1st Year M.E. Electrical Power System

Semester -I : Course Outcomes as per CBCS Scheme

1EPS01 Generation Scheduling & Load Dispatch

Course Outcomes:

By the end of this course, students will be able to

CO 1: Understand the fundamentals of various power generation systems and the concepts of energy management and conservation.

CO 2: Develop skills for coordinating and optimizing the operation of different types of power stations.

CO 3: Analyze and apply load forecasting methodologies for effective energy management.

CO 4: Evaluate generation system costs and conduct production analysis for different power generation units.

CO 5: Conduct reliability analysis for generation systems, including isolated and interconnected systems.

CO 6: Understand and apply principles of load dispatch and system communication for centralized control of power systems.

1EPS02- Power System Modeling and Control

Course Outcomes:

By the end of this course, students will be able to

CO 1: Understand the concept of Stability and modelling of Power Systems.

CO 2: Understand Mathematical Models of speed Governing Systems , Steady state and Transient State response of interconnected power systems.

CO 3: Analyze the effect of power System Stabilizers, excitation control and turbine dynamics, multi machine system with constant impedance loads.

CO 4: Develop skills in converting machine coordinates to a system reference frame to simplify the analysis of multi-machine interactions.

CO 5: Understand tie-line bias control in interconnected power systems, practical aspects of implementing AGC.

CO 6 : Explain SCADA and Self-excited electro-mechanical oscillations in power system.

1EPS03 Digital Signal Processing & Applications

Course Outcomes:

After successful completion of this course the students will be able to

CO 1: Analyze and design discrete-time signal processing systems using frequency domain analysis, linearity, convolution, time invariance, stability criteria, and solutions to linear difference equations to address practical DSP problems

CO 2: Utilize the FT, DFT, and FFT, along with their properties, to analyze and process discrete-time signals using techniques like circular and linear convolution from DFT.

CO 3: Understand and apply sampling principles, including the sampling theorem, frequency spectrum, aliasing effects, anti-aliasing filters, low-pass filter reconstruction, quantization, and encoding techniques, to effectively sample and reconstruct discrete-time signals.

CO 4: Design and implement various FIR and IIR filters using structures and methods like Direct Forms I and II, Cascade, Parallel, Frequency Sampling, and windowing techniques such as Rectangular, Triangular, and Blackman windows.

CO 5: Design and analyze analog filters, convert them into IIR digital filters using various transformation methods, and determine filter order based on specified criteria.

CO 6: Perform multi-rate digital signal processing, apply discrete wavelet and Stockwell transforms, and understand DSP applications in power systems using the TMS320 family of processors.

1EPS04 High Voltage Transmission System

Course Outcomes:

By the end of this course, students will be able to

CO 1: Compare HVDC and HVAC transmission systems.

CO 2: Evaluate various converter configurations and their characteristics.

CO 3: Design EHV AC transmission lines considering standard voltages, thermal ratings, and insulator configurations.

CO 4: Explain the corona phenomenon and strategies to reduce it.

CO 5: Explain the lightning mechanism, its effects and protection strategies.

1EPS05 : Research Methodology and IPR

Course Outcomes :

After successfully completing the course, students will be able to:

CO 1 : Identify research problems and formulate research objectives.

CO 2: Conduct literature reviews and ensure research ethics.

CO 3 : Develop technical reports and research proposals.

CO 4 : Understand intellectual property rights and patenting processes.