# Course Syllabus

**ELCT 553 – Electromechanical Energy Conversion**

<table>
<thead>
<tr>
<th>Course Coordinator:</th>
<th>Dr. Charles Brice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Catalog Description:</strong></td>
<td>Analysis and design of electromechanical energy conversion systems, including electrical machines and electronic drives.</td>
</tr>
<tr>
<td><strong>Credit Hours</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Prerequisite(s) by course</strong></td>
<td>ELCT 331 and ELCT 361</td>
</tr>
<tr>
<td><strong>Prerequisite by topics</strong></td>
<td>Control Systems, Electromagnetics</td>
</tr>
<tr>
<td><strong>Other Materials</strong></td>
<td>Class notes posted on Blackboard</td>
</tr>
</tbody>
</table>

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

- Analyze transformers in the power conversion circuits.
- Understand and use the theory of electromechanical energy conversion to analyze actuators and simple electric machines.
- Analyze AC machines, including motors and generators.
- Analyze DC machines, including motors and generators.
- Design systems including transformers, generators and motors.

Students receiving graduate credit will have an extra assignment that will be a research term paper to be described later, and will be graded on a more stringent basis.

**Course Topics:**

- Magnetic Circuits and Materials
- Transformers
- Electromechanical Energy Conversion
- Machine fundamentals
- Synchronous machines
- Induction machines
- DC machines
- Other machines
- Drives and Controls
- Review and Exams

**Course Contribution to Program Outcomes:**
No program outcomes are assessed in this course.
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.

**Recommended Study Habits**
- Read the assigned material before class.
- Bring thoughtful questions to class for discussion.
- Prepare for the exams in study groups.
- Take notes during class discussions and while completing reading assignments.

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