

1. *Course number and name*

**ENGR 458: Renewable 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.

G. M. Masters, *Renewable and Efficient Power Systems*, Wiley, 2013.

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. Transformers. Synchronous generators. Photovoltaic systems. Wind power systems. Smart grid.

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 electric power systems.

4. The students will demonstrate their understanding about power electronics for renewable electric power systems.
5. The students will demonstrate their ability to analyze photovoltaic systems.
6. The students will demonstrate their ability to analyze wind power systems.
7. The students will demonstrate their understanding about smart grid.

*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*

1. Introduction to electric power industry.
2. Fundamentals of electric circuit and electric power.
3. Fundamentals of electric power systems.
4. Fundamentals of power electronics for renewable electric power systems.
5. Photovoltaic systems.
6. Wind power systems.
7. Smart grids.