

1. *Course number and name*

**ENGR 448: 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.*

- The students will demonstrate their understanding about electric power industry.
- The students will demonstrate their understanding about electric circuit and electric power.
- The students will demonstrate their understanding about transmission lines.
- The students will demonstrate their understanding about power flow.
- The students will demonstrate their ability to analyze power transformers. The students will demonstrate their understanding about High Voltage DC (HVDC) transmission systems.
- The students will demonstrate their understanding about distribution systems, loads and power quality.
- The students will demonstrate their ability to analyze synchronous generators.

- The students will demonstrate their ability to analyze voltage regulation and stability in power systems.
- The students will demonstrate their ability to analyze transmission line faults, relaying, and circuit breakers.

*b. 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*

- Introduction to electric power industry.
- Fundamentals of electric circuit and electric power.
- AC transmission lines.
- Power flow.
- Power transformers.
- High Voltage DC (HVDC) transmission systems.
- Distribution systems, loads and power quality.
- Synchronous generators.
- Voltage regulation and stability.
- Transmission line faults, relaying, and circuit breakers.