**ELCT 551 - Power System Design and Analysis**

CREDITS/CONTACT HOURS: Credits: 3, Contact Hours: 42

COORDINATOR: Dr. Charles Brice

TEXTBOOKS AND OTHER REQUIRED MATERIAL:

SUPPLEMENTAL MATERIALS:
None

CATALOG DATA:
(Prerequisites: ELCT 331). Transmission line design, load flow, and short circuit analysis of power systems

REQUIRED/ELECTIVE: Elective

TOPICS COVERED:
- Review of AC power fundamentals (9 hrs)
- Transformers (6 hrs)
- Power line modeling (6 hrs)
- Transmission and distribution (6 hrs)
- Power flow analysis (4.5 hrs)
- Short circuit analysis (4.5 hrs)
- Survey of other topics and new developments (3 hrs)
- Review and exams (3 hrs)

COURSE OUTCOMES:
No program outcomes are assessed in this course

Course learning outcomes: The student will be able to

1. Analyze power systems in steady state
2. Model transmission line electrical performance
3. Design simple transmission and distribution systems using hand calculations
4. Design power systems (generation, transmission and distribution) using computer tools, such as power flow and short-circuit studies
5. Communicate design results in written reports
Relation of course outcomes to program outcomes
H = major importance, M = moderate importance, L = minor importance, blank indicates no relation

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<thead>
<tr>
<th>Program Outcomes</th>
<th>Course Outcomes</th>
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<tr>
<td>an ability to apply knowledge of math, science and eng. (a)</td>
<td>M M M M M</td>
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<td>an ability to design a system, component, or process to meet desired needs</td>
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<td>within realistic constraints such as economic, environmental, social,</td>
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<td>political, ethical, health and safety, manufacturability, and sustainability (c)</td>
<td>H H</td>
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<tr>
<td>an ability to identify, formulate, and solve engineering problems (e)</td>
<td>H H M M</td>
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<td>an ability to communicate effectively (g)</td>
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<td>an ability to use the techniques, skills, and modern eng. tool necessary (k)</td>
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ASSESSMENT METHODS:
1. Exams
2. Homework
3. Project reports