Course Syllabus

ELCT 201 – Introductory Electrical Engineering Laboratory

Course Coordinator: Undergraduate Program Committee

Catalog Description: Laboratory procedures, instrumentation and measurements, report writing, computer use in system design, testing, and troubleshooting. Integrative project-based learning environment including passive, active, electronic and electromechanical systems.

Credit Hours: 3

Prerequisite(s) by course: C or better in ENGL 102 and CSCE 211, Pre or Coreq: ELCT 222

Prerequisite by topics: Electrical Charges & Forces, Current & Voltage, Ohm’s Law, Circuits, Calculus, Number Systems, Algebra, Logic Design


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

1. Select and use the proper laboratory instrument.
2. Build, test and debug circuits using soldered and solderless proto-boards.
3. Communicate the results of lab experiments in formal lab reports, with emphasis on proper structure and formatting, and multimedia presentations.
4. Use the theory learned in ELCT 222 to design, build and measure active filter.
5. Design and present team oriented challenge projects.

Course Topics:
- Use of lab equipment: multimeters, oscilloscopes, function generators, power supplies, current probes.
- Construction and debugging of electronic circuits, soldering, proto-boards.
- Practical characteristics of passive components: resistors, capacitors, inductors.
- Practical characteristics of active components: diodes, transistors, optoelectronics
- Use of electromechanical actuators (DC Motors)
- Introduction of electromechanical systems with feedback
- Standard lab Report format and recommended presentation format
- Basic electric lab safety rules: safety glasses, soldering, voltage insulation, electrolytic capacitors.
- Lab projects: Building DC Power Supply, second-order Butterworth active filter, analog and digital feedback for position control
- Team oriented challenge project

Course Contribution to Program Outcomes:
ELCT 201 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 2** – an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- **Outcome 3** – an ability to communicate effectively with a range of audiences
- **Outcome 5** – an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- **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.