PSET 140 Power Systems Foundations

Course Description: An introduction to electrical power systems from generation to utilization. Topics include: purpose, composition, operating characteristics, and design considerations of power system components; power quality and safety; fundamentals of AC waveforms including single and three phase connections, voltage and current calculations; per-unit representation; and power factor.

Prerequisites(s): EET 131 **Corequisite(s):** No corequisite

Lecture Hours: 2	Lab Hours: 2	Credit Hours: 3
Lab Fee: 70	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: Electrical Power and Controls (ISPN: 0-13-113045-5)	Edition: 2nd
Author(s): Timothy L. Skvarenina, William E. DeWitt	
Publisher: Prentice Hall	

Supplemental Materials:

Introduction to Powers Systems Study Guide by Dr. Morris

Course Outcomes:

1	ABET (b) - 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 (c) - an ability to conduct standard tests and measurements, and to conduct, analyze, and interpret experiments.
3	ABET (d) - an ability to function effectively as a member of a technical team.
4	ABET (e) - an ability to identify, analyze, and solve narrowly defined engineering technology problems; *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.*
5	ABET (f) - an ability to apply written, oral, and graphical communication in both technical and non- technical environments; and an ability to identify and use appropriate technical literature.

6	ABET (g) - an understanding of the need for and an ability to engage in self-directed continuing professional development.
7	ABET (h) - an understanding of and a commitment to address professional and ethical responsibilities, including a respect for diversity.
8	ABET (i) - a commitment to quality, timeliness, and continuous improvement.

Course Topics:

Week 1	Course Introduction and Overview of Power Systems
Week 2	Generation
Week 3	Single and Three Phase Calculations
Week 4	Per Unit Calculations
Week 5	T&D Line Equipment
Week 6	Transformers
Week 7	System Protection
Week 8	Power Quality
Week 9	Building Electrical Systems
Week 10	Testing and Maintenance
Week 11	Smart Grid Overview
Week 12	Metering
Week 13	Control Room Operations
Week 14	Distribution Automation
Week 15	Distribution Automation cont'd

Methods of Evaluation/Assessment

Exam 1 (20%)
Exam 2 (20%)
Exam 3 (20%)
Homework (10%)
Lab Assignments (20%)
Attendance/Participation (10%)

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