St. Xavier's Catholic College of Engineering, Chunkankadai, Nagercoil - 629003.

2020 -- 2021

Course Outcomes

Program:B.E. Electrical and Electronics Engg.

Semester:1

Course:Physics and Chemistry Laboratory-[BS8161]
Upon completion of the course, the students will.../ will be able to...
CO1 : Determine different modulli of elasticity used in day to day engineering applications.
CO2 : Estimate the optical parameters of visible and laser sources along with their applications in various fields.
CO3 : Calculate the thickness of wire and wavelength of light using air wedge and spectrometer.
CO4 : Determine the water quality parameters(DO, Chloride, Cu content, Alkalinity and hardness) of the given water sample.
CO5 : Analyse quantitatively the metals (Fe, Na, Cu) in the given sample using potentiometer, flame photometer and Understand how conductometric titrations are better than volumetric titrations and the skill to do the experiment

Course:Engineering Chemistry-[CY8151]
Upon completion of the course, the students will.../ will be able to...
CO1 : Describe the methods of water purification
CO2 : Define the terms in phase rule and adsorption
CO3 : Explain the types of energy resources
CO4 : Determine the composition and characterisation of fuels and alloys
CO5 : Classify the types of water,fuels and alloys

Course:Problem Solving and Python Programming-[GE8151]
Upon completion of the course, the students will.../ will be able to...
CO1 : Describe the concepts of algorithm, data types, operators, conditional statements and files.
CO2 : Write and execute simple Python programs.
CO3 : Apply basic and compound data types, functions and files to implement Python programs
CO4 : Apply basic and compound data types, functions and files to implement Python programs
CO5 : Design and analyse algorithms, modules and packages.

Course:Engineering Graphics-[GE8152]
Upon completion of the course, the students will.../ will be able to...
CO1 : Understand the fundamentals and standards of Engineering graphics
CO2 : Apply freehand sketching of basic geometrical constructions and multiple views of objects.
CO3 : Analyze orthographic projections of lines and plane surfaces.
CO4 : Analyze projections and solids and development of surfaces.
CO5 : Analyze isometric and perspective sections of simple solids.

Course:Problem Solving and Python Programming Laboratory-[GE8161]
Upon completion of the course, the students will.../ will be able to...
CO1 : Write, test and debug simple Python Programs
CO2 : Implement Python Programs with conditionals and looping statements
CO3 : Develope Python Programs using functions
CO4 : Use Python lists,tuples ,dictionaries for representing compound data

CO5 : Read and write data from/to files and write programs using python packages
Course:Communicative English-[HS8151]
Upon completion of the course, the students will.../ will be able to...
CO1 : Learn vocabulary, skim and scan passages and share information related to one/oneself/family and friends.
CO2 : Improve their telephonic conversation skills, general reading and free writing skills and language skills through preposition and conjunction.
CO3 : Acquire language skills through degrees of comparison, pronouns and direct indirect questions, comprehend short and long passages, describe products and express opinions.
CO4 : Improve their language skills through reading, draft e-mails and personal letters and use correct tenses in the language usage.
CO5 : Write short essays and dialogues and participate in group activities.
Course:Engineering Mathematics - I-[MA8151]
Upon completion of the course, the students will.../ will be able to...
CO1 : defines the concept of differential calculus
CO2 : Study of functions of several variables with maxima and minima concepts
CO3 : analysis of integral calculas with bi-parts and bernoulli's formulae
CO4 : details of multiple integrals with single, double, triple, areea under the particular curve and the volume enclosed by the given figure
CO5 : application of the ordinary differential equation with constant and variable coefficients
Course:Engineering Physics-[PH8151]
Upon completion of the course, the students will.../ will be able to...
CO1 : Students will be able to describe the basics of Properties of matter, Waves, Laser, Optical fibers and Thermal behavior of materials to improve their engineering knowledge.
CO2 : Students will be able to mention the Advanced Physics concepts of quantum theory and the Characteristics of crystalline materials.
CO3 : Students will be able to illustrate Bending of beams, Oscillations, Thermal expansion joints and Fiber optic sensors to assess societal and safety issues.
CO4 : Students will be able to summarize the Types of optical fibers and losses associated with them, Wave equations, Crystal growth techniques and imperfections of crystals.
CO5 : Students will be able to determine the Moduli of elasticity of different materials, Eigen value and Eigen function of particles, Working of thermal devices and Functioning of Scanning Tunneling Microscope to enhance the development of society.

Semester:2

Course:Basic Civil and Mechanical Engineering-[BE8252]
Upon completion of the course, the students will.../ will be able to...
CO1 : Students will have an understanding of the basics of the various types of civil structures and the principle of various power plants and their impact in day to day life.
CO2 : Interpret the building materials and building components.
CO3 : Describe the surveying techniques and civil engineering structures.
CO4 : Students will have understanding about the functioning of various types of engines, power plants, boilers turbines & pumps
CO5 : Students will have an understanding about the terminologies of air conditioning and the

principles of Refrigeration and Air-conditioning
Course:Engineering Practices Lab-[GE8261]
Upon completion of the course, the students will.../ will be able to... CO1 : Develop carpentary components and pipe connections CO2 : Demonstrate basic machine operations CO3 : Construct the models using sheet metal CO4 : Create basic electrical circuits for home applications CO5 : Infer foundry smithy and soldering works
Course:Environmental Science and Engineering-[GE8291]
Upon completion of the course, the students will.../ will be able to... CO1 : Outline the importance of environmental education and ecosystem CO2 : : Explain the environmental pollution and its prevention CO3 : Discuss the conservation of natural resources CO4 : Categorize the social and environmental problems CO5 : : Summarize the need to control population for sustainable development
Course:Technical English-[HS8251]
Upon completion of the course, the students will.../ will be able to... CO1 : Read technical texts and write area- specific texts effortlessly. CO2 : Listen and comprehend lectures and talks in their area of specialization successfully. CO3 : Speak appropriately and effectively in varied formal and informal contexts. CO4 : Write reports and winning job applications. CO5 : Participate in Group discussions
Course:Engineering Mathematics II-[MA8251]
Upon completion of the course, the students will.../ will be able to... CO1 : Define the basic concepts of matrices, vectors, analytic function and Laplace transform CO2 : Explain the properties of matrices and vector differential operators CO3 : Understand the basics of Laplace transform for elementary functions and line integral of analytic functions CO4 : Apply diagonalization of matrices in quadratic form and Laplace transform in differential equations CO5 : Evaluate analytic function, vector and complex integration using various methods.
Course:Physics for Electronics Engineering-[PH8253]
Upon completion of the course, the students will.../ will be able to... CO1 : Mention the electron transport properties of conductors, basic principles of semiconductors, magnetic and dielectric properties of materials CO2 : Describe the optical properties of materials and principles of nano devices CO3 : Summarize the classical and quantum concepts of conducting materials, Physics of semiconducting devices and magnetic principles used in electronics devices CO4 : Illustrate the functioning of various optoelectronic and nano devices CO5 : Demonstrate the applications of semiconductor, magnetic, dielectric, optical and quantum devices in engineering field
Course:Circuit Theory-[EE8251]
Upon completion of the course, the students will.../ will be able to... CO1 : Analyse electrical circuits CO2 : Apply Network theorems

CO3 : Analyze the transient response of circuits CO4 : Analyze three phase AC circuits CO5 : Explain resonance and coupled circuits
Course:Electric Circuits Laboratory-[EE8261]
Upon completion of the course, the students will.../ will be able to... CO1 : Apply KVL, KCL & Network theorems to simple and Complex circuits and verify their calculation using simulation. CO2 : Determines the time constant of RC circuit and verify their calculation using simulation. CO3 : Determines frequency response of the RLC circuits and verify their calculation using simulation. CO4 : Use software to simulate three-phase balanced, unbalanced circuits. CO5 : Demonstrates the working CRO and to simulate series, parallel resonant circuits.

Semester:3

Course:Electron Devices and Circuits-[EC8353]
Upon completion of the course, the students will.../ will be able to... CO1 : Explain the construction and characteristics of diodes CO2 : Explain the construction and characteristics of Transistors and Thyristors CO3 : Analyze the gain and frequency response of transistor amplifiers CO4 : Analyze the gain and frequency response of multistage amplifiers CO5 : Synthesize the frequency of oscillation for different type of oscillators CO6 : Simulate electronic circuits using esim software
Course:Digital Logic Circuits-[EE8351]
Upon completion of the course, the students will.../ will be able to... CO1 : Demonstrate the different number system and logic families. CO2 : Apply K-maps for the implementation of combinational circuits. CO3 : Solve synchronous sequential circuits by using flip flops. CO4 : Solve asynchronous sequential circuits by using flip flops and explain about different PLDs. CO5 : Write VHDL coding for Combinational and Sequential circuits.
Course:Electromagnetic Theory-[EE8391]
Upon completion of the course, the students will.../ will be able to... CO1 : Explain the different coordinate systems, laws, theorems and characterizing parameters. CO2 : Explain the concepts about electrostatic fields, electrical potential, energy density and their applications. CO3 : Explain the concepts in magneto static fields, magnetic flux density, vector potential and its applications. CO4 : Derive Maxwell's equations for electromagnetic fields. CO5 : Derive Electromagnetic wave equation for different media and Poynting theorem.
Course:Transforms and Partial Differential Equations-[MA8353]
Upon completion of the course, the students will.../ will be able to... CO1 : Solve first, second order homogeneous and non homogeneous partial differential equations using standard methods and Fourier series method CO2 : Find the Fourier series of a given function satisfying Dirchlet's condition CO3 : Determine Fourier transform and z transforms of some standard functions

CO4 : Apply Fourier transform to evaluate certain definite Integrals and z transform to solve difference equations
CO5 : Formation of partial differential equations and difference equations
Course:Electronics Laboratory-[EC8311]
Upon completion of the course, the students will.../ will be able to...
CO1 : Examine the characteristics of semiconductor devices
CO2 : Design of common emitter amplifier, differential amplifier and oscillator and examine the frequency response characteristics.
CO3 : Examine the characteristics of light acivated devices and passive filters
CO4 : Construct rectifier circuit using diode and illustrate the result with and without filters
CO5 : Determine frequency and amplitude of given signals using CRO
CO6 : Simulate oscillator circuits using simulink and develop a mini project.
Course:Electrical Machines - I-[EE8301]
Upon completion of the course, the students will.../ will be able to...
CO1 : Outline the Magnetic circuits and its effects
CO2 : Examine the performance of transformer and its applications
CO3 : Illustrate the different methods of energy conversion in electromechanical system
CO4 : Demonstrate the Performance and control of DC Machine
CO5 : Analyze the performance of DC Machine
Course:Electrical Machines Laboratory - I-[EE8311]
Upon completion of the course, the students will.../ will be able to...
CO1 : Ability to find the performance of dc generator by conducting oc and load test
CO2 : Ability to find the performance of dc motor by conducting oc and load test
CO3 : Ability to find the performance and analysis of losses in transformer
CO4 : Ability to practice the speed control methods of dc motor also determine the losses of dc machine
CO5 : Ability to work in three phase transformer and determine its performance
Course:Power Plant Engineering-[ME8792]
Upon completion of the course, the students will.../ will be able to...
CO1 : Understanding of Thermal Power Plant Operation, turbines, different types of high pressure boilers including supercritical and supercharged boilers, Fluidized bed combustion systems
CO2 : Understanding working of gas power Cycle and Combined Cycle Power Plants
CO3 : Gain knowledge of working of Nuclear power plant including working of different types of reactors and safety measures
CO4 : Understanding working of hydroelectric power plant and discussing various renewable energy systems
CO5 : Understanding of Power Plant Economics and Discussing environmental and safety aspects of power plant operation

Semester:4

Course:Electrical Machines - II-[EE8401]
Upon completion of the course, the students will.../ will be able to...
CO1 : Analyze the performance of synchronous generator.
CO2 : Explain the principle of operation and performance of synchronous motor.
CO3 : Describe the Construction, principle of operation and performance of three phase induction motor.
CO4 : Compare the different Starting and speed control of three-phase induction motors.
CO5 : Explain the Construction, principle of operation and performance of single phase induction motors and special machines.
Course:Transmission and Distribution-[EE8402]
Upon completion of the course, the students will.../ will be able to...
CO1 : Determine transmission lines parameters.
CO2 : Model transmission lines and determine performance parameters
CO3 : Design sag, tension and insulator string efficiency of transmission lines
CO4 : Determine the parameters of underground cables
CO5 : Determine the distribution systems parameters and use of FACTS, HVDC
Course:Measurements and Instrumentation-[EE8403]
Upon completion of the course, the students will.../ will be able to...
CO1 : Explains the functional elements of instrumentation
CO2 : Understand Fundamentals of electrical and electronic instruments..
CO3 : compare various measurement techniques
CO4 : Interprets Various storage and display devices.
CO5 : understand the concepts Various transducers and the data acquisition systems
Course:Electrical Machines Laboratory - II-[EE8411]
Upon completion of the course, the students will.../ will be able to...
CO1 : Understand and analyse EMF and MMF method
CO2 : Analyze the characteristics of V and inverted V curves
CO3 : Understand the importance of synchronous machines
CO4 : Understand the importance of induction machines
CO5 : Acquire knowledge on separation of losses
Course:Linear Integrated Circuits and Applications-[EE8451]
Upon completion of the course, the students will.../ will be able to...
CO1 : Understand the IC fabrication procedures
CO2 : Design circuits using op-amp
CO3 : Analyse the applications of op-amp
CO4 : Realize the internal functional blocks of special ICs
CO5 : Understand the internal functional blocks of application ICs
Course:Linear and Digital Integrated Circuits Laboratory-[EE8461]
Upon completion of the course, the students will.../ will be able to...
CO1 : Design and Implement boolean functions for the design of circuits using digital ICs
CO2 : Design and Implement the Applications of flip flops.
CO3 : Design and Implement Basic Applications of op-amp.
CO4 : Design and Implement Applications ICs.

CO5 : Design and Implement special ICs.
Course:Control Systems-[IC8451]
Upon completion of the course, the students will.../ will be able to... CO1 : Model a physical system to obtain transfer function. CO2 : Analyze the time response of systems. CO3 : Analyze the frequency response of systems. CO4 : Design compensator for system stability. CO5 : Analyze the state variable equation of systems.
Course:Numerical Methods-[MA8491]
Upon completion of the course, the students will.../ will be able to... CO1 : understant and apply the concepts of solution of linear equation and the simultaneous linear equations using direct and indirect methods CO2 : apllication of interpolation using Newton's and Lagrange's interpolation techneques with equal and un-equal intervals CO3 : application of numerical differentiation and numerical integration techniques using Newton's and Trapezoidal and also Simpson's method CO4 : Numerical solution of ordinary differential equation using single and multistep methods CO5 : numerical solution of partial differential equation using Laplace, Poission, Bender-Smidth's techniques and the explicit methods
Course:Technical Seminar-[EE8412]
Upon completion of the course, the students will.../ will be able to... CO1 : prepare and present technological developments CO2 : face the placement interviews

Semester:5

Course:Object Oriented Programming-[CS8392]
Upon completion of the course, the students will.../ will be able to... CO1 : Understand the basic concepts of OOP and fundamentals in Java. CO2 : Write simple programs in Java and analyze the OOP concepts. CO3 : Build Java applications using exceptions and I/O streams. CO4 : Develop Java applications with threads and generics classes. CO5 : Design interactive Java programs using swings.
Course:Power System Analysis-[EE8501]
Upon completion of the course, the students will.../ will be able to... CO1 : Model power system components based on per unit standards. CO2 : Apply Numerical methods to solve power system load flow problems. CO3 : Determine fault current and post fault parameters for symmetrical fault. CO4 : Determine fault current and post fault parameters for unsymmetrical faults. CO5 : Analyze the stability of a power system.
Course:Professional Communication-[HS8581]
Upon completion of the course, the students will.../ will be able to... CO1 : Make effective presentations CO2 : Participate cofidently in Group Discussion.

CO3 : Attend job interviews and be successful in them. CO4 : Develop adequate soft skills required for the workplace. CO5 : Develop a long term career-plan- Making career changes.
Course:Basics of Biomedical Instrumentation-[OMD551]
Upon completion of the course, the students will.../ will be able to... CO1 :Understand bio potential generation and its propagation. CO2 : Determine bio signal characteristics and electrode placement for physiological recording. CO3 : Understand the concepts of bio amplifier for physiological recording. CO4 :Understand measurement techniques for non-electrical physiological parameters. CO5 :Understand different biochemical measurement techniques. CO6 : Design bio amplifier for physiological recording.
Course:Microprocessors and Microcontrollers-[EE8551]
Upon completion of the course, the students will.../ will be able to... CO1 : Illustrate the architecture and timing diagram of 8085 processor CO2 : Apply 8085 instruction set to program a 8085 microprocessor CO3 : Illustrate the architecture and timing diagram of 8051 microcontroller CO4 : Illustrate the architecture peripheral interfacing devices CO5 : Apply 8051 instruction set to program a 8051 microcontroller
Course:Digital Signal Processing-[EE8591]
Upon completion of the course, the students will.../ will be able to... CO1 : Classify Signals and Systems CO2 : Analyze Discrete Time Systems using Z-Transform CO3 : Compute Discrete Fourier Transform of Signals CO4 : Design Digital Filters CO5 : Understand Digital Signal Processors
Course:Basics of Biomedical Instrumentation-[OMD551]
Upon completion of the course, the students will.../ will be able to... CO1 : Understand bio potential generation and its propagation. CO2 : Determine bio signal characteristics and electrode placement for physiological recording. CO3 : Understand the concepts of bio amplifier for physiological recording. CO4 : Understand measurement techniques for non-electrical physiological parameters. CO5 : Understand different biochemical measurement techniques. CO6 : Design bio amplifier for physiological recording.

Semester:6

Course:Design of Electrical Apparatus-[EE8002]
Upon completion of the course, the students will.../ will be able to... CO1 : Analyze the magnetic circuit parameters of electrical machines CO2 : Design the core, yoke, windings and cooling systems of transformers. CO3 : Design the armature, windings and field systems of DC Machines CO4 : Design of stator and rotor of induction machines and synchronous machines. CO5 : Computer aided design of electrical machines.
Course:Special Electrical Machines-[EE8005]
Upon completion of the course, the students will.../ will be able to...

CO1 : Ability to acquire the knowledge on construction and operation of stepper motor. CO2 : Ability to acquire the knowledge on construction and operation of switched reluctance motors. CO3 : Ability to acquire the knowledge on construction and operation of permanent magnet brushless D.C. motors. CO4 : Ability to acquire the knowledge on construction and operation of permanent magnet synchronous motors and synchronous reluctance motor. CO5 : Explain the construction and operation of sensor less special machines.
Course:Protection and Switchgear-[EE8602]
Upon completion of the course, the students will.../ will be able to... CO1 : Summarize the abnormal operating conditions of the apparatus and understand the need of protective schemes. CO2 : Illustrate the characteristics and functions of relays and its protection schemes CO3 : Analyze the various electrical apparatus protection CO4 : Outline static and numerical relays CO5 : Interpret cicuit breakers in the protection schemes
Course:Mini Project-[EE8611]
Upon completion of the course, the students will.../ will be able to... CO1 : To develop their own innovative prototype of ideas CO2 : To find solution by formulating proper methodology CO3 : To train the students in preparing mini project reports and examination. CO4 : To Solve challenging practical problems
Course:Microprocessors and Microcontrollers Laboratory-[EE8681]
Upon completion of the course, the students will.../ will be able to... CO1 : Execute ALP using 8085 microprocessors to perform basic arithmetic, code conversion and sorting operations. CO2 : Demonstrate the interfacing of 8085 with A/D and D/A converter. CO3 : Demonstrate the interfacing of 8085 with traffic light and I/O Ports. CO4 : Execute simple ALP programs and demonstrate the interfacing of 8051 and 8085 with stepper motor. CO5 : Demonstrate the interfacing of A/D, D/A converter with 8085 processor and hardware development.
Course:Embedded Systems-[EE8691]
Upon completion of the course, the students will.../ will be able to... CO1 : Explain the structural units of embedded processor and different components of embedded system. CO2 : Classify the different types of networking devices of embedded system. CO3 : Model the Embedded product using different computational models CO4 : Understand the concept of Real Time Operating System and its scheduling. CO5 : Apply the concepts of embedded system to develop an embedded product.

Semester:7

Course:High Voltage Engineering-[EE8701]
Upon completion of the course, the students will.../ will be able to...
CO1 : understand transients and various types of over voltages in power system.
CO2 : understand the breakdown mechanisms of various dielectrics
CO3 : understand the various generation methods of high voltages and currents
CO4 : understand the various measurement methods of high voltages and currents
CO5 : test power apparatus and insulation coordination
Course:Power System Operation and Contro-[EE8702]
Upon completion of the course, the students will.../ will be able to...
CO1 : understand the operation of electric power system and analyse the control actions to be implemented on the system to meet the variation of system demand
CO2 : model and design power frequency controller and analyze its static and dynamic characteristics
CO3 : understand the reactive power-voltage interaction.
CO4 : find solution for Economic dispatch and unit commitment problems
CO5 : understand and analyse power system stability and protection
Course:Renewable Energy Systems-[EE8703]
Upon completion of the course, the students will.../ will be able to...
CO1 : Interpret to create awareness and future role of renewable Energy Sources and technologies.
CO2 : Illustrate the characteristics and functions of Wind energy harvesting techniques.
CO3 : Investigate the various power harvesting methods and the applications of solar systems.
CO4 : Outline construction and operation of biomass, geothermal and hydro power plant.
CO5 : Understand the concept about tidal energy, ocean thermal energy conversion, fuel cell, energy storage and hybrid energy systems.
Course:Renewable Energy Systems Laboratory-[EE8712]
Upon completion of the course, the students will.../ will be able to...
CO1 : Interpret to create awareness and simulation study of the characteristics of renewable energy sources.
CO2 : Design and analyze the characteristics and the harvesting techniques of wind energy.
CO3 : Investigate the various power harvesting methods and its losses due to partial shading of solar systems.
CO4 : Analyze the characteristics and operation of hybrid system.
CO5 : Examine the synchronization issues and the grid tie techniques of various renewable energy sources.
Course:Disaster Management-[GE8071]
Upon completion of the course, the students will.../ will be able to...
CO1 : Differentiate the types of disasters, causes and their impact on environment and society
CO2 : Assess vulnerability and various methods of risk reduction measures as well as mitigation.
CO3 : Draw the hazard and vulnerability profile of India, Scenarious in the Indian context, Disaster damage assessment and management.
CO4 : To enhance awareness of institutional processes in the country, Waste Management and Disaster Damage Assessment

CO5 : To develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity
Course:Signals and Systems-[OEC753]
Upon completion of the course, the students will.../ will be able to...
CO1 : Illustrate the properties of signals and systems.
CO2 : Apply Fourier series, Fourier Transform and Laplace transform for continuous time signals and systems.
CO3 : Analyze continuous time LTI system using Fourier and Laplace transforms.
CO4 : Characterize the effects of discrete time signals using DTFT and Z-transform.
CO5 : Design recursive and non-recursive discrete and continuous time systems.
Course:Power Systems Transients-[EE8010]
Upon completion of the course, the students will.../ will be able to...
CO1 : Understand the basic concepts of different types of transients in power systems.
CO2 : Describe the types of switching transients in a Power system
CO3 : Analyze the mathematical model of lightning and protection of power systems from lightning
CO4 : Explain the concept of travelling waves
CO5 : Interpret the impacts of transients and EMTP for transient computations.
Course:Power System Simulation Laboratory-[EE8711]
Upon completion of the course, the students will.../ will be able to...
CO1 : Develop SCILAB programs to solve various power system problems.
CO2 : Evaluate the performance of power systems using computational tools.
CO3 : Create the one line diagrams of power systems in ETAP and Power world simulator
CO4 : Summarize the results of the program and print necesssary results.
CO5 : Create analysis reports of a power system in ETAP.

Semester:8

Course:Project Work-[EE8811]
Upon completion of the course, the students will.../ will be able to...
CO1 : develop the ability to solve a specific problem right from its identification
CO2 : To develop the ability to solve a specific problem right from literature review
CO3 : develop the ability to solve a specific problem till they find successful solution
CO4 : To train the students in preparing project reports
CO5 : To train the students to face reviews
Course:Biomedical Instrumentation-[EI8073]
Upon completion of the course, the students will.../ will be able to...
CO1 :to understand the philosophy of the heart, lung, blood circulation and respiration system.
CO2 :to provide latest ideas on devices of non-electrical devices
CO3 :to gain knowledge on various sensing and measurement devices of electrical origin
CO4 :to understand the analysis systems of various organ types
CO5 :to explain the medical assistance/techniques, robotic and therapeutic equipments
Course:Professional Ethics in Engineering-[GE8076]
Upon completion of the course, the students will.../ will be able to...

CO1 : Awareness on human values for professional excellence stress management
CO2 : Knowledge on engineering ethics and moral issues
CO3 : Role of engineers as responsible experiments along with courses of ethics
CO4 : Assessment of safety and risk and understanding of risk benefit analysis
CO5 : Knowledge on global issues and ethics

Course:Smart Grid-[EE8019]

Upon completion of the course, the students will.../ will be able to...
CO1 : Understand the fundamentals of smart grids.
CO2 : Describe functional components of Smart grid Technologies.
CO3 : Understand the fundamentals of smart meters.
CO4 : Describe power quality management in smart grid.
CO5 : Describe computing for smart grid applications

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2020 -- 2021 ODD Semester

Course Outcomes, CO-PO and CO-PSO Mapping

Program:M.E. Control and Instrumentation

Semester:3

Course:Renewable Energy Systems-[CL5004]
Upon completion of the course, the students will.../ will be able to...
CO1 : Investigate the various power harvesting methods and the applications of solar systems.
CO2 : Illustrate the operational techniques, characteristics and energy scenario of Wind energy harvesting.
CO3 : Analyze the construction and operation of biomass power plant and its Indian energy scenario.
CO4 : Understand the concept and awareness about the characteristics and operational techniques of Ocean Thermal Energy Conversion, Wave energy, Tidal energy, Hydro, Geothermal and Fuel cell renewable energy sources and its energy scenario.
CO5 : Interpret to create awareness and future role of renewable energy sources by direct conversion of thermal energy to electrical energy.

Course:Digital Instrumentation-[IN5092]
Upon completion of the course, the students will.../ will be able to...
CO1 : Analyze working of A/D and D/A converters, use display devices for digital circuits, use digital meters for measurements
CO2 : Analyze various instrument communication techniques
CO3 : Understand the virtual instrumentation basics.
CO4 : Configure programmable instrumentation basics using control techniques.
CO5 : Improve Employability and entrepreneurship capacity due to knowledge up gradation on recent trends in embedded systems design

Course:Smart Grid-[PS5091]
Upon completion of the course, the students will.../ will be able to...
CO1 : Understand the challenges and benifits of smart grid
CO2 : Explain smart grid technologies
CO3 : Understand smart metering and Advanced metering infrastructure
CO4 : Understand power quality issues and power management in smart grid
CO5 : Understand high performance computing system for smart grid applications

Semester:4

Course:Project Work Phase II-[CL5411]
Upon completion of the course, the students will.../ will be able to...
CO1 : Take up any challenging practical problems and find solution by formulating proper methodology.

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2020 -- 2021

Course Outcomes

Program:M.E. Power Electronics and Drives

Semester:1

Course:Analysis and Design of Power Converters-[PX5152]
Upon completion of the course, the students will.../ will be able to...
CO1 : Analyze various single phase and three phase power converters
CO2 : Explains dc-dc converter topologies for a broad range of power conversion applications.
CO3 : Describe the design of power converter components.
CO4 : Explains about resonant converters
CO5 : Describes ac-ac converters

Semester:3

Course:Energy Management and Auditing-[PS5072]
Upon completion of the course, the students will.../ will be able to...
CO1 : Ability to learn about the need for energy management and auditing process
CO2 : Ability to learn about basic concepts of economic analysis and load management.
CO3 : Ability to understand the energy management on various electrical equipments.
CO4 : Ability to get knowledge on the concepts of metering and factors influencing cost function
CO5 : Ability to learn about the concept of lighting systems, light sources and various forms of cogeneration
Course:Smart Grid-[PS5091]
Upon completion of the course, the students will.../ will be able to...
CO1 : Understand the challenges and benefits of smart grid
CO2 : Explain smart grid technologies
CO3 : Understand smart metering and advanced metering infra structure
CO4 : Understand power quality issues and power management in smart grid
CO5 : Explain smart grid applications
Course:Project Work Phase I-[PX5311]
Upon completion of the course, the students will.../ will be able to...
CO1 : Acquire practical knowledge within the chosen area of technology for project development
CO2 : Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach
CO3 : Contribute as an individual in development of technical projects
CO4 : Develop effective communication skills for presentation of project related activities

Semester:4

Course:Project Work Phase II-[PX5411]
Course Outcomes
Upon completion of the course, the students will.../ will be able to...
CO1 Take up any challenging practical problems and find solution by formulating proper

:	methodology.

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2020 -- 2021 ODD Semester

Course Outcomes, CO-PO and CO-PSO Mapping

Program:M.E. Communication and Networking

Semester:3

Course:Internet of Things-[CP5292]
Upon completion of the course, the students will.../ will be able to...
CO1 : To understand the fundamentals of Internet of Things
CO2 : To learn about the basics of IOT protocols
CO3 : To build a small low cost embedded system using Raspberry Pi.
CO4 : To apply the concept of Internet of Things in the real world scenario.

Course:Optical Networks-[CU5192]
Upon completion of the course, the students will.../ will be able to...
CO1 : Recall the basics of optical networks and optical transport networks
CO2 : Describe the transmission basics and SONET/SDH
CO3 : Explain the various techniques and components used in optical networks
CO4 : Explain transmission system engineering and optical internets
CO5 : Summarize the non linear effects in optical networks and architecture of optical transport networks
CO6 : Analyze WDM,Network topologies,MPLS and optical networks
CO7 : Differentiate network topologies and protection schemes
Course:Soft Computing Techniques-[MP5092]
Upon completion of the course, the students will.../ will be able to...
CO1 : Describe the basics of artificial neural network, fuzzy logic and genetic algorithm
CO2 : Explain the operation of feed forward and feedback neural networks, fuzzy logic systems and genetic algorithm
CO3 : Apply the concept of neural network, fuzzy logic and genetic algorithm to solve practical problems
CO4 : Model systems using neural network and fuzzy logic
CO5 : Implement neural networks, fuzzy systems and genetic algorithm to solve problems
Course:Project Work Phase I-[NC5311]
Upon completion of the course, the students will.../ will be able to...
CO1 : To enable graduates to pursue research and have a successful career
CO2 : To provide students with strong foundational concepts in communication and networking
CO3 : To prepare students to critically analyze existing literature in an area of specialization
CO4 : To prepare students to simulate real time problems in an area of research
CO5 : To develop innovative and research oriented methodologies to solve the real world problems

Semester:4

Course:Project Work (Phase-II)-[NC5411]
Upon completion of the course, the students will.../ will be able to... CO1 : enable graduates to pursue research and have a successful career CO2 :To provide students with strong foundational concepts in communication and networking CO3 :To prepare students to critically analyze existing literature in an area of specialization CO4 :To prepare students to simulate real time problems in an area of research CO5 :Develop innovative and research oriented methodologies to solve the real world problems