Course Syllabus for ELEG 5513 Power Systems Analysis

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Text Book: Power Systems Analysis and Design

Welcome to the course in analyzing power and energy systems. This class will introduce design and analysis concepts for electric power generation and transmission. Control systems design in multidisciplinary in that it combines the dynamics of mechanical, thermal, biological, and aeronautical systems with digital and analog electronics to meet the desired performance objectives. There will be at least one field trip to a local substation and/or electric power generating facility. Coursework will consist of the following:

1. There will be homework assignments given each week usually on Mondays and due the following Monday. These will normally be taken from the end-of-chapter questions in the textbook. Homework will not be assigned the week prior to a test. There will also be recommended problems that the student should work through ensure proper understanding of the topics.
2. There will be two in-class tests. Practice problems similar to the tests will be provided.
3. A PSCAD-based design project is required to be completed.
4. A comprehensive final exam will be given.
5. Students taking the course for graduate credit will be assigned additional problems and assigned more in-depth analysis for the design project.

Notify me at least one week in advance to make alternative plans in the event of schedule conflicts with regard to tests and assignment due dates. 100% class attendance is strongly encouraged in order to be properly prepared for the assignments and tests.

Course Grading

- Homework Assignments Combined: 20% of Total
- Two Written In-Class Tests at 20% Each: 40% of Total
- Design Project: 20% of Total
- Final Exam: 20% of Total

Grade Assignment Guidelines

This class is targeted towards senior level undergraduates and first year graduate students. Accordingly, high quality work is expected. Grades will be based upon an evaluation of each individual student’s performance and graduate/undergraduate standing. For guidance purposes, the following are approximate grade assignments for the overall course average, and may be adjusted up or down:

- 88% to 100% → A
- 75% to 88% → B
- 60% to 74% → C
- Less than 60% → D or F

The final course grade will account for trends throughout the semester and classroom participation.
**Class Topic Schedule (subject to change)**

8 week schedule

<table>
<thead>
<tr>
<th>Week No.</th>
<th>Chapter</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Chap 1</td>
<td>Power System Architecture-Operation</td>
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<td>2</td>
<td>Chap 2</td>
<td>Transmission Line Analysis</td>
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<td>3</td>
<td>Chap 3, 4</td>
<td>Power System Component Models</td>
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<td>4</td>
<td>Chap 5</td>
<td>Transmission Line Models</td>
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<td>6</td>
<td>Chap 6</td>
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<td>7</td>
<td>Chap 7</td>
<td>Optimal Operation - Economic Dispatch</td>
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<td>8</td>
<td>Final Project</td>
<td>Design Project</td>
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Students are required to be aware of and comply with the University of Arkansas policies for academic integrity as described at [http://www.uark.edu/campus-resources/rlee/honesty.html](http://www.uark.edu/campus-resources/rlee/honesty.html).

Behavior in class is required to conform to University standards of conduct. In particular, the University faculty, administration and staff are committed to providing an equal educational opportunity to all students. The University of Arkansas does not condone discriminatory treatment of students or staff on the basis of age, disability, ethnic origin, marital status, race, religious commitment, sex, or sexual orientation in any of the activities conducted upon this campus.