



**ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S
COLLEGE OF ENGINEERING, PUNE - 1
DEPARTMENT OF ELECTRICAL ENGINEERING**



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

T E [SEMESTER -VI, TERM-II]	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.
	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	
B E [SEMESTER -VII, TERM-I]	403141	Power System Operation and Control	COURSE OUTCOMES
			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.	

B E [SEMESTER –VIII, TERM-II]	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.
	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 emerging technologies and current professional issues in electric Grid.
			Express the necessity of global smart communication system