Course Outcomes : M. Tech Ist sem (Integrated Power System)

MIP21101: Advanced Power System Analysis

CO1	Calculate voltage phasors at all buses, given the data using various methods of load flow.
CO2	Calculate fault currents in each phase.
CO3	Rank various contingencies according to their severity.
CO4	Estimate the bus voltage phasors given various quantities viz. power flow, voltages, taps, CB status etc.
CO5	Estimate closeness to voltage collapse and calculate PV curves using continuation power flow.

MIP21102: High Power Converters

CO1	Study the characteristics of power semiconductor devices such as SCRs, GTOs, IGBTs.
CO2	Analyze the operation of isolated and non-isolated converters.
CO3	Examine the resonant switch converter operation.
CO4	Apply the modulation techniques to pulse width modulated inverters for reducing the harmonic.
CO5	Distinguish the operation of AC-to-AC single phase and three phase Cycloconverters.

MIP21103: Power System Modeling

CO1	Apply the Park's transformation and per unit system for simulation and stability analysis of power system.
CO2	Analyze the operational behavior and problems of two machine and multi-machine power system for stability study.
CO3	Design the equivalent circuit, its parameters and simulation model for various components including loads in power system for static and dynamic stability studies.
CO4	Develop analytical approach and program tools for testing transition processes in power system.
CO5	Evaluate the effective inductance under open and short circuit condition, for three-phase transformers.

MIP21104: Electrical Power System Lab- I

CO1	Analyze the various power quality events like short and long duration variations, Waveform distortion , Unbalance, Transients, Power factor etc.
CO2	Apply the knowledge about the harmonics, harmonic introducing devices and effect of harmonics on system equipment and Non Linear loads
CO3	Apply suitable mitigation strategies for some of the power quality issues.
CO4	Judge the mitigation of power quality issues like waveform distortion, unbalance, and poor power factor
CO5	Select appropriate of Power Quality Improvement Methods

MIP21105: Programme Elective I: Renewable Energy Technologies

CO1	Knowledge about Renewable energy
CO2	Understanding the Working of distributed generation system in autonomous /Grid connected modes.
CO3	Know the impact of distributed generation on power system.
CO4	Analyze the role of power electronics devices in RES.
CO5	Discuss Power Quality disturbances.

MIP21106:Programme Elective I: Micro and Smart Grid

CO1	Interpret Micro grid concepts, modes of operation and control, Protection and islanding issues, etc
CO2	Analyze and design Power quality issues in micro grids like modeling and stability analysis, regulatory standards and economics and basic smart grid concepts Load and generation
CO3	Design Power flow analysis, economic dispatch and unit commitment problems and various verticals of smart grid
CO4	Implement Smart grid communication and measurement technologies like Phasor Measurement Unit (PMU), Smart meters, Wide Area Monitoring system (WAMS) etc
CO5	Distinguish Renewable Energy Sources in smart grid and associated issues and their applications in Electric vehicles etc.

MIP21108: Programme Elective II: Restructured Power Systems

CO1	Describe the various types of regulation in power system.
CO2	Identify the need of regulation & deregulation .
CO3	Define and describe the technical and Non-technical issues in deregulated power industries.
CO4	Identify and examples of existing electricity market.
CO5	Classify different Market mechanisms and summarize the role various entities in the market.

MIP21109: Programme Elective II Electrical Power Distribution System

CO1	Analyze different distribution network topologies and their advantages.
CO2	Analyze the benefit of DA in terms of reliability ,efficiency and operational flexibility.
CO3	Illustrate the block diagram of SCADA System including RTUs, PLC ,HMIs, communication networks.
CO4	Discuss the strategies for improving energy efficiency and reducing losses in Electrical Distribution System.
CO5	Apply Energy Management Techniques to optimize distribution system performance and efficiency.