1. *Course number and name*
   ENGR 455: Power Electronics

2. *Credits and contact hours*
   4 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*
   N.Mohan, *A First Course in Power Electronics*, Wiley, 2012.

   a. other supplemental materials

   Robert W. Erickson and Dragan Maksimovic, *Fundamentals of Power Electronics 2nd Edition*, Springer Science+Business Media, 2001.

5. *Specific course information*
   a. brief description of the content of the course (catalog description)
   Design of switching power-roles. Switch-mode DC-DC converters. Feedback controller design in switch-mode DC-DC converters. Rectification of utility input using diode rectifiers. Switch-mode DC power supplies. Power electronics applications.

   b. prerequisites or co-requisites
   Grades of C or better in Engr 353 and ENGR 301 and 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 power electronic devices.
   - The students will demonstrate their ability to analyze and design switch-mode DC-DC converters.
   - The students will demonstrate their ability to design feedback controller for switch-mode DC-DC converters.

   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 power electronics.
- Design of switching power-roles.
- Analysis and design of switch-mode DC-DC converters.
- Feedback controller design in switch-mode DC-DC converters.
- Rectification of utility input using diode rectifiers.
- Switch-mode DC power supplies.
- Power electronics applications.