Course Syllabus

ELCT 222 – Signals & Systems

Course Coordinator: Undergraduate Program Committee

Catalog Description: Analysis of continuous-time signals and systems in time and frequency domains, Fourier series and transforms, Laplace transforms; introduction to discrete-time signals.

Credit Hours 3

Prerequisite(s) by course C or better grade in MATH 242 and ELCT 221

Prerequisite by topics Potential & Voltage, Current & Ohm’s Law, KCL & KVL, Nodal & Mesh Analysis, Thevenin & Norton Equivalent sources, AC Circuits, Differential Equations, Laplace transform methods, Series method

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/](https://www.publishing.umich.edu/publications/ee/)


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

1. analyze RL and RC linear circuits and systems in the time and frequency domains.
2. sketch frequency response plots (Bode diagrams) for RLC linear circuits.
3. use engineering tools such as Matlab to construct accurate frequency response plots.
4. analyze first-order linear active filters (using operational amplifiers) in the frequency domain.
5. use the techniques of Fourier series, Fourier transforms, and Laplace transforms for the analysis of first-and second-order linear systems

Course Topics:
- First-order RC and RL circuits
- Second-order RLC circuits
- Frequency responses, transfer function, bode plot
- First- and second-order linear filter circuits
- Frequency response of first-order linear active filter using OPAMPS
- Laplace transform
- Application of the Laplace transform
- Fourier series
- Fourier transform

Course Contribution to Program Outcomes:
ELCT 222 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.