

Department of Electrical Engineering

B.E. 7th Sem

Course: Control System-II

Course Code: (7EE01)

At the end of Control System-II course the student will be able:

- CO 1:** To develop the classical design of various compensation networks.
- CO 2:** To analyze state space variables, canonical forms and calculation of STM.
- CO 3:** To verify system controllability and observe ability by various tests.
- CO 4:** To represent Z transform and analysis of Z transform.
- CO 5:** To identify the nonlinear system and various characteristics of nonlinear system.
- CO 6:** To analyze singular points, typical nonlinearities and their nature.

Course: Power System Operation and Control

Course Code: (7EE02)

At the end of Power System Operation and Control course the student will be able:

- CO 1:** To explain concepts of optimum scheduling, Unit Commitment problem and Load Scheduling problem to evaluate Optimum scheduling of generation without transmission loss.
- CO 2:** To examine concepts of Transmission loss and calculation of loss co-efficient and Incremental transmission loss and to solve problems on Optimum scheduling of generation with transmission loss.
- CO 3:** To interpret the basic Generator Control Loops and transfer function modeling of Automatic Voltage Regulator (AVR) and its different components.
- CO 4:** To evaluate the Automatic generation control and transfer function modeling of Automatic Load Frequency Control (ALFC) and its different components.
- CO 5:** To explain the concepts of Control Area, Pool operation; Tie-line Modeling, Tie-line bias control, and to discuss Static and Dynamic response of ALFC loop.
- CO 6:** To describe concepts of Steady-State Instabilities, Natural torsional oscillatory modes and to analyze the Effect of damper winding; changing excitation and Power System Stabilizer.

Course: Electrical Power-II

Course Code: (7EE03)

At the end of Electrical Power-II and Control course the student will be able:

- CO 1:** To transform the unsymmetrical components into symmetrical components and to form sequence networks of power system elements.
- CO 2:** To analyze symmetrical faults on transmission line and to perform the short circuit fault calculations.
- CO 3:** To compare and analyze different types of unsymmetrical faults using symmetrical components.
- CO 4:** To recognize and explain causes, effects and protection techniques for overvoltage's in power system.
- CO 5:** To describe different elements and its working in HVDC Transmission system.
- CO 6:** To explain different types of elements involved in Flexible AC Transmission Systems (FACTS)

Course: Switch Gear and Protection

Course Code: (7EE04)

At the end of Switch Gear and Protection and Control course the student will be able:

- CO 1:** To Identify the basic components of a protection system and the main function of each.
- CO 2:** To Recognize the main types of CB's and the preferred application for each type and analyze the difficulties in circuit breakers while interrupting fault current.
- CO 3:** To Classify the main types of the Electromagnetic and static relays, with the merits and demerits of each type.
- CO 4:** To Design the over current and the distance protection schemes for transmission lines.
- CO 5:** To Develop the transformer and busbar protection schemes
- CO 6:** To Develop the generator and motor protection schemes

Course: CMPSA

Course Code: (7EE05)

At the end of CMPSA course the student will be able:

- CO 1:** To represent power system components into mathematical model.
- CO 2:** To develop the oriented graph from single line diagram and different matrices also they will be able to form Singular and Nonsingular transformation of network matrices.
- CO 3:** To formulate bus impedances and admittances matrices by algorithm.
- CO 4:** To discern short circuit study by three phase symmetrical components and calculate balanced three phase networks using bus impedance matrix.
- CO 5:** To examine load flow problem using different techniques.
- CO 6:** To develop mathematical model for multimachine system stability and solve for state equation by modified Euler and Runge Kutta fourth order.

B.E. 8th Sem

Course: Power System Stability

Course Code: (8EE01)

At the end of Power System Stability course the student will be able:

- CO 1:** To describe the basic concept of stability and various time constants.
- CO 2:** To explain the steady state stability of two machine system, multimachine system, and transmission lines.
- CO 3:** To illustrate impact of various effects on steady state stability.
- CO 4:** To analyze transient state stability using equal area criterion, swing equation and point by point Solution.
- CO 5:** To describe impact of different actions on transient stability.
- CO 6:** To compare various types of the excitation system

Course: High Voltage Engineering

Course Code: (8EE02)

At the end of High Voltage Engineering course the student will be able:

- CO 1:** To describe the fundamentals of breakdown in gases and theories related to it.
- CO 2:** To describe the fundamental of breakdown in solid, liquid and composite dielectrics.
- CO 3:** To explain lightning and switching overvoltage phenomenon and protection against them.
- CO 4:** To compare high voltage and current generation techniques.
- CO 5:** To analyze different methods of high voltage, current and capacitance measurement..
- CO 6:** To explain the design and test of EHV line components.

Course: Digital Signal Processing

Course Code: (8EE03)

At the end of Digital Signal Processing course the student will be able:

- CO 1:** To identify different Continuous and discrete time signals and systems.
- CO 2:** To derive Discrete Fourier Transform, Fast Fourier Transform (FFT) algorithms for faster realization of signals and systems.
- CO 3:** To describe concept of time – frequency analysis.
- CO 4:** To design FIR and IIR filters by hand to meet specific magnitude and phase requirements.
- CO 5:** To design and analyze different types of analog and digital filters.
- CO 6:** To describe different types of DSP processor and its applications

Course: Power Quality (PE-II)

Course Code: (8EE04)

At the end of Power Quality course the student will be able:

- CO 1:** To identify the Power quality problems need of it in relation to present power system.
- CO 2:** To compare different power quality problems with analysis of causes, effects and solutions.
- CO 3:** To describe different power quality standards & predict the purpose & process of designing it
- CO 4:** To analyze the different power quality solutions along with the illustration of different equipment.
- CO 5:** To explain wiring and grounding principles along with installation and the problems related to it.
- CO 6:** To illustrate the power quality measurement tools and interpret all the things related to power quality surveys.