Department: Electrical and Computer Engineering

EEL 3002L — Engineering Tools Lab

Curriculum Designation: Required for EE and CpE majors.

Course (Catalog) Description: This is an introductory laboratory for students entering the electrical and computer engineering (ECE) programs. The basic topics include: lab safety issues; solving engineering problems using widely popular software tools such as MATLAB and Mathematica; electric circuit simulations using commonly used software packages such as Multisim and OrCAD; electric circuit design and instrumentation; the proper use of test and measurement equipment; and other topics relevant to educating first-year ECE students such as professional ethics and engineering report writing guidelines.

Co-requisite: EEL3111


Course Objectives:
1. Use MATLAB as a learning tool to complement their study of various ECE subjects.
2. Use MATLAB as an engineering tool to solve more complex problems encountered in various ECE subjects.
3. Use the NI (National Instruments) Multisim for circuit simulations to facilitate the analysis and hence the understanding of various electric circuits.
4. Use the NI ELVIS II workstation to build electric circuits on its prototyping board for measurement and design verification.
5. Write engineering lab reports in accordance with the practice commonly adopted in the field.
6. Recognize and observe the IEEE code of ethics.

Topics Covered:
1. Lab safety issues (brief discussion plus handout)
2. Guidelines for writing lab reports (handout)
3. MATLAB: basic introduction, plotting functions, and programming
4. Introduction to National Instruments (NI) Multisim
5. Basic circuit simulations using Multisim
6. Basic electric circuit test and measurement equipment
7. Basic electric circuit design and instrumentation using NI ELVIS prototyping platform

Class Schedule: One 50-minute lecture and one 165 minute lab per week (2 credit hours).

Subject Area: Engineering Topics
Significant Design:  No

Relationship to Assessed ABET Student Outcomes: None

Last Updated by:  R. J. Perry  Date:  4/30/2021