Advanced Topics in Power Systems

ECE 7843

Credit Hours:
3.00 - 3.00

Course Levels:
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
Advanced topics of power system protection, beginning with equipment protection and evolving into system wide protection design and operation to accommodate smart-grid technologies.

Prerequisites and Co-requisites:
Prereq: 5042 or 740.

Course Goals / Objectives:
- Introduce electric power system protection concepts
- Elaborate on specific protection criteria for individual components, i.e., for generators, for transformer, for lines, etc.
- Present system-wide protection principles as applied to central station systems
- Present protective schemes unique for smart-grid topologies from a system perspective
- Present protective schemes unique for smart-grid topologies from a grid component perspective

Course Topics:
- Review energy supply system structure and operation: current and smart-grid implementation and appropriate protection strategies
- Protection concepts unique to various system components: generators, transformers, transmission lines, etc.
- System-wide protection philosophies/principles for various modes of system operation, e.g., with and without islanding
- Adaptive relaying applied to modern grid operation
- Presentation and review of multi-week projects.
Designation:
Elective