MEENAKSHI COLLEGE OF ENGINEERING
No-12, Vembuli Amman Koil Street, West K.K Nagar,
Chennai - 600 078

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

M.E POWER ELECTRONICS AND DRIVES

Regulation-17

COURSE OUTCOMES

SEMESTER-I

Course Name: MA5155 Applied Mathematics for Electrical Engineers

CO1	Apply various methods in matrix theory to solve system of linear equations
CO2	Maximizing and minimizing the functional that occur in electrical engineering discipline.
CO3	Computation of probability and moments, standard distributions of discrete and continuous random variables and functions of a random variable.
CO4	Could develop a fundamental understanding of linear programming models, able to develop a linear programming model from problem description, apply the simplex method for solving linear programming problems.
CO5	Fourier series analysis and its uses in representing the power signals.

Course Name : PX5101 Power Semiconductor Devices

CO1	Ability to determine the suitable device for the application.
CO2	Ability to design of semiconductor device and its parameters.
CO3	Ability to design of protection circuits and control circuits
CO4	Ability to determine the reliability of the system.

Course Name : PX5151 Analysis Of Electrical Machines

CO1	Ability to understand the various electrical parameters in mathematical form.
CO2	Ability to understand the different types of reference frame theories and transformation relationships
CO3	Ability to find the electrical machine equivalent circuit parameters and modeling of electrical machines.

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Course Name : PX5152 Analysis And Design Of Power Converters

CO1	Analyze various single phase and three phase power converters
CO2	Select and design dc-dc converter topologies for a broad range of power conversion applications.
CO3	Develop improved power converters for any stringent application requirements.
CO4	Design ac-ac converters for variable frequency applications.

Course Name : IN5152 System Theory

CO1	Ability to represent the time-invariant systems in state space form as well as analyze, whether the system is stabilizable, controllable, observable and detectable.
CO2	Ability to design state feedback controller and state observers
CO3	Ability to classify singular points and construct phase trajectory using delta and isocline methods.
CO4	Use the techniques such as describing function, Lyapunov Stability, Popov's Stability Criterion and Circle Criterion to assess the stability of certain class of non-linear system.
CO5	Ability to describe non-linear behaviors such as Limit cycles, input multiplicity and output multiplicity, Bifurcation and Chaos.

Course Name : IN5091 Soft Computing Techniques

CO1	Will be able to know the basic ANN architectures, algorithms and their limitations.
CO2	Also will be able to know the different operations on the fuzzy sets.
CO3	Will be capable of developing ANN based models and control schemes for non-linear system
CO4	Will get expertise in the use of different ANN structures and online training algorithm
CO5	Will be knowledgeable to use Fuzzy logic for modeling and control of non-linear systems.
CO6	Will be competent to use hybrid control schemes and P.S.O and support vector Regressive.

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Course Name : PX5111 Power Electronic Circuits Laboratory

CO1	Comprehensive understanding on the switching behaviour of Power Electronic Switches
CO2	Comprehensive understanding on mathematical modeling of power electronic system and ability to implement the same using simulation tools
CO3	Ability of the student to use microcontroller and its associated IDE* for power electronic applications
CO4	Ability of the student to design and implement analog circuits for Power electronic control applications
CO5	Ability to design and fabricate a power converter circuit at an reasonable power level
CO6	Exposure to PCB designing and fabrication
CO7	* IDE – Integrate Development Environment (Code Composer Studio for Texas Instrument/MPLAB for PIC microcontrollers etc)

SEMESTER-II

Course Name : PX5201 Analysis And Design Of Inverters

CO1	Will get expertise in the working modes and operation of inverters
CO2	Will be able to design single phase and three phase inverters.
CO3	Will equip skills to formulate and design the inverters for generic loads and machine loads
CO4	Will acquire knowledge on multilevel inverters and modulationtechniques

Course Name : PX5202 Solid State Drives

CO1	Will be able to formulate, design and analyze power supplies for generic loads and machine loads
CO2	Will acquire knowledge on the operation of VSI and CSI fed induction motor drives.
CO3	Will get expertise in the field oriented control of Induction motor drives
CO4	Will be able to formulate the control schemes for synchronous motor drives.

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Course Name : PX5251 Special Electrical Machines

CO1	Understand the open loop and closed loop systems stepper motors
CO2	Understanding the classifications and characteristics of special machines
CO3	Understanding of the control methods of special motors.
CO4	Ability to select the suitable motor for a certain job under given conditions

Course Name : PX5252 Power Quality

CO1	Ability to formulate, design and simulate power supplies for generic load and machine loads
CO2	Ability to conduct harmonic analysis and load tests on power supplies and drive systems
CO3	Ability to understand and design load compensation methods useful for mitigating power quality problems

Course Name : PX5004 Modern Rectifiers And Resonant Converters

CO1	Apply the concept of various types of rectifiers.
CO2	Simulate and design the operation of resonant converter and its importance.
CO3	Identify the importance of linear system, state space model, PI controller.
CO4	Design the DC power supplies using advanced techniques.
CO5	Understand the standards for supply current harmonics and its significance

Course Name : PS5071 Distributed Generation And Microgrid

CO1	Learners will attain knowledge on the various schemes of conventional and nonconventional power generation.
CO2	Learners will have knowledge on the topologies and energy sources of distributed 31 generation
CO3	Learners will learn about the requirements for grid interconnection and its impact with NCE sources

CO4	Learners will understand the fundamental concept of Microgrid.

Course Name : PX5211 Electrical Drives Laboratory

CO1	Ability to simulate different types of machines, converters in a system.
CO2	Analyze the performance of various electric drive systems.
CO3	Ability to perform both hardware and software simulation.

Course Name : PX5212 Mini Project

CO1	Acquire practical knowledge within the chosen area of technology for project development
CO2	Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach
CO3	Contribute as an individual or in a team in development of technical projects
CO4	Develop effective communication skills for presentation of project related activities

SEMESTER-III

Course Name : PS5073 Electric Vehicles and Power Management

CO1	Learners will understand the operation of Electric vehicles and various energy storage technologies for electrical vehicles

Course Name : PS5091 Smart Grid

CO1	Learners will develop more understanding on the concepts of Smart Grid and its present developments.
CO2	Learners will study about different Smart Grid technologies
CO3	Learners will acquire knowledge about different smart meters and advanced metering infrastructure
CO4	Learners will have knowledge on power quality management in Smart Grids
CO5	Learners will develop more understanding on LAN, WAN and Cloud Computing for Smart Grid applications.