 in different addressing modes to carry out arithmetic, logical and string operations using MASM
EE 432.2	Interface ADC, 8254, Traffic Signal with 8086 microprocessors.
EE 432.3	Demonstrate various arithmetical, logical programs using 8051 trainer kit
EE 432.4	Comprehend the usage of on-chip timers and serial communication of 8051 and their interrupts using programs
EE 433	POWER SYSTEMS LAB
EE 433.1	Able to comprehend and analyze the regulation, efficiency and ABCD constants of transmission lines
EE 433.2	Able to analyze and study the characteristics of different protective relays to know performance

EE 433.3	Able to observe and analyze parallel operation of alternator and differential protection of Transformer to the performance
EE 433.4	Able to apply different methods to find sequence impedances of transformer ,alternator and to measure the capacitance of 3-core cable
EE 434	PROJECT SEMINAR
EE 434.1	Carryout Literature survey in the area of interest.
EE 434.2	Interact with industry environment/faculty for the selection of problem relevant to current technology.
EE 434.3	Understand and discuss the problem to provide possible solutions
EE 434.4	Organize the presentation in the form of a report
IV YEAR II SEM	
COURSE CODE	COURSE NAME
EE 451	UTILIZATION
EE 451.1	Able to Differentiate and Distinguish various heating and welding process and discuss the different methods.
EE 451.2	able to identify various switches used in motors and discuss the various motor control circuits.
EE 451.3	able to Identify various lamps used in lightening schemes, calculate and design the lightening scheme for given area.
EE 451.4	Ability to plot the speed time curves, determine and calculate the tractive effort, torque required and specific energy consumption.
EE 451.5	Ability to distinguish types of drives used in traction.
CE 452	DISASTER MITIGATION & MANAGEMENT
CE 452.1	Ability to analyze and critically examine existing programs in disaster management regarding vulnerability, risk and capacity at local level.
CE 452.2	Ability to choose the appropriate activities and tools and set up priorities to build a coherent and adapted disaster management plan.
CE 452.3	Ability to understand various mechanisms and consequences of natural and human induced disasters for the participatory role of engineers in disaster management
CE 452.4	Develop an awareness of the chronological phases of disaster response and relief operations for formulating effective disaster management plans.
CE 452.5	Ability to understand the concept of remote sensing and geographical information systems for their effective applications in disaster management.
EE 471	RENEWABLE ENERGY SOURCES
EE 471.1	Memorize the statistics of non-conventional sources
EE 471.2	Describe about solar radiation and solar cell fabrication
EE 471.3	Determine the maximum power developed by the wind power plant
EE 471.4	Recall the operation of bio gasifiers
EE 471.5	Summarize the operation of a wave, tidal and OTEC plants
ME 472	INDUSTRIAL ADMINISTRATION & FINANCIAL MANAGEMENT
ME 471.1	On completion of this unit learner (student) will be able to, (a) define business, objectives of business and types of business organization such as private undertakings, public undertakings and joint sector. (b) Describe factors influencing the choice of suitable form of organization. (c) Explain organization structures and advantage of organization chart. (d) Describe principles of organization structure. (e)

ME 471.2	On completion of this unit student will be able to, (a) State definitions and objectives of work study, method study and time study. (b) Discuss applications of work study and its advantages. (c) Know the contributions of F.W Taylor & Frank Gilbreth. (d)
ME 471.3	On completion of this unit student will be able to, (a) Define inspection and quality and their differences. (b) Discuss the objectives of inspection and kinds of inspections. (c) Summarize SQC and techniques used in SQC. (d) Explain sampling
ME 471.4	On completion of this unit student will be able to, (a) Define optimization and operations research. (b) Solve problems on LPP using graphical solution.
ME 471.5	On completion of this unit student will be able to, (a) Express types of cost and elements of cost. (b) Describe over heads, types of over heads and allocation of over heads. (c) Define depreciation, methods of depreciation and compute depreciation.
EE 481	DIGITAL SIGNAL PROCESSING LAB
EE 481.1	Generate Basic Analog and Discrete time Signals
EE 481.2	Evaluate frequency response, output response, Linear & circular convolution using DFT. Appreciate efficient implementation of DFT using FFT.
EE 481.3	Design & Interpret FIR and IIR Filters using various techniques
EE 481.4	Devise the above concepts using MATLAB & CCS tools. Acquire knowledge to work on real time processing using DSP Processors
EE 482	GENERAL SEMINAR
EE 482.1	Carryout Literature survey in the area of interest.
EE 482.2	Interact with faculty and choose the topic for presentation related to recent trends in electronics and communication discipline.
EE 482.3	Prepare, organize the presentation and Present effectively that helps to acquire good organizing and communicating skills
EE 482.4	Organize the presentation in the form of a report.
EE 483	PROJECT
EE 483.1	Understand and analyze the problem to provide an optimal solution
EE 483.2	Implement the project using hardware and software tools
EE 483.3	Analyze the performance of implemented results with existing work
EE 483.4	Organize the project work in the form of report/Thesis

ACADEMIC YEAR : 2015-16

I YEAR

COURSE CODE	COURSE NAME
EG 101	ENGLISH
EG 101.1	learn the importance of communication, features and process of communication and verbal and Non verbal communication in order to communicate effectively
EG 101.2	improve oral communication skills, listening skills, interpersonal communication and improve interpersonal skills by using Johari window and Knapp's model
EG 101.3	improve writing techniques such as passage expansion, Précis-writing, Essay writing, Report writing, SoP, Summary - writing and official letters
EG 101.4	learn the basic rules of grammar with appropriate usage and learn to use vocabulary such as synonyms and antonyms, homonyms and homophones
EG 101.5	improve comprehension skills by reading inspirational texts and infer information.

MT 101	MATHEMATICS-I
MT 101.1	Solve some problems based on the concept of convergence and divergence of infinite series and apply the various tests of convergence to determine the nature of an infinite series
MT 101.2	Solve problems based on the fundamental theorems of differential calculus, expanding functions using Taylor's & Maclaurin's series and solve problems on finding Radius of curvature, evolute and envelopes
MT 101.3	Evaluate limits, Continuity and derivatives of functions of two variables, Maxima & Minima for functions of two or more variables arising in Engineering Problems.
MT 101.4	Evaluate double and triple integrals and solve problems based on vector differentiation and vector integration.
MT 101.5	Solve problems based on the concepts of rank of a matrix, Eigen values, vectors and some concepts of linear algebra such as vector spaces, basis, dimension and linear transformations.
MT 102	MATHEMATICS-II
MT 102.1	Solve various types of First order ordinary differential equations and apply these
MT 102.2	Solve higher order linear O.D.E's with constant Coefficients using various
MT 102.3	Solve linear O.D.E's using power series and Frobenius methods and apply these
MT 102.4	Evaluate improper integrals using Beta and Gamma functions and solve Bessel's
MT 102.5	Solve some problems using the properties of Legendre polynomial and Bessel's
MT 102.6	Evaluate Laplace Transforms and inverse Laplace transforms of various functions
PH 101	ENGINEERING PHYSICS
PH101.1	To understand the concept of interference, diffraction and polarization.
PH101.2	Ability to know the utilization of laser technology, Holography and optical fiber and their engineering applications in various disciplines.
PH101.3	To understand the basics of statistical mechanics, significance and applications of Schrodinger wave equation
PH101.4	Able to analyze the various crystal structures and their defects and to understand the electrons behavior in solids.
PH101.5	Gain the knowledge on magnetic materials and dielectric materials and superconducting materials.
PH101.6	Understand the characterization and basic preparation methods in thin films and Nano-materials.
CH 101	ENGINEERING CHEMISTRY
CH 101.1	Explain quantitative relationship between chemical and electrical energy, construction and working of different types of electrodes used in construction of electrochemical cells Understand the operating principle and apply the knowledge to design batteries.
CH 101.2	Relate the principle behind mechanism and rate of corrosion leading to deterioration of metal and apply corrosion control method.
CH 101.3	Explain method to find impurities present in water and establish various methods of purifying water.
CH 101.4	Show the need for replacement of conventional materials with polymers to be used as plastics, fibres, elastomers, conducting polymers and composites.
CH 101.5	Identify the dependence on conventional fuel like coal, petroleum, and gaseous fuel to meet present energy requirement. Introduce the need for change to renewable sources of energy.

CH 101.6	Interpret the importance of lubricants and liquid crystals. Phase rule concept is used to know the process of separation of pure metals from alloys. Apply the principles of Green chemistry to carryout eco-friendly chemical processes without causing environmental pollution.
CS101	PROGRAMMING IN C& C++
CS 101.1	Understand the procedure to create, compile and execute C program for different
CS 101.2	Apply the concepts of control statements, operators, functions and arrays to
CS 101.3	Solve programs on pointers and strings
CS 101.4	access variables through dynamic memory.
CS 101.5	Understand and Apply the concepts of derived data types and file handling
CS 101.6	Understand the concepts of object oriented programming through C++ and know the
CS 101.7	Analyze and write programs on inheritance, polymorphism, classes and objects
CE101	ENGINEERING MECHANICS
CE 101.1	Resolve forces acting on a body; obtain resultant force or moment acting due to set of forces and moments acting on a body; and determine unknown forces from equations of equilibrium of forces and moments.
CE 101.2	Obtain location of centres of mass of regular and composite shapes; use Pappus theorems to calculate surface areas and volumes of composite structures.
CE 101.3	Distinguish between static and kinematic friction, determine effect of static or kinematic friction forces acting on a single or a system of connected bodies; effect of friction in screw jack, wedge, brakes and belt transmission.
CE 101.4	Compute area moment of inertia and products of inertia for simple and composite elements using integration methods and transform theorem; calculate mass MI and radius of gyration for regular and composite structures.
CE 101.5	Obtain displacement, velocity and acceleration relations of particles in rectilinear and curvilinear motion including projectiles; write equations of motion under influence of forces for particles and connected bodies and for plane motion of rigid bodies.
CE 101.6	Apply Principles of work and energy to motion of particle or connected bodies to evaluate the velocities and angular velocities of bodies in connected systems and involving plane motion.
CE 101.7	Apply Principle of conservation of Momentum and impulse force/moment to evaluate the velocities of a body after application of force/moment, and of bodies in impact/collision considering Coefficient of Restitution.
CE102	ENGINEERING GRAPHICS
CE 102.1	The student would be able to recall the mathematical concepts related to scales, conic
CE 102.2	The student would be able to analyse the position of objects when placed in different
CE 102.3	The student would be able to draw the various views of three dimensional objects
CE 102.4	The student would be able to assess the shapes of objects that can be generated when
CE 102.5	The student would be able to recognize the various features of solids by viewing
PH 132	PHYSICS LAB
PH 132.1	To demonstrate the phenomena of interference and diffraction to determine
PH 132.2	To verify the laws of polarization and determine the specific rotator power of an optically active substance.
PH 132.3	To understand the principle involved in laser and optical fiber technology.
PH 132.4	To examine the nature of ferromagnetic and dielectric materials to evaluate the related parameters.

PH 132.5	To characterize semiconducting devices to calculate parameters like resistance, energy gap and temperature co-efficient.
PH 132.6	To study the Characteristics of Photo Voltaic Cells and evaluate their efficiencies.
CH 132	CHEMISTRY LAB
CH 132.1	Make use of analytical and electronic balances for weighing samples in chemical analysis.
CH 132.2	Identify and estimate impurities causing hardness and alkalinity in water.
CH 132.3	Find the strength of reducing species such as Fe+2, Fe+3, Cr+3, Cu+2 and Cl- by various titrimetric methods like complexometry and Iodometry.
CH 132.4	Estimate quantitatively different chemical species present in complex mixtures, ores and unknown samples by various instrumentation techniques like Conductometry and Potentiometry.
CH 132.5	Determine quantitatively different chemical species present in unknown samples by various instrumentation techniques like pH metry and Colorimetry.
CH 132.6	Recall the methods of preparation of industrially important polymers.
ME 131	WORKSHOP PRACTICE
ME 131.1	The student would be able to utilize the various tools of fitting namely bench vice, V block, files, surface plate, surface gauge, hacksaw, drill bits, etc to perform various operations on the work piece (job) like filing, scrapping, drilling, tapping, etc.
ME 131.2	The student would be able to identify different types of connections like series, parallel, stair case wiring, etc. Subsequently, the student would be able to correlate the methods of electrical wiring in different domestic and industrial applications.
ME 131.3	The student would be able to utilize the various tools of carpentry namely bench vice, planes, mallet, hammers, files, different saws, etc to perform various carpentry joints like half lap joint, dove tail joint, bridle joint, etc.
ME 131.4	The student would be able to utilize the various tools of sheet metal (tin smithy) namely hammer, mallet, stakes, snips, pliers, punches, vernier calipers, wire gauge, etc to perform various operations like cutting, shearing, notching, bending, riveting, etc. on the given sheet metal and develop various objects like tray, funnel, scoop, cylinder, etc.
CS 131	PROGRAMMING LAB
CS 131.1	Understand the procedure to create, compile and execute C program for different inputs.
CS 131.2	Apply the concepts of functions and arrays and write C programs for matrix, searching and sorting techniques.
CS 131.3	Create Derived types and deal files by applying the concepts of structures and pointers.
CS 131.4	Understand the procedure to create, compile and execute C++ program for different inputs.
CS 131.5	Apply the concepts of classes, objects, inheritance and polymorphism in C++.
CS 131.6	Write programs in both C and C++ and could distinguish the differences between C and C++.
EG 131	ENGLISH LANGUAGE LAB
EG 131.1	Learn the sound system of English Language with the knowledge of IPA-classification & description

EG 131.2	Learn the word stress & aspects of connected speech
EG 131.3	learn the Rhythm & Intonation of English language
EG 131.4	Improve the fluency in the spoken form of the language by participating in Presentation skills, Public speaking, Group Discussion and Debate.
EG 131.5	learn to dictionary and thesaurus effectively in an appropriate way.
II YEAR I SEM	
COURSE CODE	COURSE NAME
MT 201	MATHEMATICS.III
MT 201.1	Solve problems on formation of partial differential equations and on some standard first ordered partial differential equations.
MT 201.2	Develop a Fourier series for a given function in various intervals and apply the theory of Fourier series to some boundary value problems associated with one -
MT 201.3	Classify and solve problems associated with discrete and continuous probability distributions.
MT 201.4	Identify and solve problems associated with Normal, Gamma, Poisson and Chi-Square distributions.
MT 201.5	Apply Chi-square test, t-test and F-test for analyzing experimental data.
MT 201.6	Apply method of least squares for curve fitting, computing correlation Coefficient and obtain lines of regression for given data.
EE 201	ELECTRICAL CIRCUITS.I
EE 201.1	Apply circuit analysis methods to solve electrical circuits.
EE 201.2	Apply sinusoidal phasor concepts to solve AC circuits.
EE 201.3	Analyze three phase balanced and unbalanced circuits.
EE 201.4	Apply network theorems to solve circuits. Formulate different matrices based on Graph theory
EE 201.5	Understand resonance, mutually induced EMF concepts and solve electrical circuits.
CE 222	ENVIRONMENTAL STUDIES
CE 222.1	To know the importance of natural resources (Water and land), Energy resources, floods, drought, impact of modern agriculture, land degradation.
CE 222.2	To understand basic concepts of an ecosystem and its importance
CE 222.3	To understand importance of biodiversity and need for its conservation
CE 222.4	To study different types of environmental pollution, their causes, effects and control measures and need for environmental legislation.
CE 222.5	To critically analyze global environmental issues, social aspects including population growth, disaster management.
EE 204	ELECTRICAL MEASUREMENTS AND INSTRUMENTS
EE 204.1	Define measurement, error, correction, accuracy and precision and list the methods the various effects used for measurement
EE 204.2	Demonstrate measurement of electrical parameters current, voltage, power and energy
EE 204.3	Describe the methods of measuring R L C
EE 204.4	Perform experiments to measure flux density and assess iron loss.
EE 204.5	Implement calibration methods for various instruments. Design the experimental work with minimum error which is used for planning and implementation
EC 221	ELECTRICAL ENGINEERING.I

EC 221.1	Interpret the characteristics of diodes to evaluate the diode parameters and apply diode models to analyze the applications of diodes.
EC 221.2	Identify the merits and demerits of various filters, formulate and design rectifier circuits with filters.
EC 221.3	Discriminate the BJT configurations to recognize appropriate transistor configuration for any given application and design the biasing circuits with good stability.
EC 221.4	Analyze and compare the performance of BJT amplifiers with various biasing circuits.
EC 221.5	Distinguish the principles of BJT & FET, comprehend the characteristics of FET and design biasing circuits for FET amplifiers.
ME 221	PRINCIPLES OF MECHANICAL ENGINEERING
ME 221.1	Formulate the steady flow energy equations for different flow processes, calculate different modes of heat transfer.
ME 221.2	Explain the principle of IC Engines, distinguish between 2-stroke and 4-stroke cycle engines, compute mechanical and thermal efficiencies of IC Engines
ME 221.3	Explain Steam generation processes in fire tube and water tube boilers, explain closed and open cycle gas turbines schematically
ME 221.4	Classify various types of gear trains and calculate velocity ratios. Explain different arrangements of belt drive systems, and formulate expressions for length of belts, ratio of tensions.
ME 221.5	Derive Bernoulli's equation and calculate flow rates in venture meter, orifice meter, derive Darcy's equation, explain working principles of positive displacement and rotodynamic pumps
EC 241	ELECTRONIC ENGINEERING LAB.I
EC 241.1	Analyze the characteristics of various semiconductor diodes, SCR, UJT
EC 241.2	Determine the input and output characteristics of transistor in CB, CE, CC
EC 241.3	Design the rectifiers with and without filters and verify them.
EC 241.4	Measure voltage, frequency and phase of any waveform using CRO.
EC 241.5	Design amplifiers using BJT, FET and determine their frequency response.
EE 242	CIRCUITS AND MEASUREMENTS LAB
EE 242.1	Demonstrate the verification of various theorems.
EE 242.2	Define error and calibrate the instruments using potentiometer
EE 242.3	Demonstrate the measurement of electrical parameters like resistance, inductance and capacitance using various types of bridges.
EE 242.4	Analyze the behavior of R L C Circuits with different sources.
EE 242.5	Demonstrate direct and phantom loading methods to assess the error in energy measurement
II YEAR II SEM	
COURSE CODE	COURSE NAME
EE 251	ELECTRICAL CIRCUITS.II
EE 251.1	Analyze single and double transient circuits and solve them by using Differential Equations for various excitations
EE 251.2	Identify Laplace Transform properties and solve single and double transient circuits with different excitations
EE 251.3	Solve two port networks

EE 251.4	Analyze harmonic frequency behavior of linear networks and determine the harmonic power
EE 251.5	Test the realizability of transfer function and synthesize the network
CE 223	SOLID MECHANICS
CE 223.1	Understand the basic concepts of stresses and strains for different materials.
CE 223.2	Know the mechanism of the development of shear force and bending moment diagrams in beams
CE 223.3	Know the theory of simple bending ,analyse the bending stresses, shear stresses and direct and bending stresses for rectangular, circular and standard structural sections.
CE 223.4	Study the deflections and its applications and know the strain energy concepts.
CE 223.5	Analyze torsional stresses and spring applications.
EE 253	POWER SYSTEMS.I
EE 253.1	List and analyze various conventional Energy Sources such as Thermal, Hydal, Nuclear and Gas Turbine Power Plants, describe their Operating Principles.
EE 253.2	List and analyze different Nonconventional Energy Sources like Solar Energy and Wind Energy, describe their Operating Principles.
EE 253.3	Differentiate various factors of Economics of power generation and analyze different Tariffs, determine voltage drops and losses in AC & DC Distributors.
EE 253.4	Analyze sags on overhead lines, Determine insulator string efficiency.
EE 253.5	List and assess inductance, capacitance of Single phase and Three Phase Over Head Transmission Lines.
EC 271	ELECTRONIC ENGINEERING.II
EC 271.1	Design and Analyze low frequency, mid frequency and high frequency response of small signal single stage and Multistage RC coupled using BJT.
EC 271.2	Identify the type of negative feedback, Analyze and design of various negative feedback amplifiers.
EC 271.3	Design various Audio Frequency and Radio Frequency oscillators using BJT.
EC 271.4	Distinguish various classes of Power Amplifiers.
EC 271.5	Differentiate the performance of non linear and linear wave shaping circuits like Integrator, Differentiator, Clipper and clamper circuits.
EE 252	ELECTROMAGNETIC THORY
EE 252.1	Apply Electrostatic laws to calculate electric fields of different configurations
EE 252.2	Find electric field and capacitance including dielectric media effect
EE 252.3	Apply Magneto static laws and calculate inductance of different configurations
EE 252.4	Modify Maxwell's equations for time varying fields and their applications to solve problems
EE 252.5	Formulate wave equations and estimate Electromagnetic power
EE 254	ELECTRICAL MACHINES.I
EE 254.1	Have a thorough understanding about the energy conversion principles
EE 254.2	Illustrate construction, operation and winding diagrams of DC machines.
EE 254.3	Illustrate the characteristics of DC generators and DC motors and judge their applications
EE 254.4	Demonstrate speed control evaluate performance of dc machines by conducting suitable tests

EE 254.5	Explain construction, principle of operation of single phase transformers, describe circuit model and demonstrate various testing methods to determine the efficiency and regulation
EC 291	ELECTRONIC ENGINEENG LAB.II
EC 291.1	Analyze frequency response of two stage RC coupled at low frequency, mid frequency and high frequency and compare their bandwidths.
EC 291.2	Differentiate Negative feed amplifiers at low frequency, mid frequency and high frequency and compare their bandwidths.
EC 291.3	Distinguish various oscillator circuits with respect to frequency of oscillations.
EC 291.4	Analyze power amplifiers with their efficiency.
EC 291.5	Design clipper and clamper circuits to generate required waveforms.
ME 291	MECHANICAL TECHNOLOGY LAB
ME 291.1	To correlate the performance parameters of 4-stroke petrol engines, 4- stroke diesel engines and reciprocating air compressors with respect to theoretical analysis and experimental values.
ME 291.2	To assess the variation in flow measurements with respect to theoretical and actual values for venturimeters, orifice meters and pitot tubes.
ME 291.3	To assess the variation of viscosity of various oils with temperature and also determine their flash and fire points
ME 291.4	Analyze the performance parameters related to various modes of heat transfer and compare with their theoretical values.
ME 291.5	Evaluate the performance parameters of rotodynamic pumps and Turbines and compare with their theoretical values.
III YEAR I SEM	
COURSE CODE	COURSE NAME
EE 301	POWER SYSTEMS.II
EE 301.1	Discriminate different transmission line models and find the performance of transmission lines.
EE 301.2	Compare and assess the reactive power compensation for voltage control.
EE 301.3	Change Single line diagram to p.u. system and perform balanced fault calculations.
EE 301.4	Apply symmetrical components to convert unbalanced power system faults and obtain sequence networks and perform fault calculations.
EE 301.5	Construct bewley lattice diagram to analyze transients in power systems.
EE 302	ELECTRICAL MACHINERY.II
EE 302.1	Judge the applications of 3-phase transformers and auto transformers
EE 302.2	Estimate the load shared by transformers under different conditions.
EE 302.3	Illustrate the principle of operation, characteristics of induction motor and estimate its performance.
EE 302.4	Justify various starting methods and perform speed control methods.
EE 302.5	Assess the effects of unbalanced operation and single phasing on electrical machines.
EE 303	POWER ELCTRONICS
EE 303.1	Differentiate construction, working and characteristics of various power electronic devices
EE 303.2	Classify and apply triggering circuits , protection methods of SCR
EE 303.3	Analyze single phase and three phase controlled rectifiers for R, RL and RLE loads
EE 303.4	Illustrate and analyze various types of D.C choppers , a.c voltage controllers and cyclo converters.

EE 303.5	Analyze single phase inverter , three phase inverter in 120degrees and 180degrees mode.
EE 304	DIGITAL ELECTRONICS AND LOGIC DESIGN
EE 304.1	Apply basic Boolean Operators and construct Karnaugh Maps to simplify Boolean expressions.
EE 304.2	Understand and apply different number systems to perform mathematical operations required for digital circuits.
EE 304.3	Understand principles of IC families and construct combinational logic circuits.
EE 304.4	Design Asynchronous and Synchronous sequential circuits using flip-flops
EE 304.5	Design Melay and Moore machine models and understand programmable logic devices
EE 305	LINEAR INTEGRATED CIRCUITS
EE 305.1	Understand the terminal characteristics of op-amps and design /analyze fundamental circuits based on op-amps.
EE 305.2	Realize various linear and non-linear applications of Op-Amp.
EE 305.3	Design and Formulate Op-Amp oscillators, Analyze the operation of the most commonly used D/A and A/D converter types.
EE 305.4	Analyze a fixed voltage regulator and adjustable voltage regulators.
EE 305.5	Design and compare Low pass, High pass, Band Pass and Band stop active filters.
EE 306	LINEAR CONTROL SYSTEMS
EE 306.1	Develop and analyze mathematical models open& closed loop systems
EE 306.2	Measure the Stability of Linear Control Systems using Time Domain and S-Plane based Approaches.
EE 306.3	Decide the Stability of Linear Control Systems using Frequency Domain Approach.
EE 306.4	Construct State space model and its solution using State Transition Matrix.
EE 306.5	Solving Discrete Control Systems using Z-Transform Models.
EE 331	ELECTRICAL MACHINES LAB.I
EE 331.1	Identify the conditions for voltage build up in a DC generator
EE 331.2	Compare the performance characteristics of various types of generators
EE 331.3	Compare the performance characteristics of various types of DC motors and judge their applications
EE 331.4	Demonstrate speed control methods on DC motors
EE 331.5	Perform the direct and indirect tests on DC motors and transformers to evaluate the performance.
EE 332	CONTROL SYSTEMS LAB
EE 332.1	Able to analyze the physical systems represented in Transfer function.
EE 332.2	Able to apply the control components like ac servo motor, synchro pair.
EE 332.3	Able to understand and comprehend the controller design both in time domain and frequency domain.
EE 332.4	Able to distinguish and will have knowledge of Feedback control systems like A.C
III YEAR II SEM	
COURSE CODE	COURSE NAME
EE 351	DIGITAL SIGNAL PROCESSING
EE 351.1	Understand the basic operations on Discrete Time Signals and Classify a system as Linear Time-invariant/Variant, Stable/Unstable, causal/non-causal.

EE 351.2	Conclude DTFT to evaluate frequency response. Determine DFT using direct and FFT methods. Analyze Circular and Linear convolution and apply for linear filtering operations.
EE 351.3	Evaluate Z-transforms, Construct different forms of IIR and FIR filters.
EE 351.4	Formulate & apply Digital IIR filter design using Butterworth & Chebyshev approximations to Verify the characteristics of LPF, HPF, BPF & BEF
EE 351.5	Design & compare Digital FIR filters using various windows, Analyze the characteristics of various windows.
EE 352	ELECTRICAL MACHINERY.III
EE 352.1	Describe types of windings used in AC machines, define winding factors and explain suppression of harmonics in generated e m f .
EE 352.2	Demonstrate various tests on salient and non-salient type Synchronous generators to evaluate its performance.
EE 352.3	Compare asynchronous and synchronous motors and evaluate the performance with the help of circuit model.
EE 352.4	Assess transient behavior of synchronous generators and its stability.
EE 352.5	Analyze the characteristics of different types of single phase motors
EE 353	SWITCHGEAR AND PROTECTION
EE 353.1	Understand and describe need of protection for power system. Define protective relay and compare different types of protective relays.
EE 353.2	Describe phase and amplitude comparator and analyze the dual input comparator.
EE 353.3	Understand distance protection scheme and compare different types of distance relays to protect the transmission line from the different faults
EE 353.4	Understand need of protection of generator and transformer and to analyze different
EE 353.5	Describe the function of circuit breaker and operation. Understand arc phenomenon and discuss different arc extinction methods and compare different types of Circuit Breakers.
EE 354	MICRO PROCESSORS AND MICRO CONTROLLERS
EE 354.1	Identify the architectural features of 8086 and Conceptualize its interrupt structure
EE 354.2	Develop the assembly language programming using 8086
EE 354.3	Comprehend the operation of various peripheral devices like 8254 A programmable timer/counter, 8279 Keyboard/Display and their interfacing with 8086.
EE 354.4	Differentiate between microprocessor and microcontroller in their architectural features and develop the assembly language programming using the timers/counters 8051.
EE 354.5	Develop programs for UART along with interrupts and Extend the memory and I/O ports of 8051 and Program 8051 for real time applications.
CM 371	MANAGERIAL ECONOMICS & ACCOUNTANCY
CM 371.1	There will be general exposure to the student about the business, economic, cultural and social environment and the structural aspects of Managerial Economics.

CM 371.2	After analytically studied about different principles and laws of managerial economics student will be able to examine the consumer behaviour and take various managerial decisions, such as forecasting demand for new and existing goods and services. Student will be able to appraise of the firm's behavior in different market structures with respective to the competition, price fixation of product.
CM 371.3	By analyzing and examining various production function alternatives, the student will able to suggest the best profit maximizing production function to the producers/entrepreneurs.
CM 371.4	With the knowledge of capital budgeting methods and techniques, the student can evaluate different business proposals and identify the best among them for prudent investment.
CM 371.5	Different sources of capital shall be explored to the business and also students determine the financial viable sources of capital.
CM 371.6	With the help of the accounting knowledge student will be able to analyse the business financial statements and interpret them for taking ideal managerial decisions.
EE 381	ELECTRICAL MACHINES LAB.II
EE 381.1	Able to analyze the phase conversion of transformer and performance of three Induction Motor by circle diagram.
EE 381.2	Able to distinguish various speed control methods of three phase Induction Motor and voltage regulation of alternator
EE 381.3	Able to describe performance characteristics of single phase Induction Motor and Synchronous Motor.
EE 381.4	Able to understand P.F. improvement of Induction Motor by using capacitors
EE 382	POWER ELECTRONICS LAB
EE 382.1	Determine and identify the characteristic points of power electronic devices
EE 382.2	Design and Verify the triggering circuits
EE 382.3	Estimate the performance of converter circuits
EE 382.4	Application of converters to control electrical machines
EE 383	INTIGRATED CIRCUITS LAB
EE 383.1	Students will be able to Design circuits using operational amplifiers such as Clippers, Clampers and Filter circuits
EE 383.2	Students will be able to Design and analyze pulse generator and delay using 555 timer
EE 383.3	Students will be able to Design and explain OP Amp to generate sine waveform, Square wave form, Triangular waveforms
EE 383.4	Students will be able to Design various combinational circuits using logic gates, sequential circuits using Flip-Flops.
EE 384	INDUSTRIAL VISIT
EE 384.1	Forecast about the technical approach in different industries
EE 384.2	Integrate their knowledge about different technologies and to apply them in problem solving techniques.
EE 384.3	Predict different problems that disturb the environment and solve them.
EE 384.4	Construct different Projects with the knowledge acquired.

IV YEAR I SEM	
COURSE CODE	COURSE NAME
EE 401	POWER SYSTEMS OPERATION AND CONTROL
EE 401.1	Construct mathematical model for power systems and networks.
EE 401.2	Evaluate different methods of solving nonlinear algebraic equations and perform load flow solutions.
EE 401.3	Recognize the need for economic load dispatch, design the strategies and perform optimal load dispatch.
EE 401.4	Recognize need for frequency control, analyze the effects of the variation in frequency and implement the mathematical models for single and two area control.
EE 401.5	Recognize rotor angle stability, Identify and analyze approaches to solve stability problems.
EE 402	ELECTRIC DRIVES AND STATIC CONTROL
EE 402.1	Learn the concept and classification of electric drives, dynamics of motor-load combination and stability aspects of an electric drive system.
EE 402.2	Explain the characteristics of electric drives, starting methods of electric motors and methods to improve the starting Efficiency.
EE 402.3	Summarize the concept of Electric Braking, its advantages & types of Electric braking and it's implementation through illustration.
EE 402.4	Acquire the knowledge of speed control using ac-dc and dc-dc converters for dc shunt and dc series motors, also control-loop implementation of a dc drive.
EE 402.5	Summarize the working of phase controlled converters, voltage source inverters and cyclo-converters used in control of induction motor drives.
EE 403	ELECTRICAL MACHINE DESIGN
EE 403.1	Examine the types of materials used for electrical machines
EE 403.2	Determine the specific permeance for magnetic loading, obtain temperature rise of machines
EE 403.3	Determine the main dimensions of d.c machine and transformer
EE 403.4	Determine the main dimensions of 3-phase induction motor and alternator
EE 403.5	Recall computer aided techniques used for design of 3 phase induction motor
EE 411	HIGH VOLTAGE DC TRANSMISSION
EE 411.1	To compare and contrast the AC and DC transmission systems and understand the practical utility of HVDC transmission system
EE 411.2	To understand the analysis of converter circuits with grid control, with and without overlap angle
EE 411.3	To understand the purpose of control and study the controlling methods of HVDC transmission system
EE 411.4	To study the various faults in converters, harmonics introduced in the system and to understand the protection for these faults
ME 411	ENTERPRENUERSHIP
ME 411.1	To develop distinct entrepreneurial traits and ability to recognize business opportunities to build entrepreneurial career.
ME 411.2	Students can develop and systematically apply entrepreneurial way of thinking that will allow them to identify and create business opportunities for commercialized success.

ME 411.3	To design and develop a well presented successful business plan that is feasible and to gain the advantage of Project financing.
ME 411.4	To effectively plan projects through CPM/Pert techniques. To understand human aspects of business and helps to assess and evaluate tax burden.
ME 411.5	This helps the entrepreneur to manage his human resources and time effectively.
EE 431	ELECTRICAL SIMULATION LAB
EE 431.1	Develop and test MATLAB m-code for Power systems studies
EE 431.2	Simulate and analyze the control system experiments
EE 431.3	Analyze circuits using MATLAB an P-Spice
EE 431.4	Design Lag-Lead Compensators
EE 432	MICRO PROCESSORS AND MICRO CONTROLLERS LAB
EE 432.1	Develop the logic using instruction set of 8086 in different addressing modes to carry out arithmetic, logical and string operations using MASM
EE 432.2	Interface ADC, 8254, Traffic Signal with 8086 microprocessors.
EE 432.3	Demonstrate various arithmetical, logical programs using 8051 trainer kit
EE 432.4	Comprehend the usage of on-chip timers and serial communication of 8051 and their interrupts using programs
EE 433	POWER SYSTEMS LAB
EE 433.1	Able to comprehend and analyze the regulation, efficiency and ABCD constants of transmission lines
EE 433.2	Able to analyze and study the characteristics of different protective relays to know performance
EE 433.3	Able to observe and analyze parallel operation of alternator and differential protection of Transformer to the performance
EE 433.4	Able to apply different methods to find sequence impedances of transformer ,alternator and to measure the capacitance of 3-core cable
EE 434	PROJECT SEMINAR
EE 434.1	Carryout Literature survey in the area of interest.
EE 434.2	Interact with industry environment/faculty for the selection of problem relevant to current technology.
EE 434.3	Understand and discuss the problem to provide possible solutions
EE 434.4	Organize the presentation in the form of a report
IV YEAR II SEM	
COURSE CODE	COURSE NAME
EE 451	UTILIZATION
EE 451.1	Able to Differentiate and Distinguish various heating and welding process and discuss the different methods.
EE 451.2	able to identify various switches used in motors and discuss the various motor control circuits.
EE 451.3	able to Identify various lamps used in lightening schemes, calculate and design the lightening scheme for given area.
EE 451.4	Ability to plot the speed time curves, determine and calculate the tractive effort, torque required and specific energy consumption.
EE 451.5	Ability to distinguish types of drives used in traction.
CE 452	DISASTER MITIGATION & MANAGEMENT

CE 452.1	Ability to analyze and critically examine existing programs in disaster management regarding vulnerability, risk and capacity at local level.
CE 452.2	Ability to choose the appropriate activities and tools and set up priorities to build a coherent and adapted disaster management plan.
CE 452.3	Ability to understand various mechanisms and consequences of natural and human induced disasters for the participatory role of engineers in disaster management
CE 452.4	Develop an awareness of the chronological phases of disaster response and relief operations for formulating effective disaster management plans.
CE 452.5	Ability to understand the concept of remote sensing and geographical information systems for their effective applications in disaster management.
EE 471	RENEWABLE ENERGY SOURCES
EE 471.1	Memorize the statistics of non-conventional sources
EE 471.2	Describe about solar radiation and solar cell fabrication
EE 471.3	Determine the maximum power developed by the wind power plant
EE 471.4	Recall the operation of bio gasifiers
EE 471.5	Summarize the operation of a wave, tidal and OTEC plants
ME 472	INDUSTRIAL ADMINISTRATION & FINANCIAL MANAGEMENT
ME 471.1	On completion of this unit learner (student) will be able to, (a) define business, objectives of business and types of business organization such as private undertakings, public undertakings and joint sector. (b) Describe factors influencing
ME 471.2	On completion of this unit student will be able to, (a) State definitions and objectives of work study, method study and time study. (b) Discuss applications of work study and its advantages. (c) Know the contributions of F.W Taylor & Frank Gilbreth. (d)
ME 471.3	On completion of this unit student will be able to, (a) Define inspection and quality and their differences. (b) Discuss the objectives of inspection and kinds of inspections. (c) Summarize SOC and techniques used in SOC. (d) Explain sampling
ME 471.4	On completion of this unit student will be able to, (a) Define optimization and operations research. (b) Solve problems on LPP using graphical solution.
ME 471.5	On completion of this unit student will be able to, (a) Express types of cost and elements of cost. (b) Describe over heads, types of over heads and allocation of over heads. (c) Define depreciation, methods of depreciation and compute depreciation.
EE 481	DIGITAL SIGNAL PROCESSING LAB
EE 481.1	Generate Basic Analog and Discrete time Signals
EE 481.2	Evaluate frequency response, output response, Linear & circular convolution using DFT. Appreciate efficient implementation of DFT using FFT.
EE 481.3	Design & Interpret FIR and IIR Filters using various techniques
EE 481.4	Devise the above concepts using MATLAB & CCS tools. Acquire knowledge to work on real time processing using DSP Processors
EE 482	GENERAL SEMINAR
EE 482.1	Carryout Literature survey in the area of interest.
EE 482.2	Interact with faculty and choose the topic for presentation related to recent trends in electronics and communication discipline.
EE 482.3	Prepare, organize the presentation and Present effectively that helps to acquire good organizing and communicating skills
EE 482.4	Organize the presentation in the form of a report.
EE 483	PROJECT
EE 483.1	Understand and analyze the problem to provide an optimal solution
EE 483.2	Implement the project using hardware and software tools

EE 483.3	Analyze the performance of implemented results with existing work
EE 483.4	Organize the project work in the form of report/Thesis
ACADEMIC YEAR : 2014-15	
I YEAR	
COURSE CODE	COURSE NAME
EG 101	ENGLISH
EG 101.1	learn the importance of communication, features and process of communication and verbal and Non verbal communication in order to communicate effectively
EG 101.2	improve oral communication skills, listening skills, interpersonal communication and improve interpersonal skills by using Johari window and Knapp's model
EG 101.3	improve writing techniques such as passage expansion, Précis-writing, Essay writing, Report writing, SoP, Résumé - writing and official letters
EG 101.4	learn the basic rules of grammar with appropriate usage and learn to use vocabulary such as synonyms and antonyms, homonyms and homophones
EG 101.5	improve comprehension skills by reading inspirational texts and infer information.
MT 101	MATHEMATICS-I
MT 101.1	Solve some problems based on the concept of convergence and divergence of infinite series and apply the various tests of convergence to determine the nature of an infinite series
MT 101.2	Solve problems based on the fundamental theorems of differential calculus, expanding functions using Taylor's & McLaurin's series and solve problems on finding Radius of curvature, evolutes and envelopes
MT 101.3	Evaluate limits, Continuity and derivatives of functions of two variables, Maxima & Minima for functions of two or more variables arising in Engineering Problems.
MT 101.4	Evaluate double and triple integrals and solve problems based on vector differentiation and vector integration.
MT 101.5	Solve problems based on the concepts of rank of a matrix, Eigen values, vectors and some concepts of linear algebra such as vector spaces, basis, dimension and linear transformations.
MT 102	MATHEMATICS-II
MT 102.1	Solve various types of First ordered ordinary differential equations and apply these techniques for solving some problems in Geometry, Electricity, Heat transfer and Radio activity.
MT 102.2	Solve higher ordered linear O.D.E's with constant Coefficients using various techniques.
MT 102.3	Solve linear O.D.E's using power series and Frobenius methods and apply these methods for solving Legendre's D.E.
MT 102.4	Evaluate improper integrals using Beta and Gamma functions and solve Bessel's differential equations.
MT 102.5	Solve some problems using the properties of Legendre polynomial and Bessel's functions.
MT 102.6	Evaluate Laplace Transforms and inverse Laplace transforms of various functions and solve linear ordinary differential equations using Laplace transforms.
PH 101	ENGINEERING PHYSICS
PH101.1	To understand the concept of interference, diffraction and polarization.

PH101.2	Ability to know the utilization of laser technology, Holography and optical fiber and their engineering applications in various disciplines.
PH101.3	To understand the basics of statistical mechanics, significance and applications of Schrodinger wave equation
PH101.4	Able to analyze the various crystal structures and their defects and to understand the electrons behavior in solids.
PH101.5	Gain the knowledge on magnetic materials and dielectric materials and superconducting materials.
PH101.6	Understand the characterization and basic preparation methods in thin films and Nano-materials.
CH 101	ENGINEERING CHEMISTRY
CH 101.1	construction and working of different types of electrodes used in construction of electrochemical cells Understand the operating principle and apply the knowledge to design batteries.
CH 101.2	Relate the principle behind mechanism and rate of corrosion leading to deterioration of metal and apply corrosion control method.
CH 101.3	Explain method to find impurities present in water and establish various methods of purifying water.
CH 101.4	Show the need for replacement of conventional materials with polymers to be used as plastics, fibres, elastomers, conducting polymers and composites.
CH 101.5	Identify the dependence on conventional fuel like coal, petroleum, and gaseous fuel to meet present energy requirement. Introduce the need for change to renewable sources of energy.
CH 101.6	Interpret the importance of lubricants and liquid crystals. Phase rule concept is used to know the process of separation of pure metals from alloys. Apply the principles of Green chemistry to carryout eco-friendly chemical processes without causing environmental pollution.
CS101	PROGRAMMING IN C& C++
CS 101.1	Understand the procedure to create, compile and execute C program for different inputs.
CS 101.2	Apply the concepts of control statements, operators, functions and arrays to implement matrix, searching and sorting algorithms.
CS 101.3	Solve programs on pointers and strings
CS 101.4	access variables through dynamic memory.
CS 101.5	Understand and Apply the concepts of derived data types and file handling operations.
CS 101.6	Understand the concepts of object oriented programming through C++ and know the differences between C and C++ programs.
CS 101.7	Analyze and write programs on inheritance, polymorphism, classes and objects creation using C++.
CE101	ENGINEERING MECHANICS
CE 101.1	Resolve forces acting on a body; obtain resultant force or moment acting due to set of forces and moments acting on a body; and determine unknown forces from equations of equilibrium of forces and moments.
CE 101.2	Obtain location of centres of mass of regular and composite shapes; use Pappus theorems to calculate surface areas and volumes of composite structures.

CE 101.3	Distinguish between static and kinematic friction, determine effect of static or kinematic friction forces acting on a single or a system of connected bodies; effect of friction in screw jack, wedge, brakes and belt transmission.
CE 101.4	Compute area moment of inertia and products of inertia for simple and composite elements using integration methods and transform theorem; calculate mass MI and radius of gyration for regular and composite structures.
CE 101.5	Obtain displacement, velocity and acceleration relations of particles in rectilinear and curvilinear motion including projectiles; write equations of motion under influence of forces for particles and connected bodies and for plane motion of rigid bodies.
CE 101.6	Apply Principles of work and energy to motion of particle or connected bodies to evaluate the velocities and angular velocities of bodies in connected systems and involving plane motion.
CE 101.7	Apply Principle of conservation of Momentum and impulse force/moment to evaluate the velocities of a body after application of force/moment, and of bodies in impact/collision considering Coefficient of Restitution.
CE102	ENGINEERING GRAPHICS
CE 102.1	The student would be able to recall the mathematical concepts related to scales, conic
CE 102.2	The student would be able to analyse the position of objects when placed in different
CE 102.3	The student would be able to draw the various views of three dimensional objects
CE 102.4	The student would be able to assess the shapes of objects that can be generated when
CE 102.5	The student would be able to recognize the various features of solids by viewing
PH 132	PHYSICS LAB
PH 132.1	To demonstrate the phenomena of interference and diffraction to determine wavelength of a given light source of light
PH 132.2	To verify the laws of polarization and determine the specific rotator power of an optically active substance.
PH 132.3	To understand the principle involved in laser and optical fiber technology.
PH 132.4	To examine the nature of ferromagnetic and dielectric materials to evaluate the related parameters.
PH 132.5	To characterize semiconducting devices to calculate parameters like resistance, energy gap and temperature co-efficient.
PH 132.6	To study the Characteristics of Photo Voltaic Cells and evaluate their efficiencies.
CH 132	CHEMISTRY LAB
CH 132.1	Make use of analytical and electronic balances for weighing samples in chemical analysis.
CH 132.2	Identify and estimate impurities causing hardness and alkalinity in water.
CH 132.3	Find the strength of reducing species such as Fe ⁺² , Fe ⁺³ , Cr ⁺³ , Cu ⁺² and Cl ⁻ by various titrimetric methods like complexometry and Iodometry.
CH 132.4	Estimate quantitatively different chemical species present in complex mixtures, ores and unknown samples by various instrumentation techniques like Conductometry and Potentiometry.
CH 132.5	Determine quantitatively different chemical species present in unknown samples by various instrumentation techniques like pH metry and Colorimetry.
CH 132.6	Recall the methods of preparation of industrially important polymers.

ME 131	WORKSHOP PRACTICE
ME 131.1	The student would be able to utilize the various tools of fitting namely bench vice, V block, files, surface plate, surface gauge, hacksaw, drill bits, etc to perform various operations on the work piece (job) like filing, scrapping, drilling, tapping, etc.
ME 131.2	The student would be able to identify different types of connections like series, parallel, stair case wiring, etc. Subsequently, the student would be able to correlate the methods of electrical wiring in different domestic and industrial applications.
ME 131.3	The student would be able to utilize the various tools of carpentry namely bench vice, planes, mallet, hammers, files, different saws, etc to perform various carpentry joints like half lap joint, dove tail joint, bridle joint, etc.
ME 131.4	The student would be able to utilize the various tools of sheet metal (tin smithy) namely hammer, mallet, stakes, snips, pliers, punches, vernier calipers, wire gauge, etc to perform various operations like cutting, shearing, notching, bending, riveting, etc. on the given sheet metal and develop various objects like tray, funnel, scoop,
CS 131	PROGRAMMING LAB
CS 131.1	Understand the procedure to create, compile and execute C program for different inputs.
CS 131.2	Apply the concepts of functions and arrays and write C programs for matrix, searching and sorting techniques.
CS 131.3	Create Derived types and deal files by applying the concepts of structures and pointers.
CS 131.4	Understand the procedure to create, compile and execute C++ program for different inputs.
CS 131.5	Apply the concepts of classes, objects, inheritance and polymorphism in C++.
CS 131.6	Write programs in both C and C++ and could distinguish the differences between C and C++.
EG 131	ENGLISH LANGUAGE LAB
EG 131.1	Learn the sound system of English Language with the knowledge of IPA-classification & description
EG 131.2	Learn the word stress & aspects of connected speech
EG 131.3	learn the Rhythm & Intonation of English language
EG 131.4	Improve the fluency in the spoken form of the language by participating in Presentation skills, Public speaking, Group Discussion and Debate.
EG 131.5	learn to dictionary and thesaurus effectively in an appropriate way.
II YEAR I SEM	
COURSE CODE	COURSE NAME
MT 201	MATHEMATICS.III
MT 201.1	Solve problems on formation of partial differential equations and on some standard first ordered partial differential equations.
MT 201.2	Develop a Fourier series for a given function in various intervals and apply the theory of Fourier series to some boundary value problems associated with one - dimensional wave, heat and Laplace Equation.
MT 201.3	Classify and solve problems associated with discrete and continuous probability distributions.
MT 201.4	Identify and solve problems associated with Normal, Gamma, Poisson and Chi-Square distributions.

MT 201.5	Apply Chi-square test, t-test and F-test for analyzing experimental data.
MT 201.6	Apply method of least squares for curve fitting , computing correlation Coefficient and obtain lines of regression for given data.
EE 201	ELECTRICAL CIRCUITS.I
EE 201.1	Apply circuit analysis methods to solve electrical circuits.
EE 201.2	Apply sinusoidal phasor concepts to solve AC circuits.
EE 201.3	Analyze three phase balanced and unbalanced circuits.
EE 201.4	Apply network theorems to solve circuits. Formulate different matrices based on Graph theory
EE 201.5	Understand resonance, mutually induced EMF concepts and solve electrical circuits.
CE 222	ENVIRONMENTAL STUDIES
CE 222.1	To know the importance of natural resources (Water and land), Energy resources, floods, drought, impact of modern agriculture, land degradation.
CE 222.2	To understand basic concepts of an ecosystem and its importance
CE 222.3	To understand importance of biodiversity and need for its conservation
CE 222.4	To study different types of environmental pollution, their causes, effects and control measures and need for environmental legislation.
CE 222.5	To critically analyze global environmental issues, social aspects including population growth, disaster management.
EE 204	ELECTRICAL MEASUREMENTS AND INSTRUMENTS
EE 204.1	Define measurement, error, correction, accuracy and precision and list the methods the various effects used for measurement
EE 204.2	Demonstrate measurement of electrical parameters current, voltage, power and energy
EE 204.3	Describe the methods of measuring R L C
EE 204.4	Perform experiments to measure flux density and assess iron loss.
EE 204.5	Implement calibration methods for various instruments. Design the experimental work with minimum error which is used for planning and implementation
EC 221	ELECTRICAL ENGINEERING.I
EC 221.1	Interpret the characteristics of diodes to evaluate the diode parameters and apply diode models to analyze the applications of diodes.
EC 221.2	Identify the merits and demerits of various filters, formulate and design rectifier circuits with filters.
EC 221.3	Discriminate the BJT configurations to recognize appropriate transistor configuration for any given application and design the biasing circuits with good stability.
EC 221.4	Analyze and compare the performance of BJT amplifiers with various biasing circuits.
EC 221.5	Distinguish the principles of BJT & FET, comprehend the characteristics of FET and design biasing circuits for FET amplifiers.
ME 221	PRINCIPLES OF MECHANICAL ENGINEERING
ME 221.1	Formulate the steady flow energy equations for different flow processes, calculate different modes of heat transfer.
ME 221.2	Explain the principle of IC Engines, distinguish between 2-stroke and 4-stroke cycle engines, compute mechanical and thermal efficiencies of IC Engines

ME 221.3	Explain Steam generation processes in fire tube and water tube boilers, explain closed and open cycle gas turbines schematically
ME 221.4	Classify various types of gear trains and calculate velocity ratios. Explain different arrangements of belt drive systems, and formulate expressions for length of belts, ratio of tensions.
ME 221.5	Derive Bernoulli's equation and calculate flow rates in venture meter, orifice meter, derive Darcy's equation, explain working principles of positive displacement and rotodynamic pumps
EC 241	ELECTRONIC ENGINEERING LAB.I
EC 241.1	Analyze the characteristics of various semiconductor diodes, SCR, UJT
EC 241.2	Determine the input and output characteristics of transistor in CB, CE, CC
EC 241.3	Design the rectifiers with and without filters and verify them.
EC 241.4	Measure voltage, frequency and phase of any waveform using CRO.
EC 241.5	Design amplifiers using BJT, FET and determine their frequency response.
EE 242	CIRCUITS AND MEASUREMENTS LAB
EE 242.1	Demonstrate the verification of various theorems.
EE 242.2	Define error and calibrate the instruments using potentiometer
EE 242.3	Demonstrate the measurement of electrical parameters like resistance, inductance and capacitance using various types of bridges.
EE 242.4	Analyze the behavior of R L C Circuits with different sources.
EE 242.5	Demonstrate direct and phantom loading methods to assess the error in energy measurement
II YEAR II SEM	
COURSE CODE	COURSE NAME
EE 251	ELECTRICAL CIRCUITS.II
EE 251.1	Analyze single and double transient circuits and solve them by using Differential Equations for various excitations
EE 251.2	Identify Laplace Transform properties and solve single and double transient circuits with different excitations
EE 251.3	Solve two port networks
EE 251.4	Analyze harmonic frequency behavior of linear networks and determine the harmonic power
EE 251.5	Test the realizability of transfer function and synthesize the network
CE 223	SOLID MECHANICS
CE 223.1	Understand the basic concepts of stresses and strains for different materials.
CE 223.2	Know the mechanism of the development of shear force and bending moment diagrams in beams
CE 223.3	Know the theory of simple bending ,analyse the bending stresses, shear stresses and direct and bending stresses for rectangular, circular and standard structural sections.
CE 223.4	Study the deflections and its applications and know the strain energy concepts.
CE 223.5	Analyze torsional stresses and spring applications.
EE 253	POWER SYSTEMS.I
EE 253.1	List and analyze various conventional Energy Sources such as Thermal, Hydal, Nuclear and Gas Turbine Power Plants, describe their Operating Principles.
EE 253.2	List and analyze different Nonconventional Energy Sources like Solar Energy and Wind Energy, describe their Operating Principles.

EE 253.3	Differentiate various factors of Economics of power generation and analyze different Tariffs, determine voltage drops and losses in AC & DC Distributors.
EE 253.4	Analyze sags on overhead lines, Determine insulator string efficiency.
EE 253.5	List and assess inductance, capacitance of Single phase and Three Phase Over Head Transmission Lines.
EC 271	ELECTRONIC ENGINEERING.II
EC 271.1	Identify the type of negative feedback, Analyze and design negative feedback amplifiers
EC 271.2	Design Audio Frequency and Radio Frequency oscillators using BJT.
EC 271.3	Explain the working of differential amplifier, and importance of CMRR.
EC 271.4	Distinguish the classes of Power Amplifiers and their design considerations.
EC 271.5	Differentiate the performance of non linear and linear wave shaping circuits like Integrator, Differentiator, Clipper and clamper circuits.
EE 252	ELECTROMAGNETIC THORY
EE 252.1	Apply Electrostatic laws to calculate electric fields of different configurations
EE 252.2	Find electric field and capacitance including dielectric media effect
EE 252.3	Apply Magneto static laws and calculate inductance of different configurations
EE 252.4	Modify Maxwell's equations for time varying fields and their applications to solve problems
EE 252.5	Formulate wave equations and estimate Electromagnetic power
EE 254	ELECTRICAL MACHINES.I
EE 254.1	Have a thorough understanding about the energy conversion principles
EE 254.2	Illustrate construction, operation and winding diagrams of DC machines.
EE 254.3	Illustrate the characteristics of DC generators and DC motors and judge their applications
EE 254.4	Demonstrate speed control evaluate performance of dc machines by conducting suitable tests
EE 254.5	Explain construction, principle of operation of single phase transformers, describe circuit model and demonstrate various testing methods to determine the efficiency and regulation
EC 291	ELECTRONIC ENGINEENG LAB.II
EC 291.1	Analyze frequency response of two stage RC coupled at low frequency, mid frequency and high frequency and compare their bandwidths.
EC 291.2	Differentiate Negative feed amplifiers at low frequency, mid frequency and high frequency and compare their bandwidths.
EC 291.3	Distinguish various oscillator circuits with respect to frequency of oscillations.
EC 291.4	Analyze power amplifiers with their efficiency.
EC 291.5	Design clipper and clamper circuits to generate required waveforms.
ME 291	MECHANICAL TECHNOLOGY LAB
ME 291.1	To correlate the performance parameters of 4-stroke petrol engines, 4- stroke diesel engines and reciprocating air compressors with respect to theoretical analysis and experimental values.
ME 291.2	To assess the variation in flow measurements with respect to theoretical and actual values for venturimeters, orifice meters and pitot tubes.

ME 291.3	To assess the variation of viscosity of various oils with temperature and also determine their flash and fire points
ME 291.4	Analyze the performance parameters related to various modes of heat transfer and compare with their theoretical values.
ME 291.5	Evaluate the performance parameters of rotodynamic pumps and Turbines and compare with their theoretical values.
III YEAR I SEM	
COURSE CODE	COURSE NAME
EE 301	POWER SYSTEMS.II
EE 301.1	Discriminate different transmission line models and find the performance of transmission lines.
EE 301.2	Compare and assess the reactive power compensation for voltage control.
EE 301.3	Change Single line diagram to p.u. system and perform balanced fault calculations.
EE 301.4	Apply symmetrical components to convert unbalanced power system faults and obtain sequence networks and perform fault calculations.
EE 301.5	Construct bewley lattice diagram to analyze transients in power systems.
EE 302	ELECTRICAL MACHINERY.II
EE 302.1	Judge the applications of 3-phase transformers and auto transformers
EE 302.2	Estimate the load shared by transformers under different conditions.
EE 302.3	Illustrate the principle of operation, characteristics of induction motor and estimate its performance.
EE 302.4	Justify various starting methods and perform speed control methods.
EE 302.5	Assess the effects of unbalanced operation and single phasing on electrical machines.
EE 303	POWER ELCTRONICS
EE 303.1	Differentiate construction, working and characteristics of various power electronic devices
EE 303.2	Classify and apply triggering circuits , protection methods of SCR
EE 303.3	Analyze single phase and three phase controlled rectifiers for R, RL and RLE loads
EE 303.4	Illustrate and analyze various types of D.C choppers , a.c voltage controllers and cyclo converters.
EE 303.5	Analyze single phase inverter , three phase inverter in 120degrees and 180degrees mode.
EE 304	DIGITAL ELECTRONICS AND LOGIC DESIGN
EE 304.1	Apply basic Boolean Operators and construct Karnaugh Maps to simplify Boolean expressions.
EE 304.2	Understand and apply different number systems to perform mathematical operations required for digital circuits.
EE 304.3	Understand principles of IC families and construct combinational logic circuits.
EE 304.4	Design Asynchronous and Synchronous sequential circuits using flip-flops
EE 304.5	Design Melay and Moore machine models and understand programmable logic devices
EE 305	LINEAR INTEGRATED CIRCUITS
EE 305.1	Understand the terminal characteristics of op-amps and design /analyze fundamental circuits based on op-amps.
EE 305.2	Realize various linear and non-linear applications of Op-Amp.

EE 305.3	Design and Formulate Op-Amp oscillators, Analyze the operation of the most commonly used D/A and A/D converter types.
EE 305.4	Analyze a fixed voltage regulator and adjustable voltage regulators.
EE 305.5	Design and compare Low pass, High pass, Band Pass and Band stop active filters.
EE 306	LINEAR CONTROL SYSTEMS
EE 306.1	Develop and analyze mathematical models open & closed loop systems
EE 306.2	Measure the Stability of Linear Control Systems using Time Domain and S-Plane based Approaches.
EE 306.3	Decide the Stability of Linear Control Systems using Frequency Domain Approach.
EE 306.4	Construct State space model and its solution using State Transition Matrix.
EE 306.5	Solving Discrete Control Systems using Z-Transform Models.
EE 331	ELECTRICAL MACHINES LAB.I
EE 331.1	Identify the conditions for voltage build up in a DC generator
EE 331.2	Compare the performance characteristics of various types of generators
EE 331.3	Compare the performance characteristics of various types of DC motors and judge their applications
EE 331.4	Demonstrate speed control methods on DC motors
EE 331.5	Perform the direct and indirect tests on DC motors and transformers to evaluate the performance.
EE 332	CONTROL SYSTEMS LAB
EE 332.1	Able to analyze the physical systems represented in Transfer function.
EE 332.2	Able to apply the control components like ac servo motor, synchro pair.
EE 332.3	Able to understand and comprehend the controller design both in time domain and frequency domain.
EE 332.4	Able to distinguish and will have knowledge of Feedback control systems like A.C and D.C position control systems.
III YEAR II SEM	
COURSE CODE	COURSE NAME
EE 351	DIGITAL SIGNAL PROCESSING
EE 351.1	Understand the basic operations on Discrete Time Signals and Classify a system as Linear Time-invariant/Variant, Stable/Unstable, causal/non-causal.
EE 351.2	Conclude DTFT to evaluate frequency response. Determine DFT using direct and FFT methods. Analyze Circular and Linear convolution and apply for linear filtering operations.
EE 351.3	Evaluate Z-transforms, Construct different forms of IIR and FIR filters.
EE 351.4	Formulate & apply Digital IIR filter design using Butterworth & Chebyshev
EE 351.5	Design & compare Digital FIR filters using various windows, Analyze the characteristics of various windows.
EE 352	ELECTRICAL MACHINERY.III
EE 352.1	Describe types of windings used in AC machines, define winding factors and explain suppression of harmonics in generated e m f .
EE 352.2	Demonstrate various tests on salient and non-salient type Synchronous generators to evaluate its performance.
EE 352.3	Compare asynchronous and synchronous motors and evaluate the performance with the help of circuit model.
EE 352.4	Assess transient behavior of synchronous generators and its stability.
EE 352.5	Analyze the characteristics of different types of single phase motors

EE 353	SWITCHGEAR AND PROTECTION
EE 353.1	Understand and describe need of protection for power system. Define protective relay and compare different types of protective relays.
EE 353.2	Describe phase and amplitude comparator and analyze the dual input comparator.
EE 353.3	Understand distance protection scheme and compare different types of distance relays to protect the transmission line from the different faults
EE 353.4	Understand need of protection of generator and transformer and to analyze different types of protection schemes for generator and transformer against various faults
EE 353.5	Describe the function of circuit breaker and operation. Understand arc phenomenon and discuss different arc extinction methods and compare different types of Circuit Breakers.
EE 354	MICRO PROCESSORS AND MICRO CONTROLLERS
EE 354.1	Identify the architectural features of 8086 and Conceptualize its interrupt structure
EE 354.2	Develop the assembly language programming using 8086
EE 354.3	Comprehend the operation of various peripheral devices like 8254 A programmable timer/counter, 8279 Keyboard/Display and their interfacing with 8086.
EE 354.4	Differentiate between microprocessor and microcontroller in their architectural features and develop the assembly language programming using the timers/counters 8051.
EE 354.5	Develop programs for UART along with interrupts and Extend the memory and I/O ports of 8051 and Program 8051 for real time applications.
CM 371	MANAGERIAL ECONOMICS & ACCOUNTANCY
CM 371.1	There will be general exposure to the student about the business, economic, cultural and social environment and the structural aspects of Managerial Economics.
CM 371.2	After analytically studied about different principles and laws of managerial economics student will be able to examine the consumer behaviour and take various managerial decisions, such as forecasting demand for new and existing goods and services. Student will be able to appraise of the firm's behavior in different market structures with respective to the competition, price fixation of product.
CM 371.3	By analyzing and examining various production function alternatives, the student will able to suggest the best profit maximizing production function to the producers/entrepreneurs.
CM 371.4	With the knowledge of capital budgeting methods and techniques, the student can evaluate different business proposals and identify the best among them for prudent investment.
CM 371.5	Different sources of capital shall be explored to the business and also students determine the financial viable sources of capital.
CM 371.6	With the help of the accounting knowledge student will be able to analyse the business financial statements and interpret them for taking ideal managerial decisions.
EE 381	ELECTRICAL MACHINES LAB.II
EE 381.1	Able to analyze the phase conversion of transformer and performance of three Induction Motor by circle diagram.

EE 381.2	Able to distinguish various speed control methods of three phase Induction Motor and voltage regulation of alternator
EE 381.3	Able to describe performance characteristics of single phase Induction Motor and Synchronous Motor.
EE 381.4	Able to understand P.F. improvement of Induction Motor by using capacitors
EE 382	POWER ELECTRONICS LAB
EE 382.1	Determine and identify the characteristic points of power electronic devices
EE 382.2	Design and Verify the triggering circuits
EE 382.3	Estimate the performance of converter circuits
EE 382.4	Application of converters to control electrical machines
EE 383	INTIGRATED CIRCUITS LAB
EE 383.1	Students will be able to Design circuits using operational amplifiers such as Clippers, Clampers and Filter circuits
EE 383.2	Students will be able to Design and analyze pulse generator and delay using 555 timer
EE 383.3	Students will be able to Design and explain OP Amp to generate sine waveform, Square wave form, Triangular waveforms
EE 383.4	Students will be able to Design various combinational circuits using logic gates, sequential circuits using Flip-Flops.
EE 384	INDUSTRIAL VISIT
EE 384.1	Forecast about the technical approach in different industries
EE 384.2	Integrate their knowledge about different technologies and to apply them in problem solving techniques.
EE 384.3	Predict different problems that disturb the environment and solve them.
EE 384.4	Construct different Projects with the knowledge acquired.
IV YEAR I SEM	
COURSE CODE	COURSE NAME
EE 401	POWER SYSTEMS OPERATION AND CONTROL
EE 401.1	Construct mathematical model for power systems and networks.
EE 401.2	Evaluate different methods of solving nonlinear algebraic equations and perform load flow solutions.
EE 401.3	Recognize the need for economic load dispatch, design the strategies and perform optimal load dispatch.
EE 401.4	Recognize need for frequency control, analyze the effects of the variation in frequency and implement the mathematical models for single and two area control.
EE 401.5	Recognize rotor angle stability, Identify and analyze approaches to solve stability problems.
EE 402	ELECTRIC DRIVES AND STATIC CONTROL
EE 402.1	Learn the concept and classification of electric drives, dynamics of motor-load combination and stability aspects of an electric drive system.
EE 402.2	Explain the characteristics of electric drives, starting methods of electric motors and methods to improve the starting Efficiency.
EE 402.3	Summarize the concept of Electric Braking, its advantages & types of Electric braking and it's implementation through illustration.
EE 402.4	Acquire the knowledge of speed control using ac-dc and dc-dc converters for dc shunt and dc series motors, also control-loop implementation of a dc drive.

EE 402.5	Summarize the working of phase controlled converters, voltage source inverters and cyclo-converters used in control of induction motor drives.
EE 403	ELECTRICAL MACHINE DESIGN
EE 403.1	Examine the types of materials used for electrical machines
EE 403.2	Determine the specific permeance for magnetic loading, obtain temperature rise of machines
EE 403.3	Determine the main dimensions of d.c machine and transformer
EE 403.4	Determine the main dimensions of 3-phase induction motor and alternator
EE 403.5	Recall computer aided techniques used for design of 3 phase induction motor
EE 411	HIGH VOLTAGE DC TRANSMISSION
EE 411.1	To compare and contrast the AC and DC transmission systems and understand the practical utility of HVDC transmission system
EE 411.2	To understand the analysis of converter circuits with grid control, with and without overlap angle
EE 411.3	To understand the purpose of control and study the controlling methods of HVDC transmission system
EE 411.4	To study the various faults in converters, harmonics introduced in the system and to understand the protection for these faults
ME 411	ENTERPRENUERSHIP
ME 411.1	To develop distinct entrepreneurial traits and ability to recognize business opportunities to build entrepreneurial career.
ME 411.2	Students can develop and systematically apply entrepreneurial way of thinking that will allow them to identify and create business opportunities for commercialized success.
ME 411.3	To design and develop a well presented successful business plan that is feasible and to gain the advantage of Project financing.
ME 411.4	To effectively plan projects through CPM/Pert techniques. To understand human aspects of business and helps to assess and evaluate tax burden.
ME 411.5	This helps the entrepreneur to manage his human resources and time effectively.
EE 431	ELECTRICAL SIMULATION LAB
EE 431.1	Develop and test MATLAB m-code for Power systems studies
EE 431.2	Simulate and analyze the control system experiments
EE 431.3	Analyze circuits using MATLAB an P-Spice
EE 431.4	Design Lag-Lead Compensators
EE 432	MICRO PROCESSORS AND MICRO CONTROLLERS LAB
EE 432.1	Develop the logic using instruction set of 8086 in different addressing modes to carry out arithmetic, logical and string operations using MASM
EE 432.2	Interface ADC, 8254, Traffic Signal with 8086 microprocessors.
EE 432.3	Demonstrate various arithmetical, logical programs using 8051 trainer kit
EE 432.4	Comprehend the usage of on-chip timers and serial communication of 8051 and their interrupts using programs
EE 433	POWER SYSTEMS LAB
EE 433.1	Able to comprehend and analyze the regulation, efficiency and ABCD constants of transmission lines
EE 433.2	Able to analyze and study the characteristics of different protective relays to know performance

EE 433.3	Able to observe and analyze parallel operation of alternator and differential protection of Transformer to the performance
EE 433.4	Able to apply different methods to find sequence impedances of transformer ,alternator and to measure the capacitance of 3-core cable
EE 434	PROJECT SEMINAR
EE 434.1	Carryout Literature survey in the area of interest.
EE 434.2	Interact with industry environment/faculty for the selection of problem relevant to current technology.
EE 434.3	Understand and discuss the problem to provide possible solutions
EE 434.4	Organize the presentation in the form of a report
IV YEAR II SEM	
COURSE CODE	COURSE NAME
EE 451	UTILIZATION
EE 451.1	Able to Differentiate and Distinguish various heating and welding process and discuss the different methods.
EE 451.2	able to identify various switches used in motors and discuss the various motor control circuits.
EE 451.3	able to Identify various lamps used in lightening schemes, calculate and design the lightening scheme for given area.
EE 451.4	Ability to plot the speed time curves, determine and calculate the tractive effort, torque required and specific energy consumption.
EE 451.5	Ability to distinguish types of drives used in traction.
CE 452	DISASTER MITIGATION & MANAGEMENT
CE 452.1	Ability to analyze and critically examine existing programs in disaster management regarding vulnerability, risk and capacity at local level.
CE 452.2	Ability to choose the appropriate activities and tools and set up priorities to build a coherent and adapted disaster management plan.
CE 452.3	Ability to understand various mechanisms and consequences of natural and human induced disasters for the participatory role of engineers in disaster management
CE 452.4	Develop an awareness of the chronological phases of disaster response and relief operations for formulating effective disaster management plans.
CE 452.5	Ability to understand the concept of remote sensing and geographical information systems for their effective applications in disaster management.
EE 471	RENEWABLE ENERGY SOURCES
EE 471.1	Memorize the statistics of non-conventional sources
EE 471.2	Describe about solar radiation and solar cell fabrication
EE 471.3	Determine the maximum power developed by the wind power plant
EE 471.4	Recall the operation of bio gasifiers
EE 471.5	Summarize the operation of a wave, tidal and OTEC plants
ME 472	INDUSTRIAL ADMINISTRATION & FINANCIAL MANAGEMENT
ME 471.1	On completion of this unit learner (student) will be able to, (a) define business, objectives of business and types of business organization such as private undertakings, public undertakings and joint sector. (b) Describe factors influencing

ME 471.2	On completion of this unit student will be able to, (a) State definitions and objectives of work study, method study and time study. (b) Discuss applications of work study and its advantages. (c) Know the contributions of F.W Taylor & Frank Gilbreth. (d)
ME 471.3	On completion of this unit student will be able to, (a) Define inspection and quality and their differences. (b) Discuss the objectives of inspection and kinds of inspections. (c) Summarize SQC and techniques used in SQC. (d) Explain sampling
ME 471.4	On completion of this unit student will be able to, (a) Define optimization and operations research. (b) Solve problems on LPP using graphical solution.
ME 471.5	On completion of this unit student will be able to, (a) Express types of cost and elements of cost. (b) Describe over heads, types of over heads and allocation of over heads. (c) Define depreciation, methods of depreciation and compute depreciation.
EE 481	DIGITAL SIGNAL PROCESSING LAB
EE 481.1	Generate Basic Analog and Discrete time Signals
EE 481.2	Evaluate frequency response, output response, Linear & circular convolution using DFT. Appreciate efficient implementation of DFT using FFT.
EE 481.3	Design & Interpret FIR and IIR Filters using various techniques
EE 481.4	Devise the above concepts using MATLAB & CCS tools. Acquire knowledge to work on real time processing using DSP Processors
EE 482	GENERAL SEMINAR
EE 482.1	Carryout Literature survey in the area of interest.
EE 482.2	Interact with faculty and choose the topic for presentation related to recent trends in electronics and communication discipline.
EE 482.3	Prepare, organize the presentation and Present effectively that helps to acquire good organizing and communicating skills
EE 482.4	Organize the presentation in the form of a report.
EE 483	PROJECT
EE 483.1	Understand and analyze the problem to provide an optimal solution
EE 483.2	Implement the project using hardware and software tools
EE 483.3	Analyze the performance of implemented results with existing work
EE 483.4	Organize the project work in the form of report/Thesis

ACADEMIC YEAR : 2013-14

I YEAR

COURSE CODE	COURSE NAME
EG 101	ENGLISH
EG 101.1	learn the importance of communication, features and process of communication and verbal and Non verbal communication in order to communicate effectively
EG 101.2	improve oral communication skills, listening skills, interpersonal communication and improve interpersonal skills by using Johari window and Knapp's model
EG 101.3	improve writing techniques such as passage expansion, Précis-writing, Essay writing, Report writing, SoP, Summary - writing and official letters
EG 101.4	learn the basic rules of grammar with appropriate usage and learn to use vocabulary such as synonyms and antonyms, homonyms and homophones
EG 101.5	improve comprehension skills by reading inspirational texts and infer information.

MT 101	MATHEMATICS-I
MT 101.1	Solve some problems based on the concept of convergence and divergence of infinite series and apply the various tests of convergence to determine the nature of an infinite series
MT 101.2	Solve problems based on the fundamental theorems of differential calculus, expanding functions using Taylor's & Maclaurin's series and solve problems on finding Radius of curvature, evolute and envelopes
MT 101.3	Evaluate limits, Continuity and derivatives of functions of two variables, Maxima & Minima for functions of two or more variables arising in Engineering Problems.
MT 101.4	Evaluate double and triple integrals and solve problems based on vector differentiation and vector integration.
MT 101.5	Solve problems based on the concepts of rank of a matrix, Eigen values, vectors and some concepts of linear algebra such as vector spaces, basis, dimension and linear transformations.
MT 102	MATHEMATICS-II
MT 102.1	Solve various types of First order ordinary differential equations and apply these techniques for solving some problems in Geometry, Electricity, Heat transfer and Radio activity.
MT 102.2	Solve higher order linear O.D.E's with constant Coefficients using various techniques.
MT 102.3	Solve linear O.D.E's using power series and Frobenius methods and apply these methods for solving Legendre's D.E.
MT 102.4	Evaluate improper integrals using Beta and Gamma functions and solve Bessel's differential equations.
MT 102.5	Solve some problems using the properties of Legendre polynomial and Bessel's functions.
MT 102.6	Evaluate Laplace Transforms and inverse Laplace transforms of various functions and solve linear ordinary differential equations using Laplace transforms.
PH 101	ENGINEERING PHYSICS
PH101.1	To understand the concept of interference, diffraction and polarization.
PH101.2	Ability to know the utilization of laser technology, Holography and optical fiber and their engineering applications in various disciplines.
PH101.3	To understand the basics of statistical mechanics, significance and applications of Schrodinger wave equation
PH101.4	Able to analyze the various crystal structures and their defects and to understand the electrons behavior in solids.
PH101.5	Gain the knowledge on magnetic materials and dielectric materials and superconducting materials.
PH101.6	Understand the characterization and basic preparation methods in thin films and Nano-materials.
CH 101	ENGINEERING CHEMISTRY
CH 101.1	Explain quantitative relationship between chemical and electrical energy, construction and working of different types of electrodes used in construction of electrochemical cells Understand the operating principle and apply the knowledge to design batteries.

CH 101.2	Relate the principle behind mechanism and rate of corrosion leading to deterioration of metal and apply corrosion control method.
CH 101.3	Explain method to find impurities present in water and establish various methods of purifying water.
CH 101.4	Show the need for replacement of conventional materials with polymers to be used as plastics, fibres, elastomers, conducting polymers and composites.
CH 101.5	Identify the dependence on conventional fuel like coal, petroleum, and gaseous fuel to meet present energy requirement. Introduce the need for change to renewable sources of energy.
CH 101.6	Interpret the importance of lubricants and liquid crystals. Phase rule concept is used to know the process of separation of pure metals from alloys. Apply the principles of Green chemistry to carryout eco-friendly chemical processes without causing environmental pollution.
CS101	PROGRAMMING IN C& C++
CS 101.1	Understand the procedure to create, compile and execute C program for different inputs.
CS 101.2	Apply the concepts of control statements, operators, functions and arrays to implement matrix, searching and sorting algorithms.
CS 101.3	Solve programs on pointers and strings
CS 101.4	access variables through dynamic memory.
CS 101.5	Understand and Apply the concepts of derived data types and file handling operations.
CS 101.6	Understand the concepts of object oriented programming through C++ and know the differences between C and C++ programs.
CS 101.7	Analyze and write programs on inheritance, polymorphism, classes and objects creation using C++.
CE101	ENGINEERING MECHANICS
CE 101.1	Resolve forces acting on a body; obtain resultant force or moment acting due to set of forces and moments acting on a body; and determine unknown forces from equations of equilibrium of forces and moments.
CE 101.2	Obtain location of centres of mass of regular and composite shapes; use Pappus theorems to calculate surface areas and volumes of composite structures.
CE 101.3	Distinguish between static and kinematic friction, determine effect of static or kinematic friction forces acting on a single or a system of connected bodies; effect of friction in screw jack, wedge, brakes and belt transmission.
CE 101.4	Compute area moment of inertia and products of inertia for simple and composite elements using integration methods and transform theorem; calculate mass MI and radius of gyration for regular and composite structures.
CE 101.5	Obtain displacement, velocity and acceleration relations of particles in rectilinear and curvilinear motion including projectiles; write equations of motion under influence of forces for particles and connected bodies and for plane motion of rigid bodies.

CE 101.6	Apply Principles of work and energy to motion of particle or connected bodies to evaluate the velocities and angular velocities of bodies in connected systems and involving plane motion.
CE 101.7	Apply Principle of conservation of Momentum and impulse force/moment to evaluate the velocities of a body after application of force/moment, and of bodies in impact/collision considering Coefficient of Restitution.
CE102	ENGINEERING GRAPHICS
CE 102.1	The student would be able to recall the mathematical concepts related to scales, conic sections, involutes, etc and demonstrate proficiency in construction of these using the various methods described in literature.
CE 102.2	The student would be able to analyse the position of objects when placed in different orientations with respect to reference planes and reproduce them on drawing sheets to provide valid explanations.
CE 102.3	The student would be able to draw the various views of three dimensional objects (Solids) which may be oriented in different positions with respect to the reference planes
CE 102.4	The student would be able to assess the shapes of objects that can be generated when a given solid is cut by section planes in different orientations. These shapes are shown in the corresponding sectional views using the concepts of auxiliary planes. Further the development of the truncated solids can be drawn by recognizing the basic principles of developments of surfaces.
CE 102.5	The student would be able to recognize the various features of solids by viewing them from front, top and sides. Subsequently the student would also be able to generate a few three-dimensional views of the given objects using the principles of isometric projections.
PH 132	PHYSICS LAB
PH 132.1	To demonstrate the phenomena of interference and diffraction to determine wavelength of a given light source of light
PH 132.2	To verify the laws of polarization and determine the specific rotator power of an optically active substance.
PH 132.3	To understand the principle involved in laser and optical fiber technology.
PH 132.4	To examine the nature of ferromagnetic and dielectric materials to evaluate the related parameters.
PH 132.5	To characterize semiconducting devices to calculate parameters like resistance, energy gap and temperature co-efficient.
PH 132.6	To study the Characteristics of Photo Voltaic Cells and evaluate their efficiencies.
CH 132	CHEMISTRY LAB
CH 132.1	Make use of analytical and electronic balances for weighing samples in chemical analysis.
CH 132.2	Identify and estimate impurities causing hardness and alkalinity in water.
CH 132.3	Find the strength of reducing species such as Fe+2, Fe+3, Cr+3, Cu+2 and Cl- by various titrimetric methods like complexometry and Iodometry.

CH 132.4	Estimate quantitatively different chemical species present in complex mixtures, ores and unknown samples by various instrumentation techniques like Conductometry and Potentiometry.
CH 132.5	Determine quantitatively different chemical species present in unknown samples by various instrumentation techniques like pH metry and Colorimetry.
CH 132.6	Recall the methods of preparation of industrially important polymers.
ME 131	WORKSHOP PRACTICE
ME 131.1	The student would be able to utilize the various tools of fitting namely bench vice, V block, files, surface plate, surface gauge, hacksaw, drill bits, etc to perform various operations on the work piece (job) like filing, scrapping, drilling, tapping, etc.
ME 131.2	The student would be able to identify different types of connections like series, parallel, stair case wiring, etc. Subsequently, the student would be able to correlate the methods of electrical wiring in different domestic and industrial applications.
ME 131.3	The student would be able to utilize the various tools of carpentry namely bench vice, planes, mallet, hammers, files, different saws, etc to perform various carpentry joints like half lap joint, dove tail joint, bridle joint, etc.
ME 131.4	The student would be able to utilize the various tools of sheet metal (tin smithy) namely hammer, mallet, stakes, snips, pliers, punches, vernier calipers, wire gauge, etc to perform various operations like cutting, shearing, notching, bending, riveting, etc. on the given sheet metal and develop various objects like tray, funnel, scoop,
CS 131	PROGRAMMING LAB
CS 131.1	Understand the procedure to create, compile and execute C program for different inputs.
CS 131.2	Apply the concepts of functions and arrays and write C programs for matrix, searching and sorting techniques.
CS 131.3	Create Derived types and deal files by applying the concepts of structures and pointers.
CS 131.4	Understand the procedure to create, compile and execute C++ program for different inputs.
CS 131.5	Apply the concepts of classes, objects, inheritance and polymorphism in C++.
CS 131.6	Write programs in both C and C++ and could distinguish the differences between C and C++.
EG 131	ENGLISH LANGUAGE LAB
EG 131.1	Learn the sound system of English Language with the knowledge of IPA-classification & description
EG 131.2	Learn the word stress & aspects of connected speech
EG 131.3	learn the Rhythm & Intonation of English language
EG 131.4	Improve the fluency in the spoken form of the language by participating in Presentation skills, Public speaking, Group Discussion and Debate.
EG 131.5	learn to dictionary and thesaurus effectively in an appropriate way.

II YEAR I SEM	
COURSE CODE	COURSE NAME
MT 201	MATHEMATICS.III
MT 201.1	Solve problems on formation of partial differential equations and on some standard first ordered partial differential equations.
MT 201.2	Develop a Fourier series for a given function in various intervals and apply the theory of Fourier series to some boundary value problems associated with one - dimensional wave, heat and Laplace Equation.
MT 201.3	Classify and solve problems associated with discrete and continuous probability distributions.
MT 201.4	Identify and solve problems associated with Normal, Gamma, Poisson and Chi-Square distributions.
MT 201.5	Apply Chi-square test, t-test and F-test for analyzing experimental data.
MT 201.6	Apply method of least squares for curve fitting , computing correlation Coefficient and obtain lines of regression for given data.
EE 201	ELECTRICAL CIRCUITS.I
EE 201.1	Apply circuit analysis methods to solve electrical circuits.
EE 201.2	Apply sinusoidal phasor concepts to solve AC circuits.
EE 201.3	Analyze three phase balanced and unbalanced circuits.
EE 201.4	Apply network theorems to solve circuits. Formulate different matrices based on Graph theory
EE 201.5	Understand resonance, mutually induced EMF concepts and solve electrical circuits.
CE 222	ENVIRONMENTAL STUDIES
CE 222.1	To know the importance of natural resources (Water and land), Energy resources, floods, drought, impact of modern agriculture, land degradation.
CE 222.2	To understand basic concepts of an ecosystem and its importance
CE 222.3	To understand importance of biodiversity and need for its conservation
CE 222.4	To study different types of environmental pollution, their causes, effects and control measures and need for environmental legislation.
CE 222.5	To critically analyze global environmental issues, social aspects including population growth, disaster management.
EE 204	ELECTRICAL MEASUREMENTS AND INSTRUMENTS
EE 204.1	Define measurement, error, correction, accuracy and precision and list the methods the various effects used for measurement
EE 204.2	Demonstrate measurement of electrical parameters current, voltage, power and energy
EE 204.3	Describe the methods of measuring R L C
EE 204.4	Perform experiments to measure flux density and assess iron loss.
EE 204.5	Implement calibration methods for various instruments. Design the experimental work with minimum error which is used for planning and implementation
EC 221	ELECTRICAL ENGINEERING.I
EC 221.1	Interpret the characteristics of diodes to evaluate the diode parameters and apply diode models to analyze the applications of diodes.
EC 221.2	Identify the merits and demerits of various filters, formulate and design rectifier circuits with filters.

EC 221.3	Discriminate the BJT configurations to recognize appropriate transistor configuration for any given application and design the biasing circuits with good stability.
EC 221.4	Analyze and compare the performance of BJT amplifiers with various biasing circuits.
EC 221.5	Distinguish the principles of BJT & FET, comprehend the characteristics of FET and design biasing circuits for FET amplifiers.
ME 221	PRINCIPLES OF MECHANICAL ENGINEERING
ME 221.1	Formulate the steady flow energy equations for different flow processes, calculate different modes of heat transfer.
ME 221.2	Explain the principle of IC Engines, distinguish between 2-stroke and 4-stroke cycle engines, compute mechanical and thermal efficiencies of IC Engines
ME 221.3	Explain Steam generation processes in fire tube and water tube boilers, explain closed and open cycle gas turbines schematically
ME 221.4	Classify various types of gear trains and calculate velocity ratios. Explain different arrangements of belt drive systems, and formulate expressions for length of belts, ratio of tensions.
ME 221.5	Derive Bernoulli's equation and calculate flow rates in venture meter, orifice meter, derive Darcy's equation, explain working principles of positive displacement and rotodynamic pumps
EC 241	ELECTRONIC ENGINEERING LAB.I
EC 241.1	Analyze the characteristics of various semiconductor diodes, SCR, UJT
EC 241.2	Determine the input and output characteristics of transistor in CB, CE, CC configuration and plot them
EC 241.3	Design the rectifiers with and without filters and verify them.
EC 241.4	Measure voltage, frequency and phase of any waveform using CRO.
EC 241.5	Design amplifiers using BJT, FET and determine their frequency response.
EE 242	CIRCUITS AND MEASUREMENTS LAB
EE 242.1	Demonstrate the verification of various theorems.
EE 242.2	Define error and calibrate the instruments using potentiometer
EE 242.3	Demonstrate the measurement of electrical parameters like resistance, inductance and capacitance using various types of bridges.
EE 242.4	Analyze the behavior of R L C Circuits with different sources.
EE 242.5	Demonstrate direct and phantom loading methods to assess the error in energy measurement
II YEAR II SEM	
COURSE CODE	COURSE NAME
EE 251	ELECTRICAL CIRCUITS.II
EE 251.1	Analyze single and double transient circuits and solve them by using Differential Equations for various excitations
EE 251.2	Identify Laplace Transform properties and solve single and double transient circuits with different excitations
EE 251.3	Solve two port networks
EE 251.4	Analyze harmonic frequency behavior of linear networks and determine the harmonic power
EE 251.5	Test the realizability of transfer function and synthesize the network

CE 223	SOLID MECHANICS
CE 223.1	Understand the basic concepts of stresses and strains for different materials.
CE 223.2	Know the mechanism of the development of shear force and bending moment diagrams in beams
CE 223.3	Know the theory of simple bending ,analyse the bending stresses, shear stresses and direct and bending stresses for rectangular, circular and standard structural sections.
CE 223.4	Study the deflections and its applications and know the strain energy concepts.
CE 223.5	Analyze torsional stresses and spring applications.
EE 253	POWER SYSTEMS.I
EE 253.1	List and analyze various conventional Energy Sources such as Thermal, Hydal, Nuclear and Gas Turbine Power Plants, describe their Operating Principles.
EE 253.2	List and analyze different Nonconventional Energy Sources like Solar Energy and Wind Energy, describe their Operating Principles.
EE 253.3	Differentiate various factors of Economics of power generation and analyze different Tariffs, determine voltage drops and losses in AC & DC Distributors.
EE 253.4	Analyze sags on overhead lines, Determine insulator string efficiency.
EE 253.5	List and assess inductance, capacitance of Single phase and Three Phase Over Head Transmission Lines.
EC 271	ELECTRONIC ENGINEERING.II
EC 271.1	Identify the type of negative feedback, Analyze and design negative feedback
EC 271.2	Design Audio Frequency and Radio Frequency oscillators using BJT.
EC 271.3	Explain the working of differential amplifier, and importance of CMRR.
EC 271.4	Distinguish the classes of Power Amplifiers and their design considerations.
EC 271.5	Differentiate the performance of non linear and linear wave shaping circuits like
EE 252	ELECTROMAGNETIC THORY
EE 252.1	Apply Electrostatic laws to calculate electric fields of different configurations
EE 252.2	Find electric field and capacitance including dielectric media effect
EE 252.3	Apply Magneto static laws and calculate inductance of different configurations
EE 252.4	Modify Maxwell's equations for time varying fields and their applications to solve problems
EE 252.5	Formulate wave equations and estimate Electromagnetic power
EE 254	ELECTRICAL MACHINES.I
EE 254.1	Have a thorough understanding about the energy conversion principles
EE 254.2	Illustrate construction, operation and winding diagrams of DC machines.
EE 254.3	Illustrate the characteristics of DC generators and DC motors and judge their applications
EE 254.4	Demonstrate speed control evaluate performance of dc machines by conducting suitable tests
EE 254.5	Explain construction, principle of operation of single phase transformers, describe circuit model and demonstrate various testing methods to determine the efficiency and regulation
EC 291	ELECTRONIC ENGINEENG LAB.II
EC 291.1	Analyze frequency response of two stage RC coupled at low frequency, mid frequency and high frequency and compare their bandwidths.

EC 291.2	Differentiate Negative feed amplifiers at low frequency, mid frequency and high frequency and compare their bandwidths.
EC 291.3	Distinguish various oscillator circuits with respect to frequency of oscillations.
EC 291.4	Analyze power amplifiers with their efficiency.
EC 291.5	Design clipper and clamper circuits to generate required waveforms.
ME 291	MECHANICAL TECHNOLOGY LAB
ME 291.1	To correlate the performance parameters of 4-stroke petrol engines, 4- stroke diesel
ME 291.2	To assess the variation in flow measurements with respect to theoretical and actual values for venturimeters, orifice meters and pitot tubes.
ME 291.3	To assess the variation of viscosity of various oils with temperature and also determine their flash and fire points
ME 291.4	Analyze the performance parameters related to various modes of heat transfer and compare with their theoretical values.
ME 291.5	Evaluate the performance parameters of rotodynamic pumps and Turbines and compare with their theoretical values.
III YEAR I SEM	
COURSE CODE	COURSE NAME
EE 301	POWER SYSTEMS.II
EE 301.1	Discriminate different transmission line models and find the performance of transmission lines.
EE 301.2	Compare and assess the reactive power compensation for voltage control.
EE 301.3	Change Single line diagram to p.u. system and perform balanced fault calculations.
EE 301.4	Apply symmetrical components to convert unbalanced power system faults and obtain sequence networks and perform fault calculations.
EE 301.5	Construct bewley lattice diagram to analyze transients in power systems.
EE 302	ELECTRICAL MACHINERY.II
EE 302.1	Judge the applications of 3-phase transformers and auto transformers
EE 302.2	Estimate the load shared by transformers under different conditions.
EE 302.3	Illustrate the principle of operation, characteristics of induction motor and estimate its performance.
EE 302.4	Justify various starting methods and perform speed control methods.
EE 302.5	Assess the effects of unbalanced operation and single phasing on electrical machines.
EE 303	POWER ELCTRONICS
EE 303.1	Differentiate construction, working and characteristics of various power electronic devices
EE 303.2	Classify and apply triggering circuits , protection methods of SCR
EE 303.3	Analyze single phase and three phase controlled rectifiers for R, RL and RLE loads
EE 303.4	Illustrate and analyze various types of D.C choppers , a.c voltage controllers and cyclo converters.
EE 303.5	Analyze single phase inverter , three phase inverter in 120degrees and 180degrees mode.
EE 304	DIGITAL ELECTRONICS AND LOGIC DESIGN
EE 304.1	Apply basic Boolean Operators and construct Karnaugh Maps to simplify Boolean expressions.

EE 304.2	Understand and apply different number systems to perform mathematical operations required for digital circuits.
EE 304.3	Understand principles of IC families and construct combinational logic circuits.
EE 304.4	Design Asynchronous and Synchronous sequential circuits using flip-flops
EE 304.5	Design Melay and Moore machine models and understand programmable logic devices
EE 305	LINEAR INTEGRATED CIRCUITS
EE 305.1	Understand the terminal characteristics of op-amps and design /analyze fundamental circuits based on op-amps.
EE 305.2	Realize various linear and non-linear applications of Op-Amp.
EE 305.3	Design and Formulate Op-Amp oscillators, Analyze the operation of the most commonly used D/A and A/D converter types.
EE 305.4	Analyze a fixed voltage regulator and adjustable voltage regulators.
EE 305.5	Design and compare Low pass, High pass, Band Pass and Band stop active filters.
EE 306	LINEAR CONTROL SYSTEMS
EE 306.1	Develop and analyze mathematical models open& closed loop systems
EE 306.2	Measure the Stability of Linear Control Systems using Time Domain and S-Plane based Approaches.
EE 306.3	Decide the Stability of Linear Control Systems using Frequency Domain Approach.
EE 306.4	Construct State space model and its solution using State Transition Matrix.
EE 306.5	Solving Discrete Control Systems using Z-Transform Models.
EE 331	ELECTRICAL MACHINES LAB.I
EE 331.1	Identify the conditions for voltage build up in a DC generator
EE 331.2	Compare the performance characteristics of various types of generators
EE 331.3	Compare the performance characteristics of various types of DC motors and judge their applications
EE 331.4	Demonstrate speed control methods on DC motors
EE 331.5	Perform the direct and indirect tests on DC motors and transformers to evaluate the performance.
EE 332	CONTROL SYSTEMS LAB
EE 332.1	Able to analyze the physical systems represented in Transfer function.
EE 332.2	Able to apply the control components like ac servo motor, synchro pair.
EE 332.3	Able to understand and comprehend the controller design both in time domain and frequency domain.
EE 332.4	Able to distinguish and will have knowledge of Feedback control systems like A.C and D.C position control systems.
III YEAR II SEM	
COURSE CODE	COURSE NAME
EE 351	DIGITAL SIGNAL PROCESSING
EE 351.1	Understand the basic operations on Discrete Time Signals and Classify a system as Linear Time-invariant/Variant, Stable/Unstable, causal/non-causal.
EE 351.2	Conclude DTFT to evaluate frequency response. Determine DFT using direct and FFT methods. Analyze Circular and Linear convolution and apply for linear filtering

EE 351.3	Evaluate Z-transforms, Construct different forms of IIR and FIR filters.
EE 351.4	Formulate & apply Digital IIR filter design using Butterworth & Chebyshev approximations to Verify the characteristics of LPF, HPF, BPF & BEF
EE 351.5	Design & compare Digital FIR filters using various windows, Analyze the characteristics of various windows.
EE 352	ELECTRICAL MACHINERY.III
EE 352.1	Describe types of windings used in AC machines, define winding factors and explain suppression of harmonics in generated e m f .
EE 352.2	Demonstrate various tests on salient and non-salient type Synchronous generators to evaluate its performance.
EE 352.3	Compare asynchronous and synchronous motors and evaluate the performance with the help of circuit model.
EE 352.4	Assess transient behavior of synchronous generators and its stability.
EE 352.5	Analyze the characteristics of different types of single phase motors
EE 353	SWITCHGEAR AND PROTECTION
EE 353.1	Understand and describe need of protection for power system. Define protective relay and compare different types of protective relays.
EE 353.2	Describe phase and amplitude comparator and analyze the dual input comparator.
EE 353.3	Understand distance protection scheme and compare different types of distance relays to protect the transmission line from the different faults
EE 353.4	Understand need of protection of generator and transformer and to analyze different types of protection schemes for generator and transformer against various faults
EE 353.5	Describe the function of circuit breaker and operation. Understand arc phenomenon and discuss different arc extinction methods and compare different types of Circuit Breakers.
EE 354	MICRO PROCESSORS AND MICRO CONTROLLERS
EE 354.1	Identify the architectural features of 8086 and Conceptualize its interrupt structure
EE 354.2	Develop the assembly language programming using 8086
EE 354.3	Comprehend the operation of various peripheral devices like 8254 A programmable timer/counter, 8279 Keyboard/Display and their interfacing with 8086.
EE 354.4	Differentiate between microprocessor and microcontroller in their architectural features and develop the assembly language programming using the timers/counters 8051.
EE 354.5	Develop programs for UART along with interrupts and Extend the memory and I/O ports of 8051 and Program 8051 for real time applications.
CM 371	MANAGERIAL ECONOMICS & ACCOUNTANCY
CM 371.1	There will be general exposure to the student about the business, economic, cultural and social environment and the structural aspects of Managerial Economics.

CM 371.2	After analytically studied about different principles and laws of managerial economics student will be able to examine the consumer behaviour and take various managerial decisions, such as forecasting demand for new and existing goods and services. Student will be able to appraise of the firm's behavior in different market structures with respective to the competition, price fixation of product.
CM 371.3	By analyzing and examining various production function alternatives, the student will able to suggest the best profit maximizing production function to the producers/entrepreneurs.
CM 371.4	With the knowledge of capital budgeting methods and techniques, the student can evaluate different business proposals and identify the best among them for prudent investment.
CM 371.5	Different sources of capital shall be explored to the business and also students determine the financial viable sources of capital.
CM 371.6	With the help of the accounting knowledge student will be able to analyse the business financial statements and interpret them for taking ideal managerial decisions.
EE 381	ELECTRICAL MACHINES LAB.II
EE 381.1	Able to analyze the phase conversion of transformer and performance of three Induction Motor by circle diagram.
EE 381.2	Able to distinguish various speed control methods of three phase Induction Motor
EE 381.3	Able to describe performance characteristics of single phase Induction Motor and Synchronous Motor.
EE 381.4	Able to understand P.F. improvement of Induction Motor by using capacitors
EE 382	POWER ELECTRONICS LAB
EE 382.1	Determine and identify the characteristic points of power electronic devices
EE 382.2	Design and Verify the triggering circuits
EE 382.3	Estimate the performance of converter circuits
EE 382.4	Application of converters to control electrical machines
EE 383	INTIGRATED CIRCUITS LAB
EE 383.1	Students will be able to Design circuits using operational amplifiers such as Clippers, Clampers and Filter circuits
EE 383.2	Students will be able to Design and analyze pulse generator and delay using 555 timer
EE 383.3	Students will be able to Design and explain OP Amp to generate sine waveform, Square wave form, Triangular waveforms
EE 383.4	Students will be able to Design various combinational circuits using logic gates, sequential circuits using Flip-Flops.
EE 384	INDUSTRIAL VISIT
EE 384.1	Forecast about the technical approach in different industries
EE 384.2	Integrate their knowledge about different technologies and to apply them in problem solving techniques.
EE 384.3	Predict different problems that disturb the environment and solve them.
EE 384.4	Construct different Projects with the knowledge acquired.

IV YEAR I SEM

COURSE CODE	COURSE NAME
EE 401	POWER SYSTEMS OPERATION AND CONTROL
EE 401.1	Construct mathematical model for power systems and networks.
EE 401.2	Evaluate different methods of solving nonlinear algebraic equations and perform load flow solutions.
EE 401.3	Recognize the need for economic load dispatch, design the strategies and perform optimal load dispatch.
EE 401.4	Recognize need for frequency control, analyze the effects of the variation in frequency and implement the mathematical models for single and two area control.
EE 401.5	Recognize rotor angle stability, Identify and analyze approaches to solve stability problems.
EE 402	ELECTRIC DRIVES AND STATIC CONTROL
EE 402.1	Learn the concept and classification of electric drives, dynamics of motor-load combination and stability aspects of an electric drive system.
EE 402.2	Explain the characteristics of electric drives, starting methods of electric motors and methods to improve the starting Efficiency.
EE 402.3	Summarize the concept of Electric Braking, its advantages & types of Electric braking and it's implementation through illustration.
EE 402.4	Acquire the knowledge of speed control using ac-dc and dc-dc converters for dc shunt and dc series motors, also control-loop implementation of a dc drive.
EE 402.5	Summarize the working of phase controlled converters, voltage source inverters and cyclo-converters used in control of induction motor drives.
EE 403	ELECTRICAL MACHINE DESIGN
EE 403.1	Examine the types of materials used for electrical machines
EE 403.2	Determine the specific permeance for magnetic loading, obtain temperature rise of machines
EE 403.3	Determine the main dimensions of d.c machine and transformer
EE 403.4	Determine the main dimensions of 3-phase induction motor and alternator
EE 403.5	Recall computer aided techniques used for design of 3 phase induction motor
EE 411	HIGH VOLTAGE DC TRANSMISSION
EE 411.1	To compare and contrast the AC and DC transmission systems and understand the practical utility of HVDC transmission system
EE 411.2	To understand the analysis of converter circuits with grid control, with and without overlap angle
EE 411.3	To understand the purpose of control and study the controlling methods of HVDC transmission system
EE 411.4	To study the various faults in converters, harmonics introduced in the system and to understand the protection for these faults
ME 411	ENTERPRENUERSHIP
ME 411.1	To develop distinct entrepreneurial traits and ability to recognize business opportunities to build entrepreneurial career.
ME 411.2	Students can develop and systematically apply entrepreneurial way of thinking that will allow them to identify and create business opportunities for commercialized success.
ME 411.3	To design and develop a well presented successful business plan that is feasible and to gain the advantage of Project financing.

ME 411.4	To effectively plan projects through CPM/Pert techniques. To understand human aspects of business and helps to assess and evaluate tax burden.
ME 411.5	This helps the entrepreneur to manage his human resources and time effectively.
EE 431	ELECTRICAL SIMULATION LAB
EE 431.1	Develop and test MATLAB m-code for Power systems studies
EE 431.2	Simulate and analyze the control system experiments
EE 431.3	Analyze circuits using MATLAB an P-Spice
EE 431.4	Design Lag-Lead Compensators
EE 432	MICRO PROCESSORS AND MICRO CONTROLLERS LAB
EE 432.1	Develop the logic using instruction set of 8086 in different addressing modes to carry out arithmetic, logical and string operations using MASM
EE 432.2	Interface ADC, 8254, Traffic Signal with 8086 microprocessors.
EE 432.3	Demonstrate various arithmetical, logical programs using 8051 trainer kit
EE 432.4	Comprehend the usage of on-chip timers and serial communication of 8051 and their interrupts using programs
EE 433	POWER SYSTEMS LAB
EE 433.1	Able to comprehend and analyze the regulation, efficiency and ABCD constants of transmission lines
EE 433.2	Able to analyze and study the characteristics of different protective relays to know performance
EE 433.3	Able to observe and analyze parallel operation of alternator and differential protection of Transformer to the performance
EE 433.4	Able to apply different methods to find sequence impedances of transformer
EE 434	PROJECT SEMINAR
EE 434.1	Carryout Literature survey in the area of interest.
EE 434.2	Interact with industry environment/faculty for the selection of problem relevant to <u>current technology</u> .
EE 434.3	Understand and discuss the problem to provide possible solutions
EE 434.4	Organize the presentation in the form of a report
IV YEAR II SEM	
COURSE CODE	COURSE NAME
EE 451	UTILIZATION
EE 451.1	Able to Differentiate and Distinguish various heating and welding process and discuss the different methods.
EE 451.2	able to identify various switches used in motors and discuss the various motor control circuits.
EE 451.3	able to Identify various lamps used in lightening schemes, calculate and design the lightening scheme for given area.
EE 451.4	Ability to plot the speed time curves, determine and calculate the tractive effort, torque required and specific energy consumption.
EE 451.5	Ability to distinguish types of drives used in traction.
CE 452	DISASTER MITIGATION & MANAGEMENT
CE 452.1	Ability to analyze and critically examine existing programs in disaster management regarding vulnerability, risk and capacity at local level.
CE 452.2	Ability to choose the appropriate activities and tools and set up priorities to build a coherent and adapted disaster management plan.

CE 452.3	Ability to understand various mechanisms and consequences of natural and human induced disasters for the participatory role of engineers in disaster management
CE 452.4	Develop an awareness of the chronological phases of disaster response and relief operations for formulating effective disaster management plans.
CE 452.5	Ability to understand the concept of remote sensing and geographical information systems for their effective applications in disaster management.
EE 471	RENEWABLE ENERGY SOURCES
EE 471.1	Memorize the statistics of non-conventional sources
EE 471.2	Describe about solar radiation and solar cell fabrication
EE 471.3	Determine the maximum power developed by the wind power plant
EE 471.4	Recall the operation of bio gasifiers
EE 471.5	Summarize the operation of a wave, tidal and OTEC plants
ME 472	INDUSTRIAL ADMINISTRATION & FINANCIAL MANAGEMENT
ME 471.1	On completion of this unit learner (student) will be able to, (a) define business, objectives of business and types of business organization such as private undertakings, public undertakings and joint sector. (b) Describe factors influencing
ME 471.2	On completion of this unit student will be able to, (a) State definitions and objectives of work study, method study and time study. (b) Discuss applications of work study and its advantages. (c) Know the contributions of F.W Taylor & Frank Gilbreth. (d)
ME 471.3	On completion of this unit student will be able to, (a) Define inspection and quality and their differences. (b) Discuss the objectives of inspection and kinds of inspections. (c) Summarize SQC and techniques used in SQC. (d) Explain sampling
ME 471.4	On completion of this unit student will be able to, (a) Define optimization and operations research. (b) Solve problems on LPP using graphical solution.
ME 471.5	On completion of this unit student will be able to, (a) Express types of cost and elements of cost. (b) Describe over heads, types of over heads and allocation of over heads. (c) Define depreciation, methods of depreciation and compute depreciation.
EE 481	DIGITAL SIGNAL PROCESSING LAB
EE 481.1	Generate Basic Analog and Discrete time Signals
EE 481.2	Evaluate frequency response, output response, Linear & circular convolution using DFT. Appreciate efficient implementation of DFT using FFT.
EE 481.3	Design & Interpret FIR and IIR Filters using various techniques
EE 481.4	Devise the above concepts using MATLAB & CCS tools. Acquire knowledge to work on real time processing using DSP Processors
EE 482	GENERAL SEMINAR
EE 482.1	Carryout Literature survey in the area of interest.
EE 482.2	Interact with faculty and choose the topic for presentation related to recent trends in electronics and communication discipline.
EE 482.3	Prepare, organize the presentation and Present effectively that helps to acquire good
EE 482.4	Organize the presentation in the form of a report.
EE 483	PROJECT
EE 483.1	Understand and analyze the problem to provide an optimal solution
EE 483.2	Implement the project using hardware and software tools
EE 483.3	Analyze the performance of implemented results with existing work
EE 483.4	Organize the project work in the form of report/Thesis