MTRE 3610L: Modeling and Feedback Control of Dynamic Systems Laboratory

1 Credit Hours

Concurrent: MTRE 3610

This is a laboratory course designed to complement the modeling and feedback controls topics also covered in MTRE 3610. Feedback Control (PID Control), Model Identification, MATLAB/Simulink Modeling, and Process Control are studied and analyzed using simulations and physical experiments.

MTRE 3720: Introduction to PLCs and Microcontrollers

2 Credit Hours

Prerequisite: ((CSE 1322 and CSE 1322L) or MTRE 2710) and Engineering Standing

Concurrent: MATH 3260 and (EE 2301 or EE 2305 or MTRE 2110 or CS 3503)

This course covers semiconductor electronics as the basic foundation. Further topics covered are Industry, automation, control, a basic sensing scheme, the PLC software environment, and the creation of RLL diagrams. Additionally, detailed communication protocols and interfaces with the AVR microcontroller will be carried out.

MTRE 3720L: Introduction to PLCs and Microcontrollers Laboratory

1 Credit Hours

Concurrent: MTRE 3720

The lab sessions are designed to have hands-on experience in 3 areas (i) semiconductor electronics, ii) AVR Microcontroller with interfacing, iii) the PLC software environment, and the creation of RLL diagrams. Additionally, detailed communication protocols and interfaces will be carried out.

MTRE 3800: Fluid Power

3 Credit Hours

Prerequisite: ENGR 2214 and MATH 2306 and Engineering Standing

Course provides a fundamental understanding of the physical principles of fluid mechanics and fluid power, along with a practical working knowledge of the components utilized in designing, installing, operating and maintaining hydraulic and pneumatic power systems.