



Course Outcomes

Class: I Year I Semester

Course Name with Code	Course Outcome	
Communicative English C111	CO1	Understand past culture, tradition, speaking English in real life situations
	CO2	Infer and interpret the admonitions of a father to his daughter answering a series of questions, greetings and leave takings
	CO3	Apply mechanics of writing in writing letters on various contexts, cover letters, CVs, E-mail etiquette, academic proposals, research articles and biographies.
	CO4	Understanding societal problems and finding the suitable solution with reference to Wangari Maathai
	CO5	Compare and contrast racial discrimination, better listening for better speaking and using right vocabulary
	CO6	Understand the importance of soft skills, effective communication skills, usage of functional grammar in communication.
Mathematics-I C112	CO1	Discuss the Ratio test and Mean value theorems
	CO2	Solve First order Linear differential equations
	CO3	Solve the Higher order non-homogeneous Differential Equations
	CO4	Model physical phenomena of LCR series circuit and Simple Harmonic Motion.
	CO5	Determine the extreme values for the function of two variables.
	CO6	Compute double and triple integrals to find Area and Volume.
Mathematics-II C113	CO1	Explain system of linear algebraic equations using Gauss Elimination method
	CO2	Use Cayley-Hamilton theorem to find the inverse and power of a matrix problems
	CO3	Solve the approximate roots of polynomial and transcendental equations by using Iterative methods
	CO4	Solve the system of linear equations using Jacobi and Gauss-Seidal Iterative methods
	CO5	Apply Newton's forward and backward interpolation for equal intervals and Lagrange's formula for unequal intervals
	CO6	Apply Numerical Integral techniques to solve Engineering problems
Programming for Problem Solving using C C114	CO1	Apply the fundamentals of C Programming for Problem solving.
	CO2	Identify the appropriate Decision statement and Loops for a given Problem.
	CO3	Make use of Arrays and Strings to solve the problems in C.

	CO4	design and implement programs to analyze the different pointer applications.
	CO5	Develop solutions for problems using Functions..
	CO6	Develop solutions for problems using Files
Engineering Drawing & Desin C115	CO1	Understand the knowledge of basic geometries, geometric tools, and procedures used in engineering drawing.
	CO2	Draw simple curves of ellipse, cycloid and involutes and construction of scales.
	CO3	Construct projections of points, straight lines & planes inclined to one or both the planes.
	CO4	Construct Projections of planes inclined to one or both the planes.
	CO5	Construct projection of solids on different orientations
	CO6	Transform multi-views to isometric views and vice-versa
English Communication Skills Lab C116	CO1	Identify 44 sounds of language and develop correct pronunciation learning Phonetics
	CO2	Demonstrate language functions: LSRW Skills
	CO3	Develop and practice correct accent, intonation, and rhythm to get acquaintance with language.
	CO4	Develop speaking skills through participation in activities and vocabulary
Electrical Engineering Workshop Lab C117	CO1	Explain the limitations, tolerances, safety aspects of electrical systems and wiring.
	CO2	Demonstrate wires/cables and other accessories used in electrical systems with their specifications and usage.
	CO3	Construct and evaluate the performance of simple lighting and power circuits
	CO4	Demonstrate the usage of electrical measuring equipment
	CO5	Measure the current, voltage and power in a DC circuit
	CO6	Demonstrate the assembling of electronic components on bread board.
Programming for Problem Solving using C Lab C118	CO1	Knowledge on various concepts of C language.
	CO2	Design and development of C program using loops
	CO3	Design and development of C problem solving skills using arrays
	CO4	Design and develop programs on functions

Class: I Year II Semester

Course Name with Code	Course Outcome	
Mathematics - III C121	CO1	Compute Line, Surface, Volume integrals using Green's, Stoke's and Divergence theorems.
	CO2	Use Laplace Transform methods to solve initial value problems for constant coefficient linear ordinary differential equations.
	CO3	Discuss the expansion of a given periodic function by Fourier series in the given interval.
	CO4	Solve engineering problems using Fourier Transforms and Inverse Fourier Transforms.
	CO5	Apply a range of techniques to solve first and second order linear partial differential equations.
	CO6	Model physical phenomena of Heat and Wave equations by using Partial differential equations.
APPLIED PHYSICS C122	CO1	Understand the basics of coherent sources and concepts of interference and diffraction.
	CO2	Explain the fundamental concepts of Quantum behavior of matter and apply Schrödinger's wave equation for energy values of a free particle.
	CO3	Explain various electron theories: Connect it to classification of solids based on band theory.
	CO4	Comprehend the use of concepts of semiconductor physics. Explore a few of their technological applications.
	CO5	Classify magnetic materials based on susceptibility and temperature dependence: Connect it to magnetic devices.
	CO6	Describe basics of dielectrics
Data Structures THROUGH C C123	CO1	Use data structures concepts with arrays, stacks, queues.
	CO2	Summarize the properties and types of linked lists for stacks, queues and for other applications.
	CO3	Demonstrate different methods for traversing trees.
	CO4	Implement algorithms on Graphs
	CO5	Implement algorithms on Graphs
	CO6	Discuss the computational efficiency of the principal algorithms for sorting & searching
ELECTRICAL CIRCUIT ANALYSIS-I C124	CO1	Explain the various electrical networks in presence of active and passive elements.
	CO2	Analyse the electrical networks with network topology concepts.
	CO3	Characterize any magnetic circuit with various dot conventions.

	CO4	Analyse R, L, C network with sinusoidal excitation.
	CO5	Sketch R, L, network with variation of any one of the parameters i.e., R, L, C and f
	CO6	Evaluate electrical networks by using principles of network theorems.
BASIC OF CIVIL & MECHANICAL ENGINEERING C125	CO1	Understand the basic principles of stress & strain
	CO2	Apply Shear force diagram & Bending moment diagram principles for Cantilever and Simply supported beams
	CO3	Apply concepts of Rosette analysis for strain measurements
	CO4	Understand and Classify the bricks, timbers & glasses
	CO5	Compare the working characteristics of single acting & Double acting reciprocating pump.
	CO6	Compare the differences between boiler mountings and accessories.
Applied Physics Lab C126	CO1	Determine the various parameters like wavelength of different light sources, curvature of lens using spectrometer and travelling microscope
	CO2	Apply the concepts related to semiconductors, electric and magnetic fields
	CO3	Demonstrate the photo electric effect
	CO4	Apply theoretical principles for measurements in the laboratory
BASIC OF CIVIL & MECHANICAL ENGINEERING LAB C127	CO1	Draw a valve timing diagram on 4-s diesel & petrol engine
	CO2	Understand the working principle of boilers
	CO3	Determine flow discharge measuring device used in pipes channels and tanks.
	CO4	Test for the performance of pumps and turbines
Data Structures Through C Lab C128	CO1	Design and development of Queues and Stacks
	CO2	Use basic data structure linked list
	CO3	Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths.
	CO4	Use various sorting and searching algorithms

Class: II Year I Semester

Course Name with Code	Course Outcome	
Mathematics – IV C211	CO1	Determine whether a given continuous function is analytic and find the differentiation and integration of complex functions.
	CO2	Make use of the Cauchy residue theorem to evaluate certain integrals
	CO3	Explain the concept of probability and probability distributions
	CO4	Apply the concept of sampling distributions of sample mean and variance to identify unusual samples from a given population.
	CO5	Describe point and interval estimation and determine confidence limits for the population mean and proportion
	CO6	Explain the logic behind and process of hypothesis testing and Show conclusions by carry out hypothesis testing for the population proportion.
Electronic Devices and Circuits C212	CO1	Discuss the basic concepts of semi-conductor physics
	CO2	Discuss the physical phenomena such as conduction, transport mechanism and electrical characteristics of different diodes and the application of diodes as rectifiers with their operation and characteristics with and without filters.
	CO3	Explain the principal of working and operation of Bipolar Junction Transistor and Field Effect Transistor and their characteristics.
	CO4	Explain the need of transistor biasing and its significance of BJT and FET
	CO5	Explain the stabilization concepts of BJT and FET.
	CO6	Analyse the Small signal equivalent circuit analysis of BJT and FET transistor amplifiers
Electrical Circuit Analysis –II C213	CO1	Solve three- phase circuits under balanced and unbalanced condition.
	CO2	Find the transient response of electrical networks for different types of excitations
	CO3	Find parameters for different types of network.
	CO4	Realize electrical equivalent network for a given network transfer function.
	CO5	Extract different harmonics components from the response of an electrical network.
	CO6	Relate the Fourier transforms to electrical circuit response.
DC Machines and Transformers C214	CO1	Analyse the concepts of electromechanical energy conversion.
	CO2	Illustrate the ill-effects of armature reaction and improve commutation in dc machines.
	CO3	Describe the torque production mechanism and control the speed of dc motors.
	CO4	Analyze the performance of single phase transformers.

	CO5	Calculate regulation, losses and efficiency of single phase transformers.
	CO6	Develop and formulate conditions in parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation
Electro Magnetic Fields C215	CO1	Determine the Electric field intensity, Electric flux density and Electric potential due to different configurations of static charges using Gauss's law.
	CO2	Calculate the capacitance of different capacitors and energy density in the electrostatic field
	CO3	Determine the magnetic field intensity, magnetic flux density due to different configurations using Biot-Savart's law & Ampere's circuital law.
	CO4	Determine the magnetic force and torque produced by the currents in magnetic field and energy density in the magnetic field.
	CO5	Calculate the self and mutual inductances of different electromagnetic coils.
	CO6	Formulate the statically and dynamically induced EMF using Faraday's laws and analyze the Maxwell's equations in different forms for time varying fields.
Electrical Circuits Lab C216	CO1	Verify the Thevenin's Norton's and Superposition theorem for a given network.
	CO2	Verify the Compensation and Maximum power transfer theorem for given network.
	CO3	Verify the Reciprocity and Millimann's theorem for given network.
	CO4	Determine the different two-port network parameters for given network.
	CO5	Calculate the Self and mutual inductance and co-efficient of coupling of a given inductive coils and find the chock coil parameters.
	CO6	Determine hot and cold resistance of a electrical lamp and measure the 3-phase power using 2 wattmeter method using unbalance load.
DC Machines and Transformers Lab C217	CO1	Determine the magnetic characteristics of DC Shunt generator and understand the mechanism of self-excitation
	CO2	Determine performance of DC machines
	CO3	Determine the performance of speed control of motors using armature control and field control methods
	CO4	Predetermine the efficiency and regulation of transformers and assess their performance
	CO5	Obtain three phase to two phase transformation
	CO6	Obtain separation of losses of single phase transformer, DC shunt motor
Electronic Devices and Circuits lab C218	CO1	Apply analytical skill to measure voltage, frequency and phase of any waveform using CRO
	CO2	Sketch and Analyze the characteristics of basic two terminal electronics devices like PN Junction diode and Zener diode.
	CO3	Design and Analyze diode rectifier circuits
	CO4	Sketch and Analyze the characteristics of BJT and FET.

	CO5	Sketch and Analyze the characteristics of SCR and UJT.
	CO6	Design and Analyze Transistor biasing and amplifiers.
Design of Electrical Circuits using Engineering C219	CO1	Construct the circuit to verify KVL , KCL ,MESH & NODAL Analysis
	CO2	Construct the circuit to verify Superposition theorem & Reciprocity theorem
	CO3	Construct the circuit to verify Thevenin's & Max power transfer theorem
	CO4	Construct the circuit to verify Norton's theorem
	CO5	Construct the circuit to verify compensation & Millmann's theorem
	CO6	Construct the circuit to verify Series Resonance & parallel resonance
Professional Ethics & Human Values C210	CO1	Explain the morals, values and ethics.
	CO2	Define the human rights and fundamental duties.
	CO3	Utilize the ethical theories .
	CO4	Assess the engineer's responsibilities towards safety and risk.
	CO5	Classify professional and individual rights.
	CO6	Make use of environmental, bio and research ethics

Class: II Year II Semester

Course Name with Code	Course Outcome	
Python Programming C221	CO1	Apply the basics of Programming in Python Language
	CO2	Solve coding tasks related to conditional statements, loops
	CO3	Experiment with with lists, tuples and dictionaries
	CO4	Understand how to import packages and modules
	CO5	Design programs using functions,modules,files and classes
	CO6	Solve Exception handling programs and GUI based programs
Digital Electronics C222	CO1	Able to differentiate various types of number systems and can detect and correct the errors in the information
	CO2	Able to solve the Boolean expressions using various minimization techniques
	CO3	Able to design and realize a given combinational logic circuit using minimization techniques.
	CO4	Able to implement a given circuit or expression using PAL, PLA, PROM.
	CO5	Able to discriminate and design various types of sequential circuits using flip-flops, registers and counters.
	CO6	Able to design various types of sequential circuits using state diagram and state reductions.
Power System-I	CO1	Study the principle of operation of different components of thermal power

C223		stations.
	CO2	Study the principle of operation of different components of a Nuclear power stations.
	CO3	Study the constructional and operation of different components of an Air and Gas Insulated substations.
	CO4	Study the constructional details of different types of cables.
	CO5	Study the different types of loads and load curves
	CO6	Study the costs of generation & their division and tariffs applicable to consumers
Induction and Synchronous Machines C224	CO1	Explain the operation and performance of three phase induction motor.
	CO2	Analyze the torque-speed relation, performance of induction motor and induction generator
	CO3	Explain design procedure for transformers and three phase induction motors
	CO4	Develop the starting of single phase induction motors.
	CO5	Design winding design and predetermine the regulation of synchronous generators
	CO6	Develop methods of starting and correction of power factor with synchronous motor
Managerial Economics & Financial Analysis C225	CO1	Outline the Managerial Economic concepts and techniques for optimum usage of resources and decision making.
	CO2	Classify the various demand forecasting methods and elasticity of demand for forecasting demand for products and services.
	CO3	Analyze the concept of production function and Breakeven point for estimation of output, cost and profit
	CO4	Explain the various market structures and forms of business for estimating demand and competition level
	CO5	Utilize the process of Journal, Ledger, Trail balance, final accounts and ratio analysis to assess the financial position of the company
	CO6	Apply the various techniques of capital budgeting for estimation of capital assets
Python Programming Lab C226	CO1	Apply the basics of Programming in Python Language
	CO2	Solve coding tasks related to conditional statements, loops
	CO3	Experiment with with lists, tuples and dictionaries
	CO4	Understand how to import packages and modules
	CO5	Design programs using functions,modules,files and classes
	CO6	Solve Exception handling programs and GUI based programs
Induction and	CO1	Explain the performance of single phase and three phase induction motors

Synchronous Machines Lab C227	CO2	How the speed is controlled for three phase induction motor
	CO3	Predetermine the regulation of three-phase alternator by various methods.
	CO4	find the X_d/ X_q ratio of alternator and asses the performance of three-phase synchronous motor
	CO5	Determine the Parameters of Induction Motor by conducting various tests
	CO6	Draw V and Inverted V curves of a three phase synchronous motor.
Digital Electronics Lab C228	CO1	Learn the basics of gates,
	CO2	Learn filp-flops and counters
	CO3	Construct basic combinational circuits and verify their functionalities
	CO4	Apply the design procedures to design basic sequential circuits
	CO5	understand the basic digital circuits and to verify their operation
	CO6	Apply Boolean laws to simplify the digital circuits
IoT Applications of Electrical Engineering C229	CO1	apply various technologies of Internet of Things to Home Appliances
	CO2	apply various technologies of Internet of Things to real time applications
	CO3	apply various communication technologies used in the Internet of Things
	CO4	connect the devices using web and internet in the IoT environment
	CO5	implement IoT to study Smart Home, etc
	CO6	implement IoT to study Smart city, etc.

Class: III Year I Semester

Course Name with Code	Course Outcome	
Power Systems-II C311	CO1	Discuss the parameters of various types of transmission lines from the conductor configuration and physical characteristics of the lines
	CO2	Categorize the transmission lines and analyse the performance of short, medium and long transmission lines
	CO3	Analyze the power system transients and grasp the various factors governing the performance of transmission line
	CO4	Define Skin effect and Proximity effects and Discuss Corona Phenomena.
	CO5	Define Sag/Tension and calculate Sag/tension of transmission lines
	CO6	Classify and compare different type of insulators

Power Electronics C312	CO1	Understand the characteristics of various power semiconductor devices, able to design firing circuits of SCR
	CO2	Analyse the performance of single phase AC-DC converters
	CO3	Analyse the operation of three phase AC-DC converters.
	CO4	Analyse the operation of AC-AC regulators & Cyclo converters.
	CO5	Analyse the operation of different types of DC-DC converters.
	CO6	Explain the operation of inverters and application of PWM techniques for voltage control and harmonic mitigation.
Linear IC Applications C313	CO1	Analyze the concept of categories of differential amplifier and cascaded method
	CO2	Understanding the working of Amplifier & its characteristics, parameters influence on amplifier
	CO3	Distinguish the linear and non linear applications of op-amp and their working
	CO4	Design and analysis of Active filters, Analog Multipliers and Modulators
	CO5	Understanding the working of Timers and PLL, Applications of Timers and PLL
	CO6	Knowledge on Analog to Digital and Digital to Analog converters
Digital Signal Processing C314	CO1	Calculate system output in time domain
	CO2	Solve the DFT values by using FFT algorithms
	CO3	Evaluate a digital filter (fir & iir) from the given specifications
	CO4	Discuss different filter realization methods
	CO5	Apply multirate signal processing to different applications
	CO6	Explain about Implementation of Digital Filter Banks & Transmultiplexers
Microprocessors and Microcontrollers C315	CO1	Understand the internal architecture of 8086 Microprocessor.
	CO2	Understand addressing modes to access memory 8086
	CO3	Use the Architecture and modes of 8255 and interfacing with 8086
	CO4	Apply interfacing of MP with IO as well as other devices
	CO5	Analyze the Architecture of 8051 microcontroller.
	CO6	Analyze PIC Architectures
Electrical Machines-II Laboratory C316	CO1	Examine the performance of 3- Φ Induction motor by conducting Brake test, No-load & Blocked rotor test.
	CO2	Improve the power factor of 1- Φ Induction motor by using capacitors and load test and also determine the equivalent circuit parameters

	CO3	Measure the Regulation of Alternator by E.M.F,M.M.F &Z.P.F methods
	CO4	Show the graph of V& Inverted V curves of 3- Φ synchronous motor and also determination of X_d & X_q of a salient pole synchronous machine
	CO5	Test for Speed control of Induction motor by V/f method
	CO6	Estimate the efficiency of 3- Φ Alternator by loading with 3- Φ Induction motor
Control Systems Laboratory C317	CO1	Determine the Time Response of Second order system and transfer function of D.C.motor
	CO2	Analyse the performance and working of Magnetic amplifier, stepper motor, AC Servo motors and synchros.
	CO3	Analyze the effect of P,PI,PD and PID controllers on second order systems.
	CO4	Determine the performance of lag, lead and lag-lead compensators
	CO5	Sketch the Bode plot, Root locus, Nyquist plot using MAT LAB, compute frequency domain specification using MATLAB and can determine the Controllability and Observability using MAT LAB.
	CO6	Analyze the temperature using PID controller.
Electrical Measurements Laboratory C318	CO1	Compute the errors present in measuring instruments and calibrate them.
	CO2	Measure the electrical engineering parameters like voltage, current, frequency & phase difference
	CO3	Measure the parameters like resistance, inductance and capacitance by using AC and DC bridges
	CO4	Calculate the 3 phase power with single watt meter and 2 No's of C.T
	CO5	Calculate the displacement using linear variable differential transformer
	CO6	Calculate the strain using strain gauge.
Socially Relevant Projects C319	CO1	Explain ideas and concept through conducting literature survey
	CO2	Analyze and formulate the Problem
	CO3	Apply Existing methodology to the problem
	CO4	Apply Proposed methodology to the problem
	CO5	Evaluate and Validate the proposed method by comparing with other standard methods
	CO6	Write the documentation of the project with clear description

Class: III Year II Semester

Course Name with Code	Course Outcome	
Electric Drives C321	CO1	Explain the principle of electrical drives & different electric braking methods.
	CO2	Analyse the d.c motor speed control using converters.
	CO3	Analyse a drive being applied in 4 different quadrants
	CO4	Explain& analyse the concept of different speed control methods in induction motors using thyristors based control schemes.
	CO5	Differentiate the stator side control and rotor side control of three phase induction motor.
	CO6	Explain the speed control mechanism of synchronous motors
Power system Analysis C322	CO1	Analyse the concepts of impedance diagram and formation of Y- bus
	CO2	illustrate different load flow methods
	CO3	Describe concept of Z-bus building algorithm
	CO4	Analyze the Short circuit calculation of symmetrical faults
	CO5	Calculate fault current in different unsymmetrical faults
	CO6	Develop the equations for stability of power systems
Data Structures C323	CO1	Explain arrays, string operations, Time and space Complexity
	CO2	Define Data Structures with help of stacks and Queues and its applications
	CO3	Analysis pointers ,linked lists
	CO4	Explain types of trees and its applications
	CO5	Analysis graphs algorithms and its usage
	CO6	Analyze searching and sorting techniques

Digital Control Systems C324	CO1	Analyze signals in both time domain and Z domain.
	CO2	Apply Z-transforms to Digital systems.
	CO3	Evaluate the performance of digital control systems with the concept of state space.
	CO4	Design controller by pole-placement technique to achieve desired system-behavior.
	CO5	Analyze the different tests for stability of discrete-time systems
	CO6	Design compensators to achieve the desired performance by conventional methods.
Internet of Things applications to Electrical Engineering C325	CO1	Understand the technology behind the IoT and associated technologies
	CO2	Understand architectures and design principles for IoT/M2M.
	CO3	Discuss the protocols and communication technologies of IoT
	CO4	Analyze the Data Acquiring and Storage Organizing.
	CO5	Applying cloud computing and cloud services
	CO6	Design the technologies for different practical applications
Data base management systems C326	CO1	describe a relational database and object-oriented database
	CO2	create, maintain and manipulate a relational database using SQL.
	CO3	describe ER model and normalization for database design.
	CO4	examine issues in data storage and query processing and can formulate appropriate solutions
	CO5	understand the role and issues in management of data such as efficiency, privacy, security, ethical responsibility, and strategic advantage
	CO6	design and build database system for a given real world problem
Power Electronics Laboratory C327	CO1	Determine the characteristics of various power semiconductor devices and analyze the static and dynamic characteristics of SCR's..MOSFET,IGBT
	CO2	Determine the operation of single phase full-wave converters and analyze harmonics in the input current.
	CO3	Explain the operation of three phase full-wave converters.
	CO4	Analyze the operation of different types of DC-DC converters.
	CO5	Explain the operation of inverters and application of PWM techniques for voltage control and harmonic mitigation.
	CO6	Generate triangular wave by using PPI with 8086 and keyboard interfacing through 8279
	CO1	Write the programs to perform Arithmetic operations on 8bit data,multibyte

Microprocessors & Microcontrollers Laboratory C328		addition and subtraction.
	CO2	Write the programs to perform signed operations and sum of squares/cube of a given number.
	CO3	Write the programs to reading keyboard buffered with echo and sorting of n numbers.
	CO4	Demonstrate bcd to seven segment display and finding of 1's and 0's using 8051
	CO5	Design a program to perform addition of even numbers in a given array and average of n numbers
	CO6	Generate triangular wave by using PPI with 8086 and keyboard interfacing through 8279
Employability Skills C329	CO1	solve aptitude problems
	CO2	solve reasoning problems
	CO3	Apply the soft skills in dealing the issues related to employability
	CO4	Apply the soft skills in dealing the issues related to employability
	CO5	successful in getting employment in campus placement interview
	CO6	successful in getting employment in campus placement interview

Class: IV Year I Semester

Course Name with Code	Course Outcome	
Renewable and Distributed Energy Technologies C411	CO1	Illustrate basic concepts of renewable and distributed sources
	CO2	Demonstrate the components of wind energy conversion systems
	CO3	Model PV systems and analyse MPPT Techniques.
	CO4	Illustrate the concept of Energy Production from Hydro - Tidal and Geothermal.
	CO5	Illustrate the concept of Energy Production from Tidal and Geothermal.
	CO6	Distinguish between standalone and grid connected DG systems and design hybrid renewable energy systems
High Voltage Engineering C412	CO1	Analyse the performance of high voltages with regard to different electrode configurations
	CO2	Illustrate the different breakdown phenomena

	CO3	Describe the high voltage generation techniques
	CO4	Analyze the different high voltage measurement techniques
	CO5	calculate the dielectric property of material using HV equipment
	CO6	Justify and choose different testing of HV equipment
Power System Operation and Control C413	CO1	Understand and compute optimal dispatch of generation with and without losses.
	CO2	Understand hydrothermal scheduling
	CO3	Understand and Compute the unit commitment problem.
	CO4	Analyze the load frequency control for single area system with and without controllers
	CO5	Analyze the load frequency control for two area system with and without controllers
	CO6	Understand the reactive power control and compensation of transmission lines.
Industrial Electronics C414	CO1	Understand the concept dc amplifiers
	CO2	Analyze and design different voltage regulators for real time applications
	CO3	Describe the basics of SCR and Thyristor
	CO4	Determine the performance of DIAC
	CO5	Determine the performance of TRIAC
	CO6	Develop real time application using electronics
Safety Engineering C415	CO1	Illustrate the history and concepts of industrial safety.
	CO2	List the safety equipments, smart machines and accident prevention.
	CO3	Explain safety acts and apply IoT to industry 4.0.
	CO4	List the classes of fire and different fire extinguishers.
	CO5	Explain fire prevention and protection systems.
	CO6	Explain and apply fire safety principles in building design.
Universal Human Values-2 C416	CO1	Explain the Need, Basic Guidelines, Content and Process for Value Education.
	CO2	Understanding Harmony in the Human Being - Harmony in Myself
	CO3	Explain the Harmony in the Family and Society- Harmony in Human-Human Relationship
	CO4	Understanding Harmony in the Nature and Existence - Whole existence as Coexistence

	CO5	Outline the Holistic perception of harmony at all levels of existence
	CO6	Understand the Implications of the above Holistic Understanding of Harmony on Professional Ethics
Skill Advanced Course Machine Learning with Python Lab C417	CO1	Implement procedures for the machine learning algorithms
	CO2	Write a program for the machine learning algorithms
	CO3	Design and Develop Python programs for various Learning algorithms
	CO4	Apply appropriate data sets to the Machine Learning algorithms
	CO5	Develop Machine Learning algorithms to solve real world problems
	CO6	Develop real time application using python