1. **Course number and name**
   EE 493: Protection of Power Systems I

2. **Credits and contact hours**
   3.0 (three lecture hours per week)

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

4. **Text book, title, author, and year**
   S. Horowitz and A. G. Phadke, 2014. *Power System Relaying* (4th ed.). Wiley. <http://www.systems.wsu.edu/scripts/wsuall.pl?url=http://site.ebrary.com/lib/wsu/detail.action?docID=10784789>.
   J. D. Glover, M. S. Saema, T. J. Overbye. 212. *Power System Analysis and Design* (5th ed.).
   Juan Gers. 2011. *Protection of Electricity Distribution Networks* (3rd ed.).
   Other supplemental materials
   Instructor notes will be provided.

5. **Specific course information**
   a. *Catalog description:* Analysis and equipment fundamentals of power system protection; symmetrical components, fault calculations; fuses; and relays including burden calculations.
   b. *Prerequisites or co-requisites:* EE 361 with a C or better; Certified major in Electrical Engineering, Computer Science, or Computer Engineering.

6. **Specific goals for the course**
   At the end of this course, students must be able to understand the principal and functionalities of the following topics:
   - Symmetrical fault current calculations (1,6)
   - Symmetrical components (1,6)
   - Unsymmetrical fault calculations (1,6)
   - Introduction to protective relaying (1,6)
   - Relay operating principles (1,6)
   - Current and voltage transformers (1,6)
   - Over-current line protection (1,6)
   - Distance protection of lines (1,6)
   - Rotating machine protection (1,6)
   - Transformer protection (1,6)
   - Bus protection (1,6)
   - Distribution feeder protection (1,6)

1. **Brief list of topics to be covered**
   - Overcurrent protection,
   - Fuse-Recloser-sectionalizer,

- Symmetrical faults,
- Symmetrical components, and sequence networks,
- Unsymmetrical faults,
- Distance protection, line protection and related issues,
- Differential protection for transformer and rotating machine,
- Bus bar protection,
- CT and VT selection and sizing.