LU BSEE Hardware required for the Lab courses and Hardware-in-Homework assignments:

2019-2020

Class	Hardware required	Use in class
ELEN1100 - Intro to EE (L)	*Analog Discovery 2, ADALP2000 Analog Parts Kit (APK)*	Construct and observe: (1) Digital Logic, (2) RLC, (3) Op-Amp, (4) Op-Amp with Thermistor, and (5) Electromagnetic circuits.
ELEN 2411 – Circuits I (L)	*Analog Discovery 2 by Digilent and ADALP2000 APK*	Experiments on series, parallel, and series-parallel circuits, Node voltage analysis, Thevenin circuits, Maximum power Transfer, RC and RL circuits.
ELEN 3328 - Quantum Mechanics for EEs (H)	No hardware needed. Software: *MATLAB*	MATLAB is used for simulation of the Schrödinger equation and particle behavior as well as the FTDT (Finite-difference time-domain or Yee's method) for computational quantum dynamics.
ELEN 3431 – DLD (L)	No hardware needed. Software: *Java, Jsim, Bsim, Tsim*.	Use Jsim for simulating ALU. Use Bsim to translate C program to Assembly code. Use Tsim to design a finite state machine.
ELEN 3312 – Circuits II (H)	*Analog Discovery 2 by Digilent and ADALP2000 APK*	To attain better understanding of advanced circuits with RLC circuits' analysis, power measurements including power factor, and amplifier circuits.
ELEN 3421 – Electronics I (L)	*Analog Discovery 2 by Digilent and ADALP2000 APK*	Various online lab assignments including Diode and Transistor Characteristics, Diode Applications, Amplifiers including discrete and IC components
ELEN 3371 – Electromagnetics (H)	No hardware needed. Software: *MATLAB Simulink*	Used to study and analyze the electric and magnetic behavior of materials , their modelling and its related example questions
ELEN 4486 – Microcomputers I (L)	*Raspberry Pi Zero W*	Used in each lab assignment to practice Assembly language programming
ELEN 3313 – Signals & Systems (H)	*Analog Discovery 2 by Digilent*	Used in the mini-project assignment to practice generation and analysis of simple waveforms/signals in both time and frequency domains.
ELEN 3322 – Electronics II (H)	*Analog Discovery 2 by Digilent and ADALP2000 APK*	Six (6) "Hardware in Homework" assignments- Basic BJT current source, Widlar source, Active (op-amp) filters and various RC/ RL passive filters, Bode plots.
ELEN 3381 – Elect. Analysis (H)	*Analog Discovery 2 and ADALP2000 APK*	Used to create Wheatstone Bridge circuit and verify it with the result from the MATLAB simulation.
ELEN 3441 – Fund. of Power Engineering (L)	No hardware needed. Software: *MATLAB Simulink, LabVolt DAI, SimPower*	Used for simulation of single phase and three phase circuits, delta and wye connections, single and three phase transformers, wound rotor induction, motors (i.e., split phase, capacitor start motor, capacitor run motor, universal motor, etc.)
ELEN 4387 – Microcomputers II (H)	No hardware needed. Software: *CPU Simulator and Logisim*	Used in CPU simulation and verification and in computer architecture design and verification.
ELEN 4351 – Control Engineering (B)	*Analog Discovery 2 and ADALP2000 APK**	Used in the final project to design a lead-lag controller for a DC motor.
ELEN 4206/4207 – Senior Proj. Design	Project-specific, such as *Arduino, Raspberry Pi, FPGA*, etc.	To collect data from sensors and actuate devices using an onboard microcontroller as well as computing platforms; include lectures on various applications of Arduino boards and quizzes on them.

L - Labs; H- Homework; B - bonus assignment; ** - used in optional assignments*

Last Modified: 10/28/2019