COURSE OUTCOMES

S E ELECTRICAL: COURSE PATTERN 2015

YEAR	COURSE CODE	COURSE NAME	COURSE OUTCOMES
S E [SEMESTER –III, TERM-I]	**207006**	**Engineering Mathematics III**	1.Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits.
			2.Solve problems related to Laplace transform, Fourier transform, Z-Transform and applications to Signal processing and Control systems.
			3.Perform vector differentiation and integration, analyze the vector fields and apply to Electro-Magnetic fields.
			4.Analyze conformal mappings, transformations and perform contour integration of complex functions in the study of electrostatics and signal processing.
	203141	**Power Generation Technology**	Identify operations of thermal power plant with all accessories and cycles.
			Be aware of the principle of operation, components, layout, location, environmental and social issues of nuclear, diesel and gas power plant.
			Identify and demonstrate the components of hydro power plant and calculation of turbine required based on catchment area.
			Find the importance of wind based energy generation along with its design, analysis and comparison.
			Apply solar energy in thermal and electrical power generation considering energy crisis, environmental and social benefits.
			Understand the operation of electrical energy generation using biomass, tidal,
	203142	**Material Science**	Categorize and classify different materials from Electrical Engineering applications point of view.
			Explain and summarize various properties and characteristics of different classes of materials.
			Choose materials for application in various electrical equipment.
			Explain and describe knowledge of nanotechnology, batteries and solar cell materials.
			Test different classes of materials as per IS.

	203143	**Analog and Digital Electronics**	Understand conversion of number system, perform binary arithmetic and reduce
			Boolean expressions by K- Map.
			Demonstrate basics of various types of Flip flops, design registers and counter.
			Analyze parameter of Op-amp and its applications.
			Apply the knowledge of Op-amp as wave form generators & filters.
			Use BJT as amplifier with various configurations.
	203144	**Electrical Measurements and Instrumentation**	Deliver knowledge of classification of measuring instrument with their characteristics.
			Understand instrument transformers, their terminologies and range extension methods using instrument transformers
			Demonstrate measuring techniques for electrical parameters like resistance, inductance, and capacitance.
			Apply different methods for measurement of Power in AC circuit and demonstrate use of Energymeter and its calibration
			Understand construction,front panel of CRO and its use.
			Demonstrate the knowledge of different electrical transducers for measurement of non electrical parameters
S E [SEMESTER –IV, TERM-II]	**203145**	**Power System I**	Recognize different patterns of load curve, calculate different factors associated with
			it and tariff structure for LT and HT consumers.
			Aware of features, ratings, application of different electrical equipment in power
			station and selection of overhead line insulators.
			Analyze and apply the knowledge of electrical and mechanical design of transmission
			lines.
			Identify and analyze the performance of transmission lines.
	203146	**Electrical Machine I**	To understand Construction and working of single phase transformer and to analyze its performance.
			To understand Construction and working of Three phase transformer and to study different types of connection.
			To understand the construction, principle of operation of, DC Machine.
			To test & analyze the performance of DC machine and to study the commutation.
			To understand the construction, principle of operation of Induction Motor.
			To test & analyze the performance of Induction motor.
	203147	**Network Analysis**	Developing strong basics for network theory.
			Develop the problem solving technique for networks by application of theorems.
			Understand the behavior of the network by analyzing its transient response.
			Apply their knowledge of network theory for designing special circuits like filters.

203148	**Numerical Methods and computer Programing**	Develop algorithms and implement programs using C language for various numerical methods.
		Demonstrate types of errors in computation and their causes of occurrence.
		Identify various types of equations and apply appropriate numerical method to solve different equations.
		Apply different numerical methods for interpolation, differentiation and numerical integration.
		Apply and compare various numerical methods to solve first and second order ODE.
		Apply and compare various numerical methods to solve linear simultaneous equations.
203149	**Fundamentals of Microcontroller and Applications**	Differentiate between microprocessor and microcontroller
		Describe the architecture and features of various types of microcontroller
		Demonstrate programming proficiency using the various addressing modes and all
		Program using the capabilities of the stack, the program counter the internal and
		Write assemble assembly language programs on PC and download and run their
		Design electrical circuitry to the Microcontroller I/O ports in order to interface with
203151	**Soft Skills**	Do SWOT analysis.
		Develop presentation and take part in group discussion.
		Understand and Implement etiquettes in workplace and in society at large.
		Work in team with team spirit.
		Utilize the techniques for time management and stress management.

T. E. ELECTRICAL:COURSE PATTERN 2015

YEAR	COURSE CODE	COURSE NAME	COURSE OUTCOMES
T E [SEMESTER –V, TERM-I]	**311121**	**Industrial And Technology Management**	Possess knowledge of types of business organizations; explore the fundamentals of economics and Management.
			Understand the basic concepts of Technology management and Quality management.
			Analyse and differentiate between marketing management and financial management.
			Recognize the importance of Motivation, Group dynamics, Team work, leadership skill and entrepreneurship.
			Explain the fundamentals of Human Resource management.
			Identify the importance of Intellectual property rights and understand the concept of patents, copy rights and trademarks.
	303141	**Advance Microcontroller and its Applications**	Explain architecture of PIC18F458 microcontroller, its instructions and the addressing modes
			Develop and debug program in assembly language or C language for specific applications
			Use of an IDE for simulating the functionalities of PIC microcontroller and its use for software and hardware development.
			Interface a microcontroller to various devices.
			Effectively utilize advance features of microcontroller peripherals.
	303142	**Electrical Machines II**	Understand construction working of Alternator & solve numerical on alternator
			Develop vector diagrams & understand methods for regulation calculations of alternator experimentally
			Understand operation of 3 phase Synchronous Motor, vector diagram & its power flow
			Understand different speed control methods of 3 phase Induction Motor
			Develop phasor diagram of AC Series and Universal Motor & solve numerical based on it
			Determine equivalent circuit parameters & performance characteristics of 1 ph Induction Motor

	303143	**Power Electronics**	Description : The students will be able to understand, analyse and communicate:
			thyristor characteristics ,
			switching devices like MOSFET,IGBT,MCT and analyse DC-DC Converter circuit with different control strategies
			Develop characteristics of different power electronic switching devices
			working principle of three phase AC-DC Converter with various types of load
			DC-AC Converters (VSI and CSI) with different voltage control techniques
	303144	**Electrical Installation, Maintenance and Testing**	harmonic elimination techniques of inverters, concept of multi level inverter
			Classify distribution systems, its types and substations
			Design of different earthing systems for residential and industrial premises
			Select methods of condition monitoring and testing of various Electrical Equipment
			Analyse fault on electrical equipments/machines and to carry the maintenance of it
	303145	**Seminar and Technical Communication**	Estimate and Costing of residential and industrial premises
			Relate with the current technologies and innovations in Electrical engineering.
			Improve presentation and documentation skill.
			Apply theoretical knowledge to actual industrial applications and research activity.
T E [SEMESTER –VI, TERM-II]	**303146**	**Power System II**	Communicate effectively.
			Solve problems involving modelling, design and performance evaluation of HVDC and EHVAC power transmission lines.
			Evaluate power flow in power transmission networks and apply power flow results to solve simple planning problems.
	303147	**Control System-I**	Calculate currents and voltages in a faulted power system under both symmetrical and asymmetrical faults, and relate fault currents to circuit breaker ratings.
			Model physical system
			Determine time response of linear system
			Analyse stability of LTI system,

303148	**Utilization of Electrical Energy**	Design PID controller for LTI system
		Heating element design, modern heating & welding techniques.
		Control devices and their use in Refrigeration, AC, applications of Electrochemical processes
		Maximizing energy efficiency by studying Different sources of light, Design of illumination schemes.
		Indian Railway coding , Different supply system, Track accessories, Electric Locomotive.
		Mechanics of train movement and Energy consumption of train for different application.
303149	**Design of Electrical Machines**	To select efficient Traction motors, awareness about anti collision & train tracking system.
		Calculate main dimensions and Design of single phase and three phase transformer.
		Calculate main dimensions of three phase Induction motor.
		Determine the parameters of transformer.
303150	**Energy Audit and Management**	Determine parameters of three phase Induction motor.
		Understand importance of energy Conservation and energy security.
		Understand impact of use energy resources on environment and emission standards.
		Follow format of energy management, energy policy.
		Learn various tools of energy audit and management
		Calculate energy consumption and saving options with economic feasibility
303151	**Electrical Workshop**	Solve simple problems on cost benefit analysis.
		Integrate electrical/electronic circuits for useful applications
		Acquire hardware skills to fabricate circuits designed.
		Read data manuals/data sheets of different items involved in the circuits
		Test and debug circuits.

			Produce the results of the testing in the form of report.

B. E. ELECTRICAL:COURSE PATTERN 2012

YEAR	COURSE CODE	COURSE NAME	COURSE OUTCOMES
B E [SEMESTER –VII, TERM-I]	**403141**	**Power System Operation and Control**	Identify and analyze the dynamics of power system and suggest means to improve stability of system
			Suggest the appropriate method of reactive power generation and control
			Analyze the generation-load balance in real time operation and its effect on frequency and develop automatic control strategies with mathematical relations
	403142	**PLC and SCADA Applications**	Formulate objective functions for optimization tasks such as unit commitment and economic load dispatch and get solution using computational techniques.
			Develop and explain the working of PLC with the help of a block diagram.
			Execute, debug and test the Ladder programs developed for digital and analog operations
			Implement complex ladder programs for real time operations in industry
			Reproduce block diagram representation on industrial applications using PLC and SCADA.
			Develop architecture of SCADA and explain the importance of SCADA in critical infrastructure.
	Elective – I: 403143	**Power Quality**	Troubleshoot SCADA system through knowledge and expertise in communication protocols
			Characterize power quality events.
			Reproduce causes of voltage sag and estimate magnitude of voltage sag.
			Carry out harmonic analysis and calculate total harmonic distortion.
	Elective-II: 403144	**Introduction to Electrical Transportation Systems**	Calculate parameters for passive harmonic filter.
			Select between alternative modes for electric transportation system
			Explain various types of energy storage devices and their impact on electrified
			Explain various power and energy converters in transportation system
			Analyze different control systems used in electric vehicles
			Analyze the control and performance of electric cars and traction under different operating conditions
	403145	**Control System - II**	Understand different characteristics of elevators.
			Design and realize a compensator for a physical system
			Represent a physical system in state space format and analyze the same and to realize a controller using state space technique.
			Analyze understand the various nonlinearities in a physical system.

	403146	**Project Stage I &II**	Realize digital control schemes.
			Work in team and ensure satisfactory completion of project in all respect.
			Handle different tools to complete the given task and to acquire specified knowledge in area of interest.
			Provide solution to the current issues faced by the society.
			Practice moral and ethical value while completing the given task.
B E [SEMESTER –VIII, TERM-II]	**403147**	**Switchgear and Protection**	Communicate effectively findings in verbal and written forms.
			Describe arc interruption methods in circuit breaker.
			Derive expression for restriking voltage and RRRV in circuit breaker
			Explain Construction, and working of different high voltage circuit breakers such as ABCB, SF6 CB, and VCB.
			Classify and Describe different type of relays such as over current relay, Reverse power relay, directional over current relay, Differential relay, Distance relay, Static relay and numerical relay
			Describe various protection schemes used for transformer, alternator and busbar
	403148	**Power Electronic Controlled Drives**	Describe transmission line protection schemes.
			Analyze the steady-state operation and dynamics of a motor-load system
			Analyze the operation of the converter, chopper fed dc drive.
			Analyze the operation of classical and modern induction motor drives
			Design the current and speed controllers for a closed loop solid-state d.c motor drive
			Select the drives for any particular application
	Elective –III 403149	**High Voltage Engineering**	Demonstrate the Speed control of various drives
			Reproduce concepts in breadth with various concepts of breakdown phenomenon of solid, liquid and gaseous materials along with various causes of overvoltage and protection from them.
			List and reproduce various methods of generation and measurement of DC, AC and impulse high voltage
			Demonstrate an ability to carry various DC. AC and impulse testing on high voltage equipment and materials.
	Elective –IV: 403150	**Smart Grid**	Apply safety measures, earthing, shielding for layout of HV apparatus required in High voltage laboratory.
			Differentiate Conventional and Smart Grid.
			Identify the need of Smart Grid, Micro Grid, Smart metering, Smart storage, Hybrid Vehicles, Home Automation, Smart Communication.
			Get introduced to new upcoming concepts in electrical from Utility to Consumers.

			Comparing and getting acquainted with emer professional issues in electric Grid.
			Express the necessity of global smart commu