Introduction to Discrete Time Signals & Systems Laboratory

ECE 2057

Credit Hours:
0.50

Course Levels:
Undergraduate (1000-5000 level)

Course Components:
Lab

Course Description:
Introduction to sampled time signals and linear time invariant sampled time systems. Lab only.

Prerequisites and Co-requisites:
Prereq or concur: 2051.

Course Goals / Objectives:
- Be competent with the fundamentals of discrete time linear time invariant (LTI) systems
- Be competent in working in teams for laboratory experiments
- Be competent in analyzing, designing and synthesizing discrete time LTI systems, including finite impulse response (FIR) and infinite impulse response (IIR) filters
- Be familiar with how to implement designs in hardware using modern techniques such as FPGAs and microcontrollers
- Be exposed to troubleshooting and debugging practices

Course Topics:
- Instrumentation and CAD tool review: oscilloscope, Matlab, microcontroller and FPGA programming
- FPGA implementation of discrete time filters (FIR, IIR)
- Microcontroller implementation of discrete time filters (FIR, IIR)
**Designation:**
Required