1. **Course number and name**
   EE 361: Electrical Power Systems

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

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

4. **Text book, title, author, and year**
   Stephen J. Chapman. 2001. *Electric Machinery and Power System Fundamentals*.
   Other supplemental materials
   Instructor's notes/slides will be provided for some topics.
   Any Electrical Circuits book such as the textbook for EE 261.
   Any Electromagnetic book such as the textbook for EE 331.

5. **Specific course information**
   a. Catalog description: Power system components including transformers, electromechanical machines, Transmission lines; and an introduction to power system steady state operation.
   b. Prerequisites or co-requisite: EE321: Electrical Circuits II (With a Grade of C or Better), EE331: Electromagnetic Fields and Waves (With a Grade of C or Better)

6. **Specific goals for the course**
   At the conclusion of this course, the students will be able to demonstrate their basic understanding of the fundamental characteristics, modeling, and behavior of power system components such as transformers, rotating machines, and transmission lines. They should also be able to analyze the operation of power systems in steady state. At the end of the course, the students must be able to:
   - Analyze single phase and three phase circuits (1)
   - Analyze loads in terms of complex power and design methods for economical operation of power systems and power factor correction (1, 2)
   - Apply Ampere's law to analyze linear and nonlinear magnetic circuits (1)
   - Apply Faraday's law to model and analyze single phase and three phase transformers (1, 2, 6)
   - Demonstrate their fundamental understanding of electromagnetic principles as they apply to energy conversion and rotating machines (1)
   - To model and analyze induction machines (1, 6)
   - To model and analyze synchronous machines (1, 2, 6)
   - To model and analyze DC machines (1, 6)
   - To model and analyze short to medium length transmission lines (1)
   - Model and analyze a small interconnected power system using the per unit system (1, 2)
   - Analyze the operation of power systems in steady state (1)

7. **Brief list of topics to be covered**
    - Basic Review of circuits: Sinusoidal Steady State and phasors, AC power, and Three Phase Circuits
    - Review of Electromagnetic Basics: Magnetic Field, Magnetic Materials, and Faraday's Law
    - Transformers
    - Basic principles of Electromechanical Energy Conversion
    - Induction Machines
    - Synchronous Machines
    - DC Machines
    - Transmission Lines
    - Power System Models and the per unit system
    - Introduction to Power System steady state operation