Course Syllabus

ELCT 551 – Power System Design and Analysis

<table>
<thead>
<tr>
<th>Course Coordinator:</th>
<th>Dr. Andrea Benigni</th>
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<tbody>
<tr>
<td>Catalog Description:</td>
<td>Electric power systems including transmission and distribution line design, power flow analysis and short-circuit</td>
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<tr>
<td>Credit Hours</td>
<td>3</td>
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<td>Prerequisite(s) by course</td>
<td>ELCT 331</td>
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<tr>
<td>Prerequisite by topics</td>
<td>Control Systems</td>
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| Other Materials            | Class notes posted on Blackboard
                                    Power World (http://www.powerworld.com/gloversarmaoverbye)
                                    Matlab or equivalent

Course Outcomes:
Students who successfully complete the course will be able to:

- Use sinusoidal steady-state analysis for simple balanced three-phase and single-phase systems
- Calculate resistance, inductance and capacitance for three-phase and single-phase lines
- Construct and use models for transformers and transmission and distribution line electrical performance
- Perform and interpret results of short-circuit and power-flow studies for power systems
- Understand the nomenclature and layout of generation and power delivery

Course Topics:
- Introduction to Power Systems
- Three-phase circuit review
- Transformer basics
- Transmission and distribution lines
- Generating plant overview
- Introduction to power-flow studies
- Introduction to short-circuit studies
- Introduction to system operation and control

Course Contribution to Program Outcomes:
ELCT 551 contributes to an achievement of:
- Outcome A – an ability to apply knowledge of mathematics, science and engineering
- Outcome B – an ability to design and conduct experiments, as well as to analyze and interpret data
- Outcome E – an ability to identify, formulate, and solve engineering problems
- Outcome H – the broad education necessary to understand the impact of engineering solutions
- Outcome K – an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
**General Course Policies**

**Academic Integrity**
Unless otherwise stated, assignments and examination work are expected to be the sole effort of the student submitting the work. Students are expected to follow the University of South Carolina Honor Code and they should expect that every instance of a suspected violation will be reported. Students found responsible for violations of the Code will be subject to academic penalties under the Code in addition to whatever disciplinary sanctions are applied.

**Accommodating Disabilities**
Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, contact the Office of Student Disability Services: 777-6142, TDD 777-6744, email sasds@mailbox.sc.edu, or stop by LeConte College Room 112A. All accommodations must be approved through the Office of Student Disability Services.

**Diversity**
When scheduling exams, I have attempted to avoid conflicts with major religious holidays. If, however, I have inadvertently scheduled an exam or major deadline that creates a conflict with your religious observances, please let me know as soon as possible so that we can make other arrangements.

**Deviations**
Minor deviations from the syllabus are a normal part of any adaptive teaching and learning process.