SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

B.TECH - FULL TIME (UG - 2020)

COURSE CODE	COURSE TITLE	CO	COURSE OUTCOMES	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	P012
20147S11	COMMUNICATIVE ENGLISH	CO1	Read articles of a general kind in magazines and newspapers.					✓							
		CO2	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.										✓		
		CO3	Comprehend conversations and short talks delivered in English									✓			

Code	Course	CO	Outcome													
		CO4	Write short essays of a general kind and personal letters and emails in English.									✓				
20148S12	ENGINEERING MATHEMATICS – I	CO1	Use both the limit definition and rules of differentiation to differentiate functions.													✓
		CO2	Apply differentiation to solve maxima and minima problems.	✓												
		CO3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.			✓										
		CO4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.								✓					
		CO5	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.											✓		
		CO6	Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.			✓										
		CO7	Apply various techniques in solving differential equations.													✓
20149S13	ENGINEERING PHYSICS	CO1	the students will gain knowledge on the basics of properties of matter and its applications,					✓							

Course Code	Course Name	CO	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		CO2	the students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,		✓										
		CO3	the students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,			✓									
		CO4	the students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes, and		✓									✓	
		CO5	the students will understand the basics of crystals, their structures and different crystal growth techniques.			✓									
20149S14	ENGINEERING CHEMISTRY	CO1	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.								✓				
20154S15	ENGINEERING GRAPHICS	CO1	familiarize with the fundamentals and standards of Engineering graphics							✓					
		CO2	perform freehand sketching of basic geometrical constructions and multiple views of objects.			✓									
		CO3	project orthographic projections of lines and plane surfaces.											✓	

Subject Code	Subject Name	CO	CO Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		CO4	draw projections and solids and development of surfaces.						✓									
		CO5	visualize and to project isometric and perspective sections of simple solids.			✓												
20150S16	PROBLEM SOLVING AND PYTHON PROGRAMMING	CO1	Develop algorithmic solutions to simple computational problems	✓														
		CO2	Read, write, execute by hand simple Python programs.		✓													
		CO3	Structure simple Python programs for solving problems.									✓						
		CO4	Decompose a Python program into functions.					✓										
		CO5	Represent compound data using Python lists, tuples, dictionaries.										✓					
		CO6	Read and write data from/to files in Python Programs.					✓										
20150L17	PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY	CO1	Write, test, and debug simple Python programs.															✓
		CO2	Implement Python programs with conditionals and loops.										✓					
		CO3	Develop Python programs step-wise by defining functions and calling them.									✓						
		CO4	Use Python lists, tuples, dictionaries for representing compound data.					✓										
		CO5	Read and write data from/to files in Python.						✓									

Course Code	Course Name	CO	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
20150L18	PHYSICS AND CHEMISTRY LABORATORY	CO1	apply principles of elasticity, optics and thermal properties for engineering applications.	✓											
20147S21	TECHNICAL ENGLISH	CO1	Read technical texts and write area-specific texts effortlessly.												✓
		CO2	Listen and comprehend lectures and talks in their area of specialisation successfully.											✓	
		CO3	Speak appropriately and effectively in varied formal and informal contexts.						✓						
		CO4	Write reports and winning job applications.		✓										
20148S22A	ENGINEERING MATHEMATICS – II	CO1	Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.						✓						✓
		CO2	Gradient, divergence and curl of a vector point function and related identities.											✓	
		CO3	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.		✓										
		CO4	Analytic functions, conformal mapping and complex integration.												✓

Code	Course	CO	Outcome	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		CO5	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.									✓						
20148S22A	PHYSICS FOR ELECTRONICS ENGINEERING	CO1	gain knowledge on classical and quantum electron theories, and energy band structuues,					✓										
		CO2	acquire knowledge on basics of semiconductor physics and its applications in various devices,															
		CO3	get knowledge on magnetic and dielectric properties of materials,															✓
		CO4	have the necessary understanding on the functioning of optical materials for optoelectronics,									✓						
		CO5	understand the basics of quantum structures and their applications in spintronics and carbon electronics.		✓													
20149S24A	ENVIRONMENTAL SCIENCE AND ENGINEERING	CO1	Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.					✓										
		CO2	Public awareness of environmental is at infant stage.		✓													
		CO3	Ignorance and incomplete knowledge has lead to misconceptions											✓				

Subject Code	Subject Name	CO	Course Outcome														
		CO4	Development and improvement in std. of living has lead to serious environmental disasters									✓				
20153S25C	CIRCUIT THEORY	CO1	Ability to analyse electrical circuits									✓				
		CO2	Ability to apply circuit theorems													
		CO3	Ability to analyse transients						✓							
20154S26C	BASIC CIVIL AND MECHANICAL ENGINEERING	CO1	appreciate the Civil and Mechanical Engineering components of Projects.				✓									
		CO2	explain the usage of construction material and proper selection of construction materials.													
		CO3	measure distances and area by surveying	✓												
		CO4	identify the components used in power plant cycle.				✓									
✓		CO5	demonstrate working principles of petrol and diesel engine.												✓	
		CO6	elaborate the components of refrigeration and Air conditioning cycle.										✓			
20154L27	Engineering Practices Laboratory	CO1	fabricate carpentry components and pipe connections including plumbing works.									✓				
		CO2	use welding equipments to join the structures.						✓							
		CO3	Carry out the basic machining operations						✓							
		CO4	Make the models using sheet metal works						✓							
		CO5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings												✓	

Code	Course	CO	Outcome	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		CO6	Carry out basic home electrical works and appliances								✓							
		CO7	Measure the electrical quantities						✓									
		CO8	Elaborate on the components, gates, soldering practices.					✓										
20153L28C	ELECTRIC CIRCUITS LABORATORY	CO1	Understand and apply circuit theorems and concepts in engineering applications.	✓														
		CO2	Simulate electric circuits.													✓		
20149S31C	TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	CO1	Understand how to solve the given standard partial differential equations.					✓										
		CO2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.													✓		
		CO3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.															✓
		CO4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.													✓		
		CO5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.											✓				

Code	Course	CO	Outcome	1	2	3	4	5	6	7	8	9	10	11	12	13
20153C32	DIGITAL LOGIC CIRCUITS	CO1	Ability to design combinational and sequential Circuits.			✓										
		CO2	Ability to simulate using software package.		✓											
		CO3	Ability to study various number systems and simplify the logical expressions using Boolean functions		✓											
		CO4	Ability to design various synchronous and asynchronous circuits.	✓												
		CO5	Ability to introduce asynchronous sequential circuits and PLDs	✓												
		CO6	Ability to introduce digital simulation for development of application oriented logic circuits.	✓												
20153C33	ELECTROMAGNETIC THEORY	CO1	Ability to understand the basic mathematical concepts related to electromagnetic vector fields.					✓								
		CO2	Ability to understand the basic concepts about electrostatic fields, electrical potential, energy density and their applications.											✓		
		CO3	Ability to acquire the knowledge in magneto static fields, magnetic flux density, vector potential and its applications.										✓			
		CO4	Ability to understand the different methods of emf generation and Maxwell's equations											✓		

Code	Course	CO	Outcome	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		CO5	Ability to understand the basic concepts electromagnetic waves and characterizing parameters													✓	
		CO6	Ability to understand and compute Electromagnetic fields and apply them for design and analysis of electrical equipment and systems	✓													
20153C34	ELECTRICAL MACHINES – I	CO1	Ability to analyze the magnetic-circuits.			✓											
		CO2	Ability to acquire the knowledge in constructional details of transformers.									✓					
		CO3	Ability to understand the concepts of electromechanical energy conversion.													✓	
		CO4	Ability to acquire the knowledge in working principles of DC Generator.			✓											
		CO5	Ability to acquire the knowledge in working principles of DC Motor														✓
		CO6	Ability to acquire the knowledge in various losses taking place in D.C. Machines						✓								
20153C35	ELECTRON DEVICES AND CIRCUITS	CO1	Explain the structure and working operation of basic electronic devices.	✓													
		CO2	Able to identify and differentiate both active and passive elements		✓												
		CO3	Analyze the characteristics of different electronic devices such as diodes and transistors	✓												✓	

Code	Course	CO	Course Outcome													
		CO4	Choose and adapt the required components to construct an amplifier circuit.					✓								
		CO5	Employ the acquired knowledge in design and analysis of oscillators								✓					
20153C36	POWER PLANT ENGINEERING	CO1	Explain the layout, construction and working of the components inside a thermal power plant.							✓						
		CO2	Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants.		✓											
		CO3	Explain the layout, construction and working of the components inside nuclear power plants.												✓	
		CO4	Explain the layout, construction and working of the components inside Renewable energy power plants					✓								
		CO5	Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.		✓											
20153L37	ELECTRONICS LABORATORY	CO1	Ability to understand and analyse electronic circuits.	✓												
20153L38	ELECTRICAL MACHINES LABORATORY-I	CO1	Ability to understand and analyze DC Generator		✓											
		CO2	Ability to understand and analyze DC Motor							✓						

Code	Course	CO	Outcome													
		CO3	Ability to understand and analyse Transformers.					✓								
20149C41C	NUMERICAL METHODS	CO1	Understand the basic concepts and techniques of solving algebraic and transcendental equations.										✓			
		CO2	Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.						✓							
		CO3	Apply the numerical techniques of differentiation and integration for engineering problems.													✓
		CO4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations											✓		
		CO5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.							✓						
20153C42	ELECTRICAL MACHINES – II	CO1	Ability to understand the construction and working principle of Synchronous Generator				✓									
		CO2	Ability to understand MMF curves and armature windings.						✓							
		CO3	Ability to acquire knowledge on Synchronous motor.		✓											
		CO4	Ability to understand the construction and working principle of Three phase Induction Motor													✓

Code	Course	CO	Course Outcome	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		CO5	Ability to understand the construction and working principle of Special Machines											✓			
		CO6	Ability to predetermine the performance characteristics of Synchronous Machines.					✓									
20153C43	TRANSMISSION AND DISTRIBUTION	CO1	To understand the importance and the functioning of transmission line parameters.			✓											
		CO2	To understand the concepts of Lines and Insulators.					✓									✓
		CO3	To acquire knowledge on the performance of Transmission lines.										✓				
		CO4	To acquire knowledge on Underground Cabilitys		✓												
		CO5	To become familiar with the function of different components used in Transmission and Distribution levels of power system and modelling of these components.														✓
20153C44	MEASUREMENTS AND INSTRUMENTATION	CO1	To acquire knowledge on Basic functional elements of instrumentation									✓					
		CO2	To understand the concepts of Fundamentals of electrical and electronic instruments					✓									
		CO3	Ability to compare between various measurement techniques														

Course Code	Course Name	CO	CO Statement															
✓		CO4	To acquire knowledge on Various storage and display devices															✓
		CO5	To understand the concepts Various transducers and the data acquisition systems									✓						
		CO6	Ability to model and analyze electrical and electronic Instruments and understand the operational features of display Devices and Data Acquisition System.	✓														
20153C45	LINEAR INTEGRATED CIRCUITS AND APPLICATIONS	CO1	Ability to acquire knowledge in IC fabrication procedure			✓												
		CO2	Ability to analyze the characteristics of Op-Amp	✓														
		CO3	To understand the importance of Signal analysis using Op-amp based circuits.										✓					
		CO4	Functional blocks and the applications of special ICs like Timers, PLL circuits, regulator Circuits.															
		CO5	To understand and acquire knowledge on the Applications of Op-amp										✓					
		CO6	Ability to understand and analyse, linear integrated circuits their Fabrication and Application.										✓					
20153C46	CONTROL SYSTEMS	CO1	Ability to develop various representations of system based on the knowledge of Mathematics, Science and Engineering fundamentals.															

Course Code	Course Name	CO	Course Outcome	1	2	3	4	5	6	7	8	9	10	11	12	13
		CO2	Ability to do time domain and frequency domain analysis of various models of linear system							✓						
		CO3	Ability to interpret characteristics of the system to develop mathematical model.				✓									
		CO4	Ability to design appropriate compensator for the given specifications.													
		CO5	Ability to come out with solution for complex control problem	✓												
		CO6	Ability to understand use of PID controller in closed loop system.				✓									
20153L47	ELECTRICAL MACHINES LABORATORY - II	CO1	Ability to understand and analyze EMF and MMF methods													✓
		CO2	Ability to analyze the characteristics of V and Inverted V curves										✓			
		CO3	Ability to understand the importance of Synchronous machines									✓				
		CO4	Ability to understand the importance of Induction Machines						✓							
		CO5	Ability to acquire knowledge on separation of losses						✓							
20153L48	LINEAR AND DIGITAL INTEGRATED CIRCUITS LABORATORY	CO1	Ability to understand and implement Boolean Functions.						✓							
		CO2	Ability to understand the importance of code conversion											✓		
		CO3	Ability to Design and implement 4-bit shift registers						✓							

Course Code	Course Name	CO	Outcome															
		CO4	Ability to acquire knowledge on Application of Op-Amp TOTA					✓										
		CO5	Ability to Design and implement counters using specific counter IC.				✓											
20153C51	POWER SYSTEM ANALYSIS	CO1	Ability to model the power system under steady state operating condition	✓														
		CO2	Ability to understand and apply iterative techniques for power flow analysis													✓		
		CO3	Ability to model and carry out short circuit studies on power system				✓											
		CO4	Ability to model and analyze stability problems in power system													✓		
		CO5	Ability to acquire knowledge on Fault analysis.															✓
		CO6	Ability to model and understand various power system components and carry out power flow, short circuit and stability studies.													✓		
20153C52	MICROPROCESSORS AND MICROCONTROLLERS	CO1	Ability to acquire knowledge in Addressing modes & instruction set of 8085 & 8051.												✓			
		CO2	Ability to understand the importance of Interfacing			✓												
		CO3	Ability to explain the architecture of Microprocessor and Microcontroller		✓													
		CO4	Ability to write the assembly language programme		✓													
		CO5	Ability to develop the Microprocessor and Microcontroller based applications.	✓														

Course Code	Course Name	CO	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		CO6	Ability to need & use of Interrupt structure 8085 & 8051.	✓											
20153C53	POWER ELECTRONICS	CO1	Ability to analyse AC-AC and DC-DC and DC-AC converters.	✓											
		CO2	Ability to choose the converters for real time applications.										✓		
20150FE54A	Database Management System	CO1	This course introduces the core principles and techniques required in the design and implementation of database systems.											✓	
		CO2	This introductory application-oriented course covers the relational database systems RDBMS - the predominant system for business, scientific and engineering applications at present.			✓									
		CO3	Ability to recognize current and possible future role of renewable energy sources.												✓
		CO4	It includes Entity-Relational model, Normalization, Relational model, Relational algebra, and data access queries as well as an introduction to SQL.					✓							
		CO5	It also covers essential DBMS concepts such as: Transaction Processing, Concurrency Control and Recovery.		✓										
		CO6	It also provides students with theoretical knowledge and practical skills in the use of databases and database management systems in information technology applications.			✓									

Course Code	Course Name	CO	Course Outcome	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
20153C55	DIGITAL SIGNAL PROCESSING	CO1	Ability to understand the importance of Fourier transform, digital filters and DS Processors.		✓												✓	
		CO2	Ability to acquire knowledge on Signals and systems & their mathematical representation							✓								
		CO3	Ability to understand and analyze the discrete time systems.											✓				
		CO4	Ability to analyze the transformation techniques & their computation.									✓						
		CO5	Ability to analyze the transformation techniques & their computation.				✓											
		CO6	Ability to acquire knowledge on programmability digital signal processor & quantization effects.														✓	
20153C56	OBJECT ORIENTED PROGRAMMING	CO1	Develop Java programs using OOP principles								✓							
		CO2	Develop Java programs with the concepts inheritance and interfaces				✓											
		CO3	Build Java applications using exceptions and I/O streams	✓														
		CO4	Develop Java applications with threads and generics classes		✓													
		CO5	Develop interactive Java programs using swings											✓				
20153L57	CONTROL AND INSTRUMENTATION LABORATORY	CO1	Ability to understand control theory and apply them to electrical engineering problems.							✓								

Code	Course	CO	Outcome	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14
		CO2	Ability to analyze the various types of converters									✓					
		CO3	Ability to design compensators						✓								
		CO4	Ability to understand the basic concepts of bridge networks.													✓	
		CO5	Ability to the basics of signal conditioning circuits										✓				
		CO6	Ability to study the simulation packages.						✓								
20153L58	OBJECT ORIENTED PROGRAMMING LABORATORY	CO1	Develop and implement Java programs with arraylist, exception handling and multithreading .			✓											
		CO2	Design applications using file processing, generic programming and event handling.						✓								
20153L59	PROFESSIONAL COMMUNICATION	CO1	Make effective presentations	✓													
		CO2	Participate confidently in Group Discussions													✓	
		CO3	Attend job interviews and be successful in them										✓				
		CO4	Develop adequate Soft Skills required for the workplace						✓								

Course Code	Course Name	CO	Course Outcome	1	2	3	4	5	6	7	8	9	10	11	12
20153C61	SOLID STATE DRIVES	CO1	Ability to understand and suggest a converter for solid state drive.			✓									
		CO2	Ability to select suitability drive for the given application					✓							✓
		CO3	Ability to study about the steady state operation and transient dynamics of a motor load system.										✓		
		CO4	Ability to analyze the operation of the converter/chopper fed dc drive	✓											
		CO5	Ability to analyze the operation and performance of AC motor drives												✓
		CO6	Ability to analyze and design the current and speed controllers for a closed loop solid state DC motor drive.									✓			
20153C62	PROTECTION AND SWITCHGEAR	CO1	Ability to understand and analyze Electromagnetic and Static Relays.					✓							
		CO2	Ability to suggest suitability circuit breaker												
		CO3	Ability to find the causes of abnormal operating conditions of the apparatus and system.												✓

Course Code	Course Name	CO	Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		CO4	Ability to analyze the characteristics and functions of relays and protection schemes									✓						
		CO5	Ability to study about the apparatus protection, static and numerical relays.		✓													
		CO6	Ability to acquire knowledge on functioning of circuit breaker				✓											
20153C63	EMBEDDED SYSTEMS	CO1	Ability to understand and analyze Embedded systems.		✓													
		CO2	Ability to suggest an embedded system for a given application.											✓				
		CO3	Ability to operate various Embedded Development Strategies															
		CO4	Ability to study about the bus Communication in processors.											✓				
		CO5	Ability to acquire knowledge on various processor scheduling algorithms.											✓				
		CO6	Ability to understand basics of Real time operating system.															
20153E64E	MODERN POWER CONVERTERS	CO1	Ability to suggest converters for AC-DC conversion and SMPS								✓							
20153E65C	POWER QUALITY	CO1	Ability to understand various sources, causes and effects of power quality issues, electrical systems and their measures and mitigation.				✓											
		CO2	Ability to analyze the causes & Mitigation techniques of various PQ events.															

Code	Subject	CO	Course Outcome	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		CO3	Ability to study about the various Active & Passive power filters.	✓													
		CO4	Ability to understand the concepts about Voltage and current distortions, harmonics.				✓										
		CO5	Ability to analyze and design the passive filters.														✓
		CO6	Ability to acquire knowledge on compensation techniques.											✓			
		CO7	Ability to acquire knowledge on DVR.										✓				
20153L66	POWER ELECTRONICS AND DRIVES LABORATORY	CO1	Ability to practice and understand converter and inverter circuits and apply software for engineering problems						✓								
		CO2	Ability to experiment about switching characteristics various switches						✓								
		CO3	Ability to analyze about AC to DC converter circuits						✓								
		CO4	Ability to analyze about DC to AC circuits.												✓		
		CO5	Ability to acquire knowledge on AC to AC converters									✓					
		CO6	Ability to acquire knowledge on simulation software					✓									
20153L67	MICROPROCESSORS AND MICROCONTROLLERS LABORATORY	CO1	Ability to understand and apply computing platform and software for engineering problems				✓										
		CO2	Ability to programming logics for code conversion.	✓													

Code	Subject	CO	Outcome													
		CO3	Ability to acquire knowledge on A/D and D/A											✓		
		CO4	Ability to understand basics of serial communication				✓									
		CO5	Ability to understand and impart knowledge in DC and AC motor interfacing											✓		
		CO6	Ability to understand basics of software simulators.													✓
20153MP68	MINI PROJECT	CO1	On Completion of the mini project work students will be in a position to take up their final year project work and find solution by formulating proper methodology.												✓	
20153C71	HIGH VOLTAGE ENGINEERING	CO1	Ability to understand Transients in power system										✓			
		CO2	Ability to understand Generation and measurement of high voltage			✓										
		CO3	Ability to understand High voltage testing.		✓											
		CO4	Ability to understand various types of over voltages in power system		✓											
		CO5	Ability to measure over voltages.	✓												
		CO6	Ability to test power apparatus and insulation coordination	✓												

Course Code	Course Name	CO	Course Outcome	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
20153C72	POWER SYSTEM OPERATION AND CONTROL	CO1	Ability to understand the day-to-day operation of electric power system.	✓														
		CO2	Ability to analyze the control actions to be implemented on the system to meet the minute to-minute variation of system demand.					✓										
		CO3	Ability to understand the significance of power system operation and control.											✓				
		CO4	Ability to acquire knowledge on real power-frequency interaction										✓					
		CO5	Ability to understand the reactive power-voltage interaction.											✓				
		CO6	Ability to design SCADA and its application for real time operation															✓
20153C73	RENEWABLE ENERGY SYSTEMS	CO1	Ability to create awareness about renewable Energy Sources and technologies.		✓													
		CO2	Ability to get adequate inputs on a variety of issues in harnessing renewable Energy.				✓											
		CO3	Ability to recognize current and possible future role of renewable energy sources.											✓				
		CO4	Ability to explain the various renewable energy resources and technologies and their applications.													✓		
		CO5	Ability to understand basics about biomass energy				✓											
		CO6	Ability to acquire knowledge about solar energy.															✓

Course Code	Course Name	CO	Course Outcome	1	2	3	4	5	6	7	8	9	10	11	12	13
20154FE74B	TESTING OF MATERIALS	CO1	Identify suitable testing technique to inspect industrial component						✓							
		CO2	ability to use the different technique and know its application and limitation	✓												
20153E75A	DISASTER MANAGEMENT	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.				✓									
20153E76F	TOTAL QUALITY MANAGEMENT	CO1	The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.								✓					
20153L77	POWER SYSTEM SIMULATION LABORATORY	CO1	Ability to understand power system planning and operational studies.						✓							
		CO2	Ability to acquire knowledge on Formation of Bus Admittance and Impedance Matrices and Solution of Networks		✓											
		CO3	Ability to analyze the power flow using GS and NR method											✓		
		CO4	Ability to find Symmetric and Unsymmetrical fault						✓							

Course Code	Course Name	CO	CO Statement	1	2	3	4	5	6	7	8	9	10	11	12	13
		CO5	Ability to understand the economic dispatch			✓										
		CO6	Ability to analyze the electromagnetic transients.	✓												
20153L78	RENEWABLE ENERGY SYSTEMS LABORATORY	CO1	Ability to understand and analyze Renewable energy systems.		✓											
		CO2	Ability to train the students in Renewable Energy Sources and technologies.									✓				
		CO3	Ability to provide adequate inputs on a variety of issues in harnessing Renewable Energy.						✓							
		CO4	Ability to simulate the various Renewable energy sources.										✓			
		CO5	Ability to recognize current and possible future role of Renewable energy sources							✓						
		CO6	Ability to understand basics of Intelligent Controllers.													✓
20153E81G	PRINCIPLES OF MANAGEMENT	CO1	Upon completion of the course, students will be ability to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management											✓		
20153E82F	BIOMEDICAL INSTRUMENTATION	CO1	Ability to understand the philosophy of the heart, lung, blood circulation and respiration system.						✓							
		CO2	Ability to provide latest ideas on devices of non-electrical devices.				✓									

Course Code	Course Name	CO	Course Outcome													
		CO3	Ability to gain knowledge on various sensing and measurement devices of electrical origin.						✓							
		CO4	Ability to understand the analysis systems of various organ types.		✓											
✓		CO5	Ability to bring out the important and modern methods of imaging techniques and their analysis.													✓
		CO6	Ability to explain the medical assistance/techniques, robotic and therapeutic equipments.											✓		
20153P83	PROJECTWORK	CO1	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.						✓							