

K.L.N. COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
REGULATION – 2013

B.E. ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE OUTCOMES (CO)

HS6151-Technical English-I [C101]

C101.1	Apply the collaborative and social aspects of research and writing processes.
C101.2	Comprehend that research and writing is a series of tasks, including accessing, retrieving, evaluating, analyzing and synthesizing appropriate data and information from sources that vary in content, format, structure and scope.
C101.3	Use appropriate technologies to organize, present and communicate information to address a range of audiences, purposes and genres.
C101.4	Explain the relationships among language, knowledge and power including social, cultural, historical and economic issues related to information, writing and technology.
C101.5	Demonstrate the role of a variety of technologies/ media in accessing, retrieving, managing and communicating information.

MA6151-Mathematics-I [C102]

C102.1	Find the eigen values and eigen vectors to diagonalise and reduce a matrix to quadratic form
C102.2	Check the converges, diverges of infinite series
C102.3	Obtain the evaluate and envelopes of a given curves by means of radius and centre of curvature
C102.4	Calculate the maxima and minima value functions of two variables
C102.5	Find the area of plain curves and volume of solid using double and triple integrals

PH6151-Engineering Physics-I [C103]

C103.1	Classify the Bravais lattices and different types of crystal structures and growth technique.
C103.2	Demonstrate the properties of elasticity and heat transfer through objects.
C103.3	Explain black body radiation, properties of matter waves and Schrodinger wave equations.
C103.4	Illustrate the acoustic requirements, production and application of ultrasonics.
C103.5	Examine the characteristics of laser and optical fiber.

CY6151 -Engineering Chemistry – I (C104)

C104.1	Classify the polymers and their utility in the industries and describe the techniques of polymerization & properties of polymers.
C104.2	Relate various thermodynamic functions such as enthalpy, entropy, free energy and their importance and equilibrium constant and its significance.
C104.3	Characterize the photophysical processes such as fluorescence and phosphorescence and various components of UV & IR spectrophotometer.
C104.4	Analyze the phase transitions of one component and two component systems and the types of alloys and their application in industries.
C104.5	Describe the synthesis, characteristics and the applications of nano materials.

GE6151-Computer Programming-[C105]

C105.1	Explain the basic organization of computers, the number systems and write the pseudo code for algorithms and flow chart.
C105.2	Develop 'C' programming fundamentals, looping statements and solve problems.
C105.3	Design 'C' programs for arrays and strings.
C105.4	Use functions with pass by value and reference, pointers in programs.
C105.5	Develop codings in 'C' for structures and unions with storage classes and preprocessor.

GE6152- Engineering Graphics [C106]

C106.1	Construct the conic sections and special curves and outline their practical applications and sketch the orthographic views from pictorial views and models
C106.2	Apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.
C106.3	Draw the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures
C106.4	Design the sectional views of solids like cube, prisms, pyramids, cylinders & cones and Development of its lateral surfaces
C106.5	Apply the principles of isometric projection and perspective projection of simple solids and truncated prisms, pyramids, cone and cylinders

GE6161 – Computer Practices Laboratory – (C107)

C107.1	Prepare data using MS-word & Excel to visualize graphs, charts in MS-Excel.
C107.2	Outline the given problem using flowchart and to program using Switch case & Control structures.
C107.3	Develop the code using decision making & looping statements.
C107.4	Apply passing parameters using Arrays & Functions.
C107.5	Use structure and Union for a given database and to bring out the importance of Unions over structure.

GE6162 – Engineering Practices Laboratory -- (C108)

C108.1	Demonstrate wiring for a simple residential house, identify the ratings of various appliances like Fluorescent tube, incandescent lamp, etc.
C108.2	Calculate the different Electrical quantities, measure the energy consumption using single phase energy meter.
C108.3	Measure the resistance to earth of an electrical equipment, analyze AC signal parameters using CRO.
C108.4	Verify the Truth tables of Logic gates AND, OR, EOR and NOT, generate clock signal using suitable gates.
C108.5	Develop soldering in a PCB, measure ripple factor of Half Wave Rectifier and Full Wave Rectifier.

GE6163 - Physics and Chemistry Laboratory – I (C109)

C109.1	Evaluate the wavelength of spectral lines using spectrometer, the wavelength of laser, particle size, acceptance angle of an optical fiber using semiconductor diode laser and the thickness of a thin wire through interference fringes using Air wedge apparatus.
C109.2	Appraise the velocity of sound and compressibility of the liquid using ultrasonic interferometer and thermal conductivity for bad conductors using Lee's disc apparatus.
C109.3	Determine the DO content in water sample by winkler's method and molecular weight of polymer by Ostwald viscometer.
C109.4	Find the strength of an acid using pH meter and conductometer.
C109.5	Estimate the amount of weak and strong acids in a mixture by conductometer.

HS6251-Technical English-II [C110]

C110.1	speak clearly, confidently, comprehensibly, and communicate with one or many listeners using appropriate communicative strategies
C110.2	Write cohesively and coherently and flawlessly avoiding grammatical errors, using a wide vocabulary range, organizing their ideas logically on a topic.
C110.3	Read different genres of texts adopting various reading strategies.
C110.4	listen/view and comprehend different spoken discourses/excerpts in different accents
C110.5	Recognize, understand, and analyze the context within which language, information, and knowledge are produced, managed, organized, and disseminated.

MA6251-Mathematics-II - [C111]

C111.1	Find solenoidal, irrotational vectors and explain the concepts of Green's, Gauss divergence, Stokes theorem to evaluate, single double and triple integrals
C111.2	Obtain the P.I. of Cauchy and Legendre Equation, explain the method of variation of parameters and solve simultaneous linear equations
C111.3	evaluate Laplace Transforms of periodic functions and solve the ODE using Inverse Laplace Transform
C111.4	Recall the properties of analytic functions for verifying C-R equations and determine Bilinear Transformation
C111.5	Expand functions of two variables as Taylor's and Laurent's series and evaluate Contour integrals using Cauchy's Integral formula

PH6251 – Engineering Physics–II – [C112]

C112.1	Illustrate classical and quantum free electron theory and calculate carrier concentration in metals.
C112.2	Describe the carrier concentration in semi conductors and identify the p-type and n-type semi conductor using hall effect.
C112.3	Classify the different types of magnetic and super conducting materials.
C112.4	Explain the dielectrics, types of polarization, losses and breakdown.
C112.5	Discuss the properties, preparation and applications of metallic alloys, SMA, nano materials, NLO, Bio-materials.

CY6251 – Engineering Chemistry –II – [C113]

C113.1	Explain the problems of using hard water in boilers and the methods of treatment of water for boiler use.
C113.2	Design the electrochemical cells and to identify the types of corrosion and the methods of preventing.
C113.3	Illustrate the methods of harnessing energy from non-conventional energy sources.
C113.4	Classify various engineering materials and their importance.
C113.5	Relate the significance of solid, liquid and gaseous fuels and to calculate the calorific values of fuels and the requirement of air for combustion in furnaces.

GE6251- Basic Civil and Mechanical Engineering - [C114]

C114.1	Explain the working principles of various power plants and differentiate the pumps and turbines.
C114.2	State the functions of IC engine and classify the various types of boilers.
C114.3	Apply the principles of vapour absorption and compression systems and Explain the Operation of air conditioner.
C114.4	Apply the principles of surveying and use various measurements for surveying and study about various engineering materials and leveling instruments.
C114.5	Classify the types of bridges, foundation, floorings, roofs, plasters and R.C.C structural members and state the purpose of dam.

EE 6201 – Circuit Theory – (C115)

C115.1	Apply Kirchoff's current and voltage law to simple circuits and Solve complex circuits using Mesh & Nodal Methods.
C115.2	Apply Network theorems to solve simple and complex linear circuits.
C115.3	Solve the Series and Parallel resonance circuit, analyze the performance of single & double tuned circuits.
C115.4	Develop the Transient response of RLC circuits using Laplace Transform, explain the characteristics of two port networks.
C115.5	Explain three phase balanced and unbalanced star, delta network.

GE6262 - Physics and Chemistry Laboratory – II-[C116]

C116.1	Appraise the Young's modulus of the beam by uniform and non uniform bending method, the moment of inertia and Rigidity Modulus for thin wire using Torsion Pendulum.
C116.2	Use Poiseuille's method for determining the coefficient of viscosity of the liquid.
C116.3	Evaluate the refractive index of spectral lines for determining the dispersive power of a prism.
C116.4	Determine the type, amount of alkalinity , hardness in a given water sample and evaluate the amount of copper using EDTA method
C116.5	Examine the potentiometric redox titration and Conductometric precipitation titration.

GE6263-Computer Programming Laboratory-[C117]

C117.1	Explain UNIX Operating system and usage of file system.
C117.2	Apply Shell Commands for a given task using filter and pipe commands.
C117.3	Develop and implement the Shell scripts in VI editor.
C117.4	Develop C Program on Unix environment.
C117.5	Apply File handling in C to copy, merge and display the given file.

EE 6211 – Electric Circuits Laboratory – (C118)

C118.1	Apply KCL, KVL and Network Theorems to Simple and Complex circuits.
C118.2	Demonstrate the working of CRO and Determine the Time Constant of RC circuit.
C118.3	Determine frequency response of RLC circuits and Use MATLAB to simulate series, parallel resonant circuit, low pass, high pass filter.
C118.4	Use MATLAB to simulate three phase balanced, unbalanced circuit and Measure power in three phase circuits by two wattmeter methods.
C118.5	Determine h-parameters of Two port networks and Calibrate single phase energy meter

MA6351- Transforms and Partial Differential Equations[C201]

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

EE6301-Digital Logic Circuits-[C202]

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

EE6302-Electromagnetic Theory – (C203)

C203.1	Explain the different coordinate systems, and apply Gauss's law
C203.2	Interpret the concepts of Electrostatic fields and apply boundary conditions on Electrostatic field
C203.3	Develop concepts of Magnetostatic fields and apply boundary conditions.
C203.4	Analyze the Maxwell's equations for electromagnetic fields
C203.5	Derive Electromagnetic wave equation and apply the Poynting expression.

GE6351 – Environmental Science and Engineering (C204)

C204.1	Define Environment, ecosystem and biodiversity, classify types of ecosystems and outline the impacts to biodiversity.
C204.2	Define pollution, classify its types, analyze the causes and suggest control measures for pollution.
C204.3	Outline various natural resources; explain causes and impacts of destruction of resources.
C204.4	List various social issues related to land, water and energy; summarize the concerning government acts and rules to overcome these problems.
C204.5	Interpret population explosion and variation among nations, show the impacts of over population and illustrate the methods to mitigate the same.

EC6202 - Electronic Devices and Circuits – [C205]

C205.1	Draw the characteristics of various types of Diodes, design half and full wave Rectifiers.
C205.2	Compare the different configurations of BJT, draw its characteristics.
C205.3	Calculate the FET parameters, draw its frequency response characteristics.
C205.4	Design Amplifier circuits and draw frequency response characteristics.
C205.5	Develop the parameters of feedback amplifier circuit, describe different types of oscillator circuits.

EE 6303 – Linear Integrated Circuits & Applications– (C206)

C206.1	Explain the procedure for the fabrication of IC
C206.2	Summarize the DC & AC characteristics of Operational amplifier.
C206.3	Discuss the applications of Operational amplifier
C206.4	Describe the internal functional blocks of special ICs like Timer and PLL.
C206.5	Classify types of voltage regulators and describe the special ICs.

EC6361 - Electronics Laboratory – [C207]

C207.1	Find the breakdown voltage of Diode, draw the V-I characteristics of BJT.
C207.2	Draw the equivalent circuit of JFET and develop the saw tooth waveform generation using UJT
C207.3	Design the Common Emitter amplifier and draw the V-I characteristics of photo diode & photo transistor
C207.4	Compare the theoretical and practical frequency value of oscillators and measure the ripple factor of rectifier
C207.5	Show the frequency response of filters, design the multivibrators

EE 6311 – Linear and Digital Integrated Circuits Laboratory– (C208)

C208.1	Apply Boolean functions to implement adder, subtractor circuits and convert Excess 3 to BCD, Binary to Gray code and vice versa
C208.2	Test Parity generator and checker and Design encoder decoder circuits
C208.3	Demonstrate 4 bit synchronous, asynchronous counter and Shift registers.
C208.4	Illustrate multiplexer demultiplexer circuit and apply 555 timer in Monostable and Astable operation.
C208.5	Apply OP-AMP to construct Adder, comparator, differentiator, Integrator and describe VCO, PLL characteristics.

MA6459-Numerical Methods-[C209]

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

EE6401-Electrical Machines-I- [C210]

C210.1	Describe the coupled coil calculate the self and mutually induced emf
C210.2	Analyze the operation of transformer in different loading condition
C210.3	Explain the concept of field energy and co-energy in single and multiple excited systems
C210.4	Demonstrate the construction of D.C machines and operation of DC Generator
C210.5	Derive the performance equation of D.C motor under various load condition and analyze the braking system

CS6456-Object Oriented Programming-[C211]

C211.1	Explain the key attributes of C++ like native types and statements and implement ADT.
C211.2	Develop object oriented programs using polymorphism and data abstraction concepts.
C211.3	Design templates, construct generics and to handle exceptions.
C211.4	Develop the concept of java in creating classes, objects using arrays and control statements.
C211.5	Create packages, handle exceptions and develop multi-threaded programs.

EE 6402 – Transmission and Distribution – (C212)

C212.1	Identify the basic elements of the electric power system, generation, transmission, distribution and describe the role played by each element.
C212.2	Compute the losses, efficiency and parameters of the Transmission line.
C212.3	Analyze the Performance of Transmission Lines.
C212.4	Solve the voltage distribution in insulator strings, cables and methods to improve the same.
C212.5	Design overhead lines both Mechanical and electrical aspects using Sag calculation.

EE6403-Discrete Time Systems and Signal Processing-[C213]

C213.1	Classify the different types of signals and systems and Explain the sampling process of continuous time signal.
C213.2	Apply z-transform and inverse Z transform and analyze discrete time systems.
C213.3	Apply Radix-2 Decimation in Time (DIT) and Decimation in Frequency (DIF)FFT Algorithm to Compute Discrete Fourier Transform.
C213.4	Explain different types of Infinite Impulse Response (IIR) filters and Finite Impulse Response (FIR) filters.
C213.5	Explain various architectures of Digital signal processors.

EE6404– Measurements and Instrumentation-(C214)

C214.1	Describe the basic functional block elements in Different measuring Instruments and the errors in the measurement system.
C214.2	Select the suitable instrument for measuring different electrical and magnetic parameters.
C214.3	Design a suitable Bridge circuit to determine the values of various resistor, inductor and capacitor.
C214.4	Explain the construction and working principle of various types of storage and display devices and compare them.
C214.5	Compare the various types of transducers and explain the function of different blocks involved in data acquisition systems.

CS 6461- Object Oriented programming Laboratory-[C215]

C215.1	Design C++ programs using functions, classes with objects, member functions and constructors.
C215.2	Develop operator and function overloading and run time polymorphism using C++.
C215.3	Develop file handling techniques in C++ for sequential and random access also use Java code for strings.
C215.4	Construct packages and interfaces in Java.
C215.5	Create threads in Java and handle predefined and user defined exceptions.

EE6411-Electrical Machines Laboratory-I- [C216]

C216.1	Analyze the characteristics of DC shunt generator DC compound generator and calculate critical resistance and critical speed
C216.2	Examine load characteristics of DC shunt, series and compound motor and identify its maximum efficiency operating point
C216.3	Predict the efficiency of DC shunt machine in different methods
C216.4	Explain the load characteristics of single phase and three phase transformer , separate the different losses and to find the efficiency
C216.5	Predetermine the equivalent circuit parameters of single phase transformer in two different methods and compare the results

EE 6501 – Power System Analysis-[C301]

C301.1	Explain the operation of various power system components, Draw the per unit diagram and form the Y-bus matrix for the power system.
C301.2	Develop the power flow equation for power system problems and Determine the line flows using G-S, N-R and F-D method
C301.3	Illustrate the types of faults and their effects, Calculate the fault currents for symmetrical fault condition.
C301.4	Draw the sequence network for L-G, L-L and L-L-G fault of the power system and Determine the fault current incase of L-G, L-L and D-L-G fault
C301.5	Explain the concept of power system stability, Analyze the stability of single machine infinite bus system.

EE 6502 – Microprocessors and Microcontrollers – (C302)

C302.1	Describe the basic Architecture of 8085 Microprocessor and working of all blocks of the processor, IO and memory interfacing with necessary timing diagrams.
C302.2	Classify the instructions with the help of Addressing modes of 8085 with necessary programs.
C302.3	Explain the basic Architecture of 8051 Microcontroller with working of various blocks of the controller like Interrupts, Timer, IO ports etc. with necessary timing diagram and compare the programming concepts with 8085.
C302.4	Analyze the architecture of various Interfacing Devices like 8255 PPI, 8259 PIC, 8251 USART, 8279, 8253, ADC and DAC and Programming of all the Interfacing IC's.
C302.5	Apply the knowledge of programming concepts of 8051 Microcontroller for various applications like keyboard display interface, servo motor etc

ME 6701 – Power Plant Engineering – (C303)

C303.1	Draw the layout of modern coal power plant and list the various components used in thermal power plant.
C303.2	Identify the components of diesel and gas turbine power plants and construct the integrated gasifier based combined cycle systems.
C303.3	Describe the layout of subsystems of various nuclear power plants and express safety measures for nuclear power plants.
C303.4	Distinguish different hydroelectric power plants and construct various renewable energy power plants such as wind, tidal, PV, solar, thermal, geo thermal, biogas and fuel cell.
C303.5	Calculate the per unit cost of electrical energy based on Power tariff, load factor, demand factor, diversity factor and plant safety factor.

EE6503 - Power Electronics - [C304]

C304.1	Explain the significance of switching devices and its application to power converters and demonstrate the triggering circuit and snubber circuits.
C304.2	Compare the operation of two, three Pulse Converters and draw output waveforms with and without source and load inductance.
C304.3	Classify the operation of Choppers and outline the application of SMPS.
C304.4	Analyze the operation of single phase and three phase Inverters with and without PWM techniques.
C304.5	Illustrate the operation of AC voltage controller and cycloconverter and its application.

EE6504-Electrical Machines-II-[C305]

C305.1	Draw the constructional details and explain the performance of salient and non – salient type synchronous generators.
C305.2	Draw and explain the Principle of operation and performance of synchronous motor.
C305.3	Draw and describe the construction, principle of operation and performance of induction machines.
C305.4	Describe the starting and speed control of three-phase induction motors.
C305.5	Explain the construction, principle of operation and performance of single phase induction motors and special machines.

IC6501- Control systems – (C306)

C306.1	Discuss the use of transfer function models for analysis of physical systems and the control system components.
C306.2	Analyze the time response of systems and steady state error.
C306.3	Use the basic knowledge in obtaining the open loop and closed-loop frequency responses of systems.
C306.4	Explain the stability analysis and types of compensators.
C306.5	Describe the state variable representation of physical systems and the effect of state feedback.

EE6511- Control and Instrumentation Laboratory – (C307)

C307.1	Determine the characteristics of P, PI and PID controllers experimentally and analyze the stability of the control system by (i) Bode plot (ii) Root Locus Plot and (iii) Nyquist plot using MATLAB.
C307.2	Compute the transfer function of a Field controlled DC motor experimentally and Design the Lag, Lead and Lag-Lead Compensators for the given specifications and hook up it using RC networks.
C307.3	Draw the transient response of Position Control system experimentally, Determine the Characteristics of Synchro-Transmitter- Receiver and Use the MATLAB for the Simulation of Control Systems.
C307.4	Calculate the unknown Capacitance, Inductance and Resistance using AC and DC Bridges experimentally and Analyze the Dynamics of Sensors/Transducers (a) Temperature (b) Pressure (c) Displacement (d) Optical (e) Strain and (f) Flow.
C307.5	Measure the Power and Energy experimentally; Analyze the Signal Conditioning units (a) Instrumentation Amplifier (b) ADC and DACs and Use the MATLAB for Process Simulation.

GE6563- Communication Skills – Laboratory based – (C308)

C308.1	Apply appropriate communication skills across settings, purposes and audiences.
C308.2	Demonstrate knowledge of communication theory and applications.
C308.3	Practice critical thinking to develop innovative and well-founded perspectives related to the students emphasis. Build and maintain healthy and effective relationships.
C308.4	Use technology to communicate effectively in various settings and contexts.
C308.5	Demonstrate appropriate and professional ethical behavior.

EE6512-Electrical Machines Laboratory-II - [C309]

C309.1	Determine the voltage regulation of three phase alternator in different methods and compare the results
C309.2	Determine the voltage regulation of salient pole synchronous machine and find negative & zero sequence components
C309.3	Explain the V and inverted V characteristics of three phase synchronous machine at different load condition
C309.4	Determine and pre determine performance characteristics of three phase induction motor
C309.5	Determine and pre determine performance characteristics of single phase induction motor

EC6651-Communication Engineering - (C310)

C310.1	Explain the operation of Amplitude Modulation , draw the frequency spectrum and vector representation of AM
C310.2	Compare the different methods of QPSK, BFSK and GMSK
C310.3	Analyze how information is transmitted to receiver using the Huffman coding
C310.4	Discuss about the various types of multiple access techniques
C310.5	Distinguish between INTELSAT and INSAT

EE6601– Solid State Drives – (C311)

C311.1	Classify the various types of drives and load torque characteristics and Apply the multi quadrant dynamics in hoist load system.
C311.2	Analyze the operation of steady state analysis of single phase and three phase fully controlled converter and Chopper fed separately excited dc motor drives and discuss the various control strategies of converter.
C311.3	Explain the operation and characteristics of various methods of solid state speed control of induction motor.
C311.4	Describe the operation of various modes of V/f control of synchronous motor drives and different types of permanent magnet synchronous motor drives.
C311.5	Design a current and speed controller and develop the transfer function for DC motor, load and converter, closed loop control with current and speed feedback.

EE 6602 – Embedded Systems – (C312)

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

EE 6603 – Power System Operation and Control - (C313)

C313.1	Analyze the various load characteristics with load curve and load duration curve.
C313.2	Describe modeling of power-frequency dynamics and design power-frequency controller
C313.3	Explain the modeling of reactive power-voltage interaction and the control actions
C313.4	Solve economic dispatch problems and unit commitment problems in power systems
C313.5	Explain the need of computer controls to energy management using SCADA

EE 6604 - Design of Electrical Machines [C314]

C314.1	Compare Electrical Engineering materials; determine heat dissipation due to Conduction, convection and radiation.
C314.2	Calculate mmf for slots and teeths, apparent flux density, main dimensions and winding details of DC machines.
C314.3	Design core, yoke, winding and cooling system of transformers.
C314.4	Develop output equation of AC machines, design stator and rotor of induction machines.
C314.5	Design stator and rotor of synchronous machines analyze their thermal behavior, design field systems for turbo alternators.

EE6002-Power System Transients - (C315E3)

C315E3.1	Explain the concept of transients and Compute the solution of transient current equation for RL and RLC system.
C315E3.2	Illustrate the importance of switching transients, Explain the concept of resistance switching, load switching and capacitance switching.
C315E3.3	Explain the concept of lightning mechanism, Describe the interaction between lightning and power system
C315E3.4	Apply the concept of reflection and refraction, Draw the Bewley Lattice diagram for different systems.
C315E3.5	Analyze the concept of short line (or) Kilometric fault and justify the EMTP for transient computation.

EE6611-Power Electronics and Drives Laboratory – (C316)

C316.1	Draw the VI characteristics of SCR and generate the Gate Pulse using R, RC and UJT.
C316.2	Plot the characteristics of MOSFET and IGBT
C316.3	Simulate a single phase AC to DC half and fully controlled converter.
C316.4	Draw the output response of step up and step down MOSFET based chopper and simulate a single phase IGBT based PWM inverter.
C316.5	Plot the output response of AC voltage controller and simulate the Power Electronic Circuits.

EE 6612 – Microprocessors and Microcontrollers Laboratory – (C317)

C317.1	Predict the smallest/ largest number from a given array and to Perform various mathematical operations using 8085 processor
C317.2	Convert the given analog input to digital value and to control the traffic signals using 8085 programming
C317.3	Develop coding to display the given word using keyboard and display controller and for serial communication
C317.4	Manipulate the basic operations involving jumps and loops using 8051 Microcontroller and to interface stepper motor and other devices
C317.5	Design circuits for implementing real time applications

EE 6613 – Presentation Skills and Technical Seminar – (C318)

C318.1	Present seminar in the field of electrical and electronics engineering subjects studied.
C318.2	Solve objective type questions in the field of electrical and electronics engineering.
C318.3	Communicate effectively, the subjects learned in the form of seminar presentation.
C318.4	Communicate effectively, the modern trends in the field of electrical and electronics engineering.
C318.5	Answer effectively during technical interviews.

EE6701- High Voltage Engineering- (C401)

C401.1	Identify the causes of over voltage and its effects in power system.
C401.2	Classify the breakdown Mechanisms in Solid, Liquid, gases and Composite dielectrics
C401.3	Design different type of Generating circuit for high voltage D.C and high voltage A.C
C401.4	Measure A.C and D.C high voltage and current using appropriate method
C401.5	Test the transformer ,insulator , circuit breakers, surge diverters and cables also discuss the insulation coordination

EE6702- Protection and Switchgear - [C402]

C402.1	Summarize the causes and effects of faults in power system and explain the necessity of protection in power system.
C402.2	Describe the operation of electromagnetic relays and draw their characteristic curves.
C402.3	List out the various faults that can occur on alternator, transformer, busbar and transmission line and select the suitable protection schemes.
C402.4	Synthesize the static relays using comparators and explain numerical relays.
C402.5	Derive the expression for RRRV, critical resistance value and compare the various types of circuit breakers.

EE6703-Special Electrical Machines - [C403]

C403.1	Explain the necessity to improve the saliency of synchronous reluctance motor and its characteristics
C403.2	Compare the various methods of excitation of different types of stepper motor and its driver circuits
C403.3	Describe the operation of switched reluctance motor with and without sensors
C403.4	Explain the electronic commutation of permanent magnet brushless D.C. motors and develop the torque equation.
C403.5	Develop the expression for emf and torque of permanent magnet synchronous motors and discuss power controller for permanent magnet synchronous motors.

MG6851-Principles of Management - [C404]

C404.1	Describe the basic of management and its types, skills, management roles, types of business organizations and current trends in business.
C404.2	Explain the nature and purpose of planning , types, objective of planning and decision process
C404.3	Compare the different organization structures, Authorities and responsibilities, Human resource management and training and development.
C404.4	Estimate the individual and group behavior, motivation, job satisfaction, types and theories of leadership, communication and IT.
C404.5	Apply the knowledge using the various System and process of controlling, budgetary and non-budgetary control techniques, use of computers and IT in Management control, reporting.

EI 6704 – Biomedical Instrumentation – (C405E2)

C405E2.1	Identify the functions of human nervous system and describe the basic components of biomedical system.
C405E2.2	Illustrate the measurement of non-electrical parameters in human body system.
C405E2.3	Apply different electrodes and amplifiers in physiological measurements (EEG, ECG, EMG etc.)
C405E2.4	Explain the basic principles of imaging techniques and patient monitoring system.
C405E2.5	Describe the functions of life assisting and therapeutic equipments

EE6008 – Micro Controller Based System Design – [C406E4]

C406E4.1	Describe the basic architecture of PIC16cxx and apply the instruction set for simple operations.
C406E4.2	Explain about the PIC micro controllers interrupts and write the interrupt programs
C406E4.3	Apply the program to interface I/O devices with controller like LCD, Keyboard, and Sensors etc.,
C406E4.4	Develop simple applications using ARM assembly language programs
C406E4.5	Analyze ARM Organization and ARM Coprocessor interface

EE 6711 – Power System Simulation Laboratory – [C407]

C407.1	Determine the bus impedance and admittance matrices using C and MATLAB
C407.2	Apply numerical methods for solving load flow problems and verify using C and MATLAB
C407.3	Analyze various faults occurring in power system and simulate the faults using PSCAD.
C407.4	Analyze small signal stability of Single Machine Infinite Bus (SMIB) system and draw the swing curve using AUPOWER Lab and MATLAB.
C407.5	Generate the coding for economic dispatch problems and load frequency dynamics problems using MATLAB.

EE6712 -Comprehension- [C408]

C408.1	Describe the basic concepts of electrical and electronics subjects.
C408.2	Solve objective type questions in the field of electrical and electronics engineering
C408.3	Review, prepare and present technological developments
C408.4	Analyze the modern trends in the field of electrical and electronics engineering.
C408.5	Answer effectively during technical interviews.

EE6801-Electric Energy Generation, Utilization and Conservation – [C409]

C409.1	Evaluate tractive effort for the propulsion of train, name the traction motors, list the traction motor control, track equipment and collection gear.
C409.2	Categorize different light sources and design various illumination systems for the indoor lighting schemes, factory lighting, halls, outdoor lighting schemes, flood lighting, street lighting.
C409.3	Compare the different methods of electric heating and types of electric welding.
C409.4	Estimate average solar radiation and illustrate the physical principles of the conversion of solar radiation into heat.
C409.5	Analyze aerodynamic forces acting on the blade and draw basic components of a WECS.

EE 6009 – Power Electronics for Renewable Energy Systems – (C410E1)

C410E1.1	Discuss and analyze the various types of renewable energy sources
C410E1.2	Analyze the performance of IG, PMSG, SCIG and DFIG
C410E1.3	Design different power converters namely AC to DC, DC to DC and AC to AC converters for renewable energy systems.
C410E1.4	Analyze various operating modes of wind electrical generators and solar energy systems.
C410E1.5	Develop maximum power point tracking algorithms.

GE6757-Total Quality Management - [C411E2]

C411E2.1	Describe the basic of Basic concepts of TQM and its need , Contributions of Deming, Juran and Crosby , Customer focus, Costs of quality.
C411E2.2	Explain the Leadership ,Quality Councils , Employee involvement, Teamwork, Quality circles , Performance appraisal , PDCA cycle, 5S, Kaizen, Supplier partnership.
C411E2.3	Compare the different tools of quality, New management tools , Six sigma, Bench marking.
C411E2.4	Estimate the TQM using Control Charts, Taguchi quality loss function , TPM - Concepts, improvement needs and Performance measures.
C411E2.5	Apply the knowledge using the various System using ISO 9000 - ISO 9001-2008 , Elements, Documentation, Quality Auditing - QS 9000 - ISO 14000 – Concepts etc.

EE6811 – Project work [C412]

C412.1	Apply the fundamentals of mathematics, science and engineering knowledge to identify , formulate , design and investigate complex engineering problems of electrical and electronics engineering and allied applications .
C412.2	Apply appropriate techniques and modern engineering hardware and software tools in electrical and electronics engineering and allied applications.
C412.3	Apply reasoning informed by the contextual knowledge to assess societal , health, safety, legal and cultural issues with societal and environmental context , applying ethical principles in the field of electrical and electronics engineering and allied applications.
C412.4	Function effectively as an individual and as a member or leader in diverse teams in multidisciplinary settings and make effective presentation, and communicate effectively.
C412.5	Demonstrate the understanding of the engineering and management principles in multidisciplinary environments to engage in lifelong learning in the broadest context of technological change.