

1. *Course number and name*

**ENGR 458: Electric Power Systems**

2. *Credits and contact hours*

3 credit hours

3. *Instructor's or course coordinator's name*

Instructor: Jin Ye, Ph.D.

Course coordinator: Jin Ye

4. *Text book, title, author, and year*

Mohan, *A First Course in Electric Power Systems*, Wiley, 2012.

a. *other supplemental materials*

J. D. Glover, T. J. Overbye, and M. S. Sarma, *Power system analysis and design 6<sup>th</sup> Edition*, Cengage Learning, 2017.

5. *Specific course information*

a. *brief description of the content of the course (catalog description)*

Introduction to electric power industry. Electric circuit and electric power. Transmission lines. Power flow. Transformers. HVDC. Power quality. Synchronous generators. Stability in Power System. Transmission line faults.

b. *prerequisites or co-requisites*

Grades of C or better in ENGR 306

c. *indicate whether a required, elective, or selected elective course in the program*

Elective for Computer and electrical Engineering.

6. *Specific goals for the course*

a. *Specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.*

1. The students will demonstrate their understanding about electric power industry.
2. The students will demonstrate their understanding about electric circuit and electric power.
3. The students will demonstrate their understanding about transmission lines.
4. The students will demonstrate their understanding about power flow.

5. The students will demonstrate their ability to analyze power transformers. The students will demonstrate their understanding about High Voltage DC (HVDC) transmission systems.
6. The students will demonstrate their understanding about distribution systems, loads and power quality.
7. The students will demonstrate their ability to analyze synchronous generators.
8. The students will demonstrate their ability to analyze voltage regulation and stability in power systems.
9. The students will demonstrate their ability to analyze transmission line faults, relaying, and circuit breakers.

10. *Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*

Course addresses ABET Student Outcome(s): a, b, c, k

7. *Brief list of topics to be covered*

1. Introduction to electric power industry.
2. Fundamentals of electric circuit and electric power.
3. AC transmission lines.
4. Power flow.
5. Power transformers.
6. High Voltage DC (HVDC) transmission systems.
7. Distribution systems, loads and power quality.
8. Synchronous generators.
9. Voltage regulation and stability.
10. Transmission line faults, relaying, and circuit breakers.