MTRE 3810: Device Control and Simulation of Mobile Robots

3 Credit Hours

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

Concurrent: MATH 3260

This course covers the Robot operating systems (ROS) from basic to advance level to program and build robots in the simulation world, learn algorithmic approaches, mathematical models, and computational and motion control methods applicable to mobile robotic systems. Students will also learn different motion planning and navigation schemes associated with wheeled mobile robots. Finally, students will recognize and analyze the basic mechanical and electrical systems concerning robots' locomotion.

MTRE 3810L: Device Control and Simulation of Mobile Robots Laboratory

1 Credit Hours

Concurrent: MTRE 3810

This Lab covers the hands-on skillset development for Robot operating systems (ROS) from basic to advance level to program and build wheeled robots in simulation world using Gazebo and Rviz. It will further expand to advance industry tool set using MoveIT.

MTRE 4001: Modeling and Feedback Control of Dynamic Systems

3 Credit Hours

Prerequisite: MATH 2202 and (EE 2301 or EE 2305 or CS 3503) and PHYS 2211 and Engineering Standing

This is a control system course tailored for Mechatronics Engineering students. While it covers all topics in a traditional control system course, some additional topics, such as modeling of mechatronics systems, controller design of mechatronics system, and vibration control, are covered as well.

MTRE 4002L: Feedback Control Laboratory

1 Credit Hours

Prerequisite: (ME 1311 or (CSE 1321 and CSE 1321L)) and Engineering Standing

Concurrent: MTRE 4001

This is a laboratory course designed to complement the modeling and feedback controls topics. Feedback Control, MATLAB/Simulink Modeling are studied and analyzed using simulations and physical experiments.