Course Syllabus

ELCT 220 – Electrical Engineering for Non-Majors

Course Coordinator: Dr. Yinchao Chen

Catalog Description: Fundamentals of electrical engineering for mechanical, chemical, or other engineering disciplines, including electric circuits, measurements, data acquisition, sensors, motors, and controllers.

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<th>Credit Hours</th>
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Prerequisite(s) by course: MATH 142

Prerequisite by topics: Calculus, Electrical Charges and Forces, Current and Voltage, Ohm’s Law


Other Materials: Class slides posted on Blackboard

Course Outcomes:

Students who successfully complete this course will be able to:

- Solve DC and AC linear circuit problems using nodal, mesh and source transformation (Thevenin and Norton) techniques
- Find the impedance of and power in R, L, C network components
- Use MathCad or MatLab to solve mesh and nodal matrix equations, and to calculate voltages, currents, impedances and powers in linear circuits
- Use fundamental SPICE simulations to build the schematics and generate frequency dependencies of currents and voltages in linear circuits.

Course Topics:

- Electricity, notation and units, symbols and diagrams
- Basic equations of electric circuits
- DC circuits
- AC circuits
- Theorems, Wheatstone bridge, distribution systems
- Magnetism, magnetic circuits, actuators
- DC motors, simple electrical machines and transformers
- Impedance and power in DC and AC circuits
- Phasors, impedance, capacitors, reactance
- Intro to diodes and transistors
- Intro to data acquisition and sensors

Course Contribution to Program Outcomes:

ELCT 220 contributes to an achievement of:

- Outcome A – an ability to apply knowledge of mathematics, science and engineering
- 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. Any plagiarism on homework problems or exams, or the use of additional note cards, texts or other information on an exam will result in a course grade reduction of one full letter grade.

**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.