



MAR ATHANASIUS COLLEGE OF ENGINEERING
KOTHAMANGALAM

ELECTRICAL & ELECTRONICS ENGINEERING DEPARTMENT

LIST OF COURSE OUTCOME

M.TECH POWER ELECTRONICS

SEMESTER	SUBJECT COSE	SUBJECT NAME	CO NO:	CO DESCRIPTION
S1	05EE6001	OPTIMISATION TECHNIQUES	1	Students are able to understand basic principles in linear optimization techniques and algorithms
			2	Students are capable to formulate, implement and analyze unconstrained one-dimensional optimization models.
			3	Conceptual understanding of unconstrained n dimensional optimization techniques and ability to solve complex power electronic problems.
			4	Students are able to use constrained optimization techniques and dynamic programming techniques for engineering practice
S1	05EE6003	ADVANCED POWER SEMI CONDUCTOR DEVICES	1	To understand power handling capability of power switching devices
			2	In depth learning about BJT & THYRISTORS and their static & dynamic models.
			3	To understand the characteristics & operational features of power electronic devices
			4	To study the basics of protection schemes for power electronic devices
S1	05EE6005	POWER CONVERTERS	1	Students will be comprehensively understand and carry out transient and steady state analysis of controlled and uncontrolled half wave rectifier with different loads
			2	Students will be able to do the analysis of single phase and three phase controlled rectifiers with different types of loads

			3	Students will be able to do the analysis of various dc-dc converters with continuous and discontinuous modes.
			4	Students will be able to do the analysis of different choppers and inverters.
S1	05EE6007	MODERN CONTROL SYSTEMS	1	An ability to design a system, component, or process to meet desired needs, to test the controllability and observability of a given system and design of pole assignment in controller and observer using state feedback
			2	Identify and analyze non-linear systems using describing function analysis and phase plane analysis
			3	Analyze linear and non-linear systems using Lyapunov function, variable gradient and design Lyapunov function for stable systems
			4	Formulate an optimal control problem and design optimal control signal.
S1	05EE 6011	POWER SYSTEM OPERATION AND CONTROL	1	Students will be able to explain methods for economic load dispatch and unit commitment
			2	Students will be able to formulate hydrothermal scheduling problem
			3	Students will be able to apply control and compensations schemes on a power system
			4	Students will be able to adopt contingency analysis and selection methods to improve system security.
S1	05EE6077	RESEARCH METHODOLOGY	1	The students should be able to understand the basic concepts of research and its methodologies
			2	Students will have knowledge on the technical aspects of executing a research study
			3	Students are able to understand different statistical test and parameters
			4	The students should be able to define appropriate research problem and write a research report

S1	05EE6091	POWER ELECTRONICS LAB	1	Students will learn the design of various triggering circuits.
			2	Students will learn the design of ac voltage controllers using different types of firing circuits.
			3	Students will learn the design of inverters and converters.
			4	Students will learn the design of MOSFET based DC choppers
S2	05EE6002	FLEXIBLE AC TRANSMISSION SYSTEMS	1	The students will be able to use FACT controllers for various power quality issues
			2	Students will be able to solve the reactive power problems in power system using FACT devices
			3	Students will have a full understanding of the presence of harmonics and different power quality conditioners.
			4	An ability to develop and promote research interests, in controllers for reducing problems in power systems
S2	05EE6004	SOLID STATE DC AND AC DRIVES	1	Students will learn the speed control techniques for dc motors using single phase converters
			2	Students will learn the schemes using three phase semi/full converters for the speed control of DC drives
			3	Students will learn the speed control techniques using choppers for the control of DC drives
			4	Students will learn the various methods for the speed control of induction motors
S2	05EE6006	MODELLING OF ELECTRICAL MACHINES	1	Understand theoretical concepts behind the modelling of conventional electrical machines
			2	To develop dynamic models of DC machines using generalized machine theory
			3	To derive the dynamic model of three phase induction machine in various reference frames
			4	To derive the dynamic models of two phase induction machine and 3 phase synchronous machine in various reference frames

S2	05EE 6066	SEMINAR I	1	Ability to understand about recent research and development areas in Electrical & Electronics Engineering and related fields
			2	Ability to undergo an in-depth study and comprehend a specific area of interest
			3	Capability for effective communication , presentation and report writing using modern techniques
			4	Capability for research oriented higher studies
S2	05EE 6088	MINI PROJECT	1	To train the students to use their previous knowledge and skills to solve a technical problem
			2	To modify the design methodologies and their implementations, if necessary after evaluation
			3	To work efficiently and plan constructively in a group to find solution to complex engineering problems
			4	Effective communication through reports and design documentations, makes the student capable in presenting technical matters in objective written form
S2	05EE6092	POWER ELECTRONICS SIMULATION LAB	1	Students will be able to simulate and analyze single phase and three phase converters with different types of loads.
			2	Students will be able to simulate single phase and three phase ac voltage controller circuits with different loads
			3	Students will be able to simulate and analyse inverter circuits with different types of loads.
			4	Students will learn the various methods for the speed control of induction motors
S2	05EE6026	ARTIFICIAL NEURAL NETWORKS AND FUZZY SYSTEMS	1	To expose the students to the concepts of feed forward neural networks
			2	To provide adequate knowledge about feedback neural networks

			3	To teach about the concepts of fuzziness involved in various systems and to provide adequate knowledge about fuzzy set theory
			4	To provide adequate knowledge of application of fuzzy logic control to real time systems
S2	05EE 6034	HVDC TRANSMISSION SYSTEMS	1	Students will be able to understand the importance of Transmission power through HVDC.
			2	Ability to calculate power conversion between AC to DC and DC to AC
			3	Ability to control reactive power through HVDC.
			4	Ability to discuss power flow analysis in HVDC.
S3	05EE 7041	MICROCONTROLLER APPLICATIONS IN POWER CONVERTERS	1	Ability to write the programs using assembly languages and high level languages
			2	Ability to understand the methods of interfacing of ARM controllers
			3	Ability to analyze various FPGA controllers and their interfacing
			4	Capability to design and implementation of different controllers for power converters
S3	05EE7051	ADVANCED POWER ELECTRONIC SYSTEMS	1	Obtain sound knowledge about the various modulation strategies and capable of applying these to power electronic converters and do the harmonic analysis
			2	Gain knowledge about the different SMPS topologies, their design methods and control strategies
			3	Get the basic concepts about the resonant converters and zero switching techniques
			4	Acquire knowledge about the PWM rectifier and Matrix converter topologies, their design methods and control strategies
S3	05EE 6066	SEMINAR II	1	Ability to understand about recent research and development areas in Electrical & Electronics Engineering and related fields.
			2	Ability to undergo an in-depth study and comprehend a specific area of interest.

			3	Capability for effective communication , presentation and report writing using modern techniques
			4	Capability for research oriented higher studies
S4	05EE 7088	MAIN PROJECT	1	To train the students to use their previous knowledge and skills to solve a technical problem
			2	To modify the design methodologies and their implementations, if necessary after evaluation
			3	To work efficiently and plan constructively in a group to find solution to complex engineering problems and make capable for research oriented higher studies
			4	Effective communication through reports and design documentations, makes the student capable in presenting technical matters in objective written form