

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER
Department of Electrical Engineering
Course Outcomes (CO)

Final Year – 2015 Course			
Course Code	Course Name	Course Outcomes	
Semester - I			
(403141)	Power System Operations and Control	C441.1	Identify and analyze the dynamics of power system and suggest means to improve stability of system.
		C441.2	Comprehend the effect of reactive power on Power system and suggest the suitable means of reactive power management
		C441.3	Selection of appropriate FACTs devices
		C441.4	Analyze the generation-load balance in real time operation and its effect on frequency and develop automatic control strategies with mathematical relations
		C441.5	Formulate objective functions for optimization tasks such as unit commitment and economic load dispatch and get solution using computational techniques
		C441.6	Evaluate reliability indices of Power system
(403142)	PLC and SCADA Applications	C441.1	Develop block diagram of PLC and explain the working.
		C441.2	Classify input and output interfacing devices with PLC.
		C441.3	Execute , debug and test the programs developed for digital and analog operations.
		C441.4	Applications of PLC for developing the industrial systems
		C441.5	Develop architecture of SCADA and explain the importance of SCADA in critical infrastructure.
		C441.6	Describe various SCADA protocols along with their architecture and Observe development of various industrial applications using PLC and SCADA.

(403143)	Elective I Power Quality	C443.1	Identify importance of various power quality issues.
		C443.2	Carry out power quality monitoring
		C443.3	List and explain various causes and effects of power quality problems
		C443.4	Analyze power quality parameters and carry out power quality analysis
		C443.5	Select cost effective mitigation technique for various power quality problems
		C443.6	Use IEEE 519-2014 power quality standard for harmonic compliance
(403144D)	Electric and Hybrid Vehicles	C444.1	Review history, Social and environmental importance of Hybrid and Electric vehicles
		C444.2	Describe the performance and selection of energy storage systems
		C444.3	Analyze battery management system.
		C444.4	Distinguish between the performance and architecture of various drive trains.
		C444.5	Describe the different Instrumentation and Control used for electric vehicles.
		C444.6	Differentiate between Vehicle to Home, Vehicle to Vehicle and Vehicle to Grid energy systems concepts.
(403145)	Control System- II	C445.1	Recognize the importance of digital control system.
		C445.2	Derive pulse transfer function.
		C445.3	Analyze digital controllers.
		C445.4	Convert system in state space format.
		C445.5	Solve state equation.
		C445.6	Design observer for system
(403146)	Project-I	C446.1	Conduct literature search to identify and formulate the engineering problems
		C446.2	Engage in independent study and apply the mathematical, science, engineering concept and management principles necessary to solve the identified engineering

			problem
		C446.3	Identify the community that shall benefit through the solution to identified engineering problem and also demonstrate concern for environment
		C446.4	Prepare the budget for hardware requirement & Select the proper engineering tools /components for solving the identified engineering problem
		C446.5	Engage in effective written communication through the project report ,engage in effective oral communication through presentation of the project work
		C446.6	Perform in team , contribute to the team and mentor /lead to them
(403152)	Audit Course V (A) Hydro Energy Systems	C453.1	Explain and differentiate various types of hydro electric generators; pico, micro and small hydro
Semester - II			
(403147)	Switchgear and Protection	C447.1	Describe arc interruption methods in circuit breaker.
		C447.2	Derive expression for restriking voltage and RRRV in circuit breaker
		C447.3	Explain construction and working of different high voltage circuit breakers such as ABCB, SF6 CB, and VCB.
		C447.4	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
		C447.5	Describe various protection schemes used for transformer, alternator and busbar
		C447.6	Describe transmission line protection schemes.
(403148)	Power Electronics Controlled Drives	C448.1	Explain motor load dynamics and multi quadrant operation of drives
		C448.2	Analyze operation of converter fed and chopper fed DC drives.
		C448.3	Describe braking methods of D.C.

			and induction motor drive.
		C448.4	Explain vector control for induction motor drives
		C448.5	Describe synchronous motor drive.
		C448.6	Identify classes and duty cycles of motor and applications of drives in industries.
(403149)	High Voltage Engineering	C449.1	Identify, describe and analyze the breakdown theories of solid, liquid and gaseous materials
		C449.2	Describe as well as use different methods of generation of high AC, DC, impulse voltage and current
		C449.3	Demonstrate and use different methods of measurement of high AC, DC, impulse voltage and current
		C449.4	Identify the occurrence of overvoltage and to provide remedial solutions
		C449.5	Demonstrate an ability to carry out different tests on high voltage equipment and devices
		C449.6	Design the high voltage laboratory with all safety measures
(403150),	Elective IV-Smart Grid:	C450.1	Differentiate Conventional and Smart Grid.
		C450.2	Identify the need of Smart Grid, Micro Grid, Smart metering, Smart storage, Hybrid Vehicles, Home Automation, Smart Communication.
		C450.3	Get introduced to new upcoming concepts in electrical from Utility to Consumers.
		C450.4	Comparing and getting acquainted with emerging technologies and current professional issues in electric Grid.
		C450.5	Express the necessity of global smart communication system
(403151)	Project-II,	C451.1	Perform in team and ensure satisfactory completion of project in all respect.
		C451.2	Apply different tools to complete the given task and to acquire specified knowledge in area of

			interest.
		C451.3	Provide solution to the current issues faced by the society.
		C451.4	Practice moral and ethical value while completing the given task.
		C451.5	Communicate effectively findings in verbal and written forms.
403153	Audit Course VI : Energy Storage Systems	C453.1	Explain and differentiate various types of energy storage systems.