ELEG 3121L – SYSTEM AND SIGNAL LABORATORY
(REQUIRED)

Catalog Description
ELEG 3121L – System and Signal Laboratory. 1 credit hours
Laboratory exercises associated with ELEG 3123 – System and Signal Analysis. Discrete- and Continuous-time signals and systems design using MATLAB. In this process applications of discrete-time systems design tools for the design and IIR, FIR, etc. filters are demonstrated, Fourier Series and Fourier Transform applications, DTFS and DTFT tools are used and practiced with. Co-requisite: ELEG 3123, Prerequisite: ELEG 2113 (or ELEG3903 and consent of instructor).

Textbook
Linear Systems and Signals (2^{nd} edition), Author: B. P. Lathi, Oxford University Press

Prerequisites by Topics
1. Differential equations
2. Concepts of Linear Algebra
3. Laplace transform
4. AC circuit analysis

Course Objectives
After completing this course, electrical engineering students should be able to determine the following:
- Use of MATLB for the design and analysis of analog and digital signals and systems

Topics
1. MATLAB programming and M-files (2 classes)
2. Discrete-time signals and systems (1 class)
3. Continuous-time filters (2 classes)
4. Discrete-time IIR filters (2 classes)
5. Fourier Series applications (1 class)
6. Fourier Transform Topics (1 class)
7. The Discrete-Fourier transform (1 class)
8. Working with the DTFS and DTFT (1 class)

There are one (1) THREE hours class periods per week for a total of 11 weeks.

Computer Usage
MATLAB is extensively used.

Oral/Written Communications
Class participation will constitute part of student's final grade. Assignment during lab sessions and project assignments constitute major part of final grade.

Design Activities
Some system design activities are required.

Relationship of Course to ABET Program Outcomes

OUTCOME	HOW IT WAS ADDRESSED
(a)	
(b)	Design of systems and signals using MATLAB
(c)	
(d)	
(e)	Design and analysis of filters and specialized electrical systems using MATLAB
(f)	
(g)	Class participation (contribution to final grade), group projects and interaction with team members.
(h)	
(i)	
(j)	
(k)	MATLAB

Professional Components

Mathematics:
Sciences:
Engineering Science: 20%
Engineering Design: 80 %
General Education:

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