PSET 275 Protective Relays and Controls

Course Description: A course on protective relays and their application to electric transmission and distribution systems. Topics include: power regulation and communication requirements; electro-mechanical relays and breakers, microprocessor relays and synchrophasors; transformers; transmission and distribution lines; capacitor banks; and regulator protection.

Prerequisites(s): PSET 225 **Corequisite(s):** No corequisite

Lecture Hours: 2	Lab Hours: 3	Credit Hours: 3
Lab Fee: 105	Supplemental Fee: 0	Purpose:
☐ Transfer Assurance Guide Course (TAG)	☐ Transfer Module Course (TM)	
Course Format: Lec/Lab	Grading: A/B/C/D/F/I	
Delivery Method: □ Web	□ Hybrid	x Classroom
Semesters Offered: □ Fall	x Spring	□ Summer

Course Primary Text:

Title: Power System Relaying	Edition: 3rd
Author(s): Stanley H. Horowitz, Arun G Phadke	
Publisher: Wiley	

Supplemental Materials:

Course Outcomes:

1	ABET(a) - an ability to apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined engineering technology activities; *the application of circuit analysis and design, computer programming, associated software, analog and digital electronics, and microcomputers, and engineering standards to the building, testing, operation, and maintenance of electrical systems.*
2	ABET(b) - an ability to apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge; *the applications of physics or chemistry to electrical/electronic(s) circuits in a rigorous mathematical environment at or above the level of algebra and trigonometry.*
3	ABET(c) - an ability to conduct standard tests and measurements, and to conduct, analyze, and interpret experiments.
4	ABET(d) - an ability to function effectively as a member of a technical team..
5	ABET(g) - an understanding of the need for and an ability to engage in self-directed continuing professional development.

Course Topics:

Week 1	Introduction to protective relaying
Week 2	Relay operating principles
Week 3	Current and voltage transformers
Week 4	Review of per unit and overview of symmetrical components
Week 5	Distribution line protection
Week 6	Distribution line protection con'td
Week 7	Non-pilot overcurrent protection of transmission lines
Week 8	Nonpilot distance protection of transmission lines
Week 9	Pilot protection of transmission lines
Week 10	Rotation machinery protection
Week 11	Transformer protection
Week 12	Bus, reactor and capacitor protection
Week 13	Relaying for system performance
Week 14	Switching schemes and procedures
Week 15	Monitoring performance of power systems

Methods of Evaluation/Assessment

Exam 1 (20%)
Exam 2 (20%)
Exam 3 (20%)
Homework (15%)
Lab Assignments (15%)
Class Participation (10%)

Course Keeper: Russ Campbell Date Completed: 4/19/2019