Course Code :   **EE 746**

Course Title :   **Computer control in power systems**

Credit Hours :   **3**

Course Description
Control problems in electrical power system, Control system Hierarchy of power system, Computer Control System Fundamentals, Digital Model of power system loops (1,2), Digital model and analysis of load frequency control loop, Digital model and analysis of excitation control system and voltage control, Digital control of active power and power factor (1,2), Digital control of distribution system, SCADA system application in power system (1,2), Distributed generation (DG) Control (1,2), Advanced topics in Digital Control and Protection Systems.

Course Objectives

Understand the excitation systems and their modeling.
Understand the main concepts of stability, steady state, transient, dynamic.
Understand the operation of VAR systems.
Understand the DC link.

Course Topics

Week no. 1:   Control problems in electrical power system

Week no. 2:   Control system Hierarchy of power system.

Week no. 3:   Computer Control System Fundamentals.

Week no. 4:   Digital Model of power system loops (1).
Week no. 5:   Digital Model of power system loops (2).

Week no. 6:   Digital model and analysis of load frequency control loop.

Week no. 7:   Digital model and analysis of excitation control system and voltage control. / 7th week evaluation.

Week no. 8:   Digital control of active power and power factor (1).

Week no. 9:   Digital control of active power and power factor (2).

Week no. 10:   Digital control of distribution system.

Week no. 11:   SCADA system application in power system (1).

Week no. 12:   SCADA system application in power system (2). / 12th week evaluation

Week no. 13:   Distributed generation (DG) Control (1).

Week no. 14:   Distributed generation (DG) Control (2).

Week no. 15:   Advanced topics in Digital Control and Protection Systems.

Week no. 16:   Final Examination

References

- P.M Anderson, and A.A. Fouad " Power System Control and Stability", Iowa State University Press, U.S.A, 1977

- C.L. Phillips and H. T. Nagle, " Digital Control System Aalysis and Design", Person, 1998

- P. Kunder, "Power system Stability and Control", McGraw Hill.