Course Syllabus

ELCT 531 – Digital Control Systems

<table>
<thead>
<tr>
<th>Course Coordinator:</th>
<th>Herbert L. Ginn</th>
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<tbody>
<tr>
<td>Catalog Description:</td>
<td>Analysis and design of discrete-time control systems, implementation of control systems using digital electronic systems. Applications to electrical systems.</td>
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<td>Credit Hours</td>
<td>3</td>
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<td>Prerequisite(s) by course</td>
<td>ELCT 331 or equivalent</td>
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<tr>
<td>Prerequisite by topics</td>
<td>Fundamentals of Feedback Control Systems</td>
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<td>Other Materials</td>
<td>Handouts and papers provided by instructor</td>
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Course Outcomes:
Students who successfully complete the course will be able to:

- Analyze and model hybrid systems composed of continuous-time and discrete-time subsystems
- Study discrete-time closed-loop systems by using the z-transform
- Design discrete-time controllers for hybrid systems
- Understand implementation issues for computer-based control systems

Course Topics:
- Introduction to digital control systems
- Discrete time systems and the z-transform
- Sampling and Reconstruction
- State variables in discrete time systems
- Closed-loop discrete time systems
- Sampled-data transformation of analog controllers
- Digital controller design

Course Contribution to Program Outcomes:
ELCT 531 contributes to an achievement of:

- Outcome A – an ability to apply knowledge of mathematics, science and engineering
- Outcome E – an ability to identify, formulate, and solve engineering problems
- Outcome K – an ability to use the techniques, skills, and modern engineering tools necessary.
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. The University of South Carolina has clearly articulated its policies governing academic integrity and students are encouraged to carefully review the policy on the Honor Code in the Carolina Community. Any deviation from these expectations will result in academic penalties as well as disciplinary action.

**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.