Course Syllabus
ELCT 102 – Electrical Science

Course Coordinator: Undergraduate Program Committee


Credit Hours 3

Prerequisite(s) by course MATH 141 (or coreq)

Prerequisite by topics Calculus of single variables I

Required Textbook
2) or cost-free version of the book downloadable after July 1st 2018 from the Michigan publisher website https://www.publishing.umich.edu/publications/ee/
3) Analog Discovery Kit 2 (https://store.digilentinc.com/analog-discovery-2-100mhz-oscilloscope-logic-analyzer-and-variable-power-supply/)

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

1. Solve basic problems on potential, voltage, current and finding equivalent resistances in DC resistive electric circuits.
2. Analyze DC resistive circuits using nodal and mesh analysis, Thevenin and Norton transformation.
3. Solve problems on power dissipation in resistive DC circuits
4. Use MATLAB to apply matrix methods to analyzing DC circuits using nodal and mesh analysis and Thevenin and Norton transformations.

Course Topics:
- Basic concepts of electric circuits: potential, voltage, current
- Resistive circuits: Ohm’s law, Kirchhoff’s Laws, equivalent circuits
- DC circuit analysis techniques: nodal analysis, mesh analysis, superposition, Thevenin and Norton transformations
- DC circuit analysis with dependent sources and OPAMPs

Course Contribution to Program Outcomes:
ELCT 102 contributes to an achievement of:
- Outcome 1 – an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- Outcome 6 – an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusion.
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.