Koneru Lakshmaiah Education Foundation
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Department of Electrical and Electronics Engineering

Program: M. Tech – Power Systems

Academic Year: 2021-2022

Course Code	Course Title	CO NO	Description of the Course Outcome
21EE5102	Advanced Power System Analysis	CO1	Understand power system stability and power angle equations
		CO2	Analyzing swing equation and equal area criterion
		CO3	Understand synchronous machine modeling
		CO4	Understand excitation systems and power system stabilizers
21EE5101	Power System Dynamics & Stability	CO1	Comprehend basic concepts and principles in power system analysis and Formulate and solve power flow problems, economic and environmental dispatch problems
		CO2	Demonstrate understanding in the theory of power sy stem security analysis, voltage stability analysis, optimal power flow and state estimation
		CO3	Develop algorithms as well as to use software tools to solve power system analysis and stability problems
		CO4	To make sound recommendations and implement as requ ired based on these solutions,analyse for practical power system problems
21EE5103	Deregulated Operation Of Power Systems	CO1	Describe various types of regulations in power systems and Identify the need of regulation and deregulation
		CO2	Define and describe the Technical and Non-technical issues in Deregulated Power Industry
		CO3	Identify and give examples of existing electricity markets
		CO4	Classify different market mechanisms and to summarize the role of varlous entities in the market
21EE5114	Modern Control Theory	CO1	this course introduces Z Transforms and analysis of discrete data systems using Z Transforms
		CO2	in case of multiple input and multiple output systems, this course helps to deal with digital control systems
		CO3	the Non – Linear systems which will come across in most of practical systems, this course deals about Non – Linearity's
		CO4	since stability is most important for everyu systems to give it satisfactory performance, this topic also helps
21EE51S3		CO1	Understand basic concepts of smart grid in power network

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	Floating Solar and Off -Shore wind Technologies	CO2	Analyzing swing equation and equal area criterion
		CO3	Understand synchronous machine modeling
		CO4	Understand excitation systems and power system stabilizers
21EE51S2	Distribution System Planning & Automation	CO1	Apply numerical or iterative techniques in power systems for optimal power flow solutions
		CO2	Optimize the parameters in control systems for desired steady state or transient response
		CO3	Optimize the cost function in deciding economic factors of power systems
		CO4	Design of electrical systems optimally using suitable techniques like univariate method, steepest descent method etc
21EE5201	Real Time Control of Power System	CO1	Learn various activities of operator
		CO2	Understand about Supervisory control and data acquisition
		CO3	Real time software and state estimation
		CO4	Understand Security management
21EE5202	AI Techniques in Power Systems	CO1	Differentiate between Algorithmic based methods and knowledge based methods
		CO2	Use the soft computing techniques for power system problems
		CO3	Use appropriate AI framework for solving power system problems
		CO4	Apply GA to power system optimization problems
21EE5214	Smart Grids Technologies	CO1	Understand basic concepts of smart grid in power network.
		CO2	Analyzing swing equation and equal area criterion
		CO3	Understand synchronous machine modeling
		CO4	Understand excitation systems and power system stabilizers
21EE5203	Digital Protection of Power System	CO1	Understand salient features of protective relaying electromagnetic relays and distance protection schemes
		CO2	Apply the Over current protective schemes and differential protection of alternator and transformer
		CO3	Analyse wire pilot and carrier current protection for transmission lines and neutral grounding
		CO4	Understand the principle of operation of static relays and realization of various static relays and Understand current practices in microprocessor based numerical relays and the over voltage protection

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21EE52C1	FACTS Devices	CO1	Learners will be able to refresh on basics of power transmission networks and need for FACTS controllers
		CO2	Learners will be able to explain about static var compensator in detail and series compensation devices
		CO3	Learners will understand the significance about different voltage source converter based facts controllers
		CO4	Learners will be able to analyze on FACTS controller interaction and control coordination
21EE52D2	Power Quality	CO1	To understand the basic concepts of EHV AC and HVDC transmission
		CO2	To identify the electrical requirements for HVDC lines and identify the components used in AC to DC conversion
		CO3	To understand the operation of HVDC conversion technology
		CO4	To understand the fundamental requirements of HVDC transmission line design and To identify factors affecting AC-DC transmission
21EE51S3	Floating Solar and Off -Shore wind Technologies	CO1	understand the selection of floating solar power plant
		CO2	understand different layouts and selection of converters
		CO3	understand the operation of off shore wind power plants
		CO4	Analyze the operation of floating solar and off shore power system
21EE51B2	Digital Signal Processors and Applications	CO1	Understand components of digital signal processing
		CO2	Understand Architecture of TMS320C5X, TMS320C6X and ADSP-21XXprocessors
		CO3	Understand programming of functional units of TMS320C5X, TMS320C6X and ADSP-21XX
		CO4	Apply Signal conditioning and PWM applications with TMS320C5X, TMS320C6X and ADSP-21XX processors
21EE52C3	Adaptive Control Systems	CO1	Understand the elements of probability and Stochastic processes
		CO2	Understand parametric and non-parametric system models
		CO3	Understand adaptive control techniques to linear systems
		CO4	Apply adaptive control process and assess stability of linear systems
21EE52D2	Power Quality	CO1	Outline basic power quality issues

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		CO2	Demonstrate conventional loop control for voltage and current balance
		CO3	Demonstrate DSTATCOM for power quality restoration
		CO4	Apply combined compensation techniques for power quality restoration
21EE52D3	Energy Management Systems	CO1	Outline data acquisition components of power system
		CO2	Demonstrate energy data monitoring, reporting and communication
		CO3	Apply supervisory control for energy management
		CO4	Illustrate Energy management centre functions
21EE51S1	Reactive Power Compensation & Management	CO1	Distinguish the importance of load compensation in symmetrical as well as unsymmetrical loads
		CO2	Examine various compensation methods in transmission lines
		CO3	Construct model for reactive power coordination
		CO4	Distinguish demand side reactive power management & user side reactive power management
21EE52C2	ENERGY CONSERVATION & AUDIT	CO1	Understand the concept of Energy Audit and Energy Management
		CO2	Analyze the various characteristics of energy efficient motors
		CO3	Analyze the different energy instruments and importance of power factor improvement
		CO4	Analyze the economic aspects of electrical energy

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