

MTRE 4010: Advanced Controls

3 Credit Hours

Prerequisite: ((MTRE 4001 and MTRE 4002L) or EE 4201 or (ME 3501 and ME 4501)) and MATH 3260 and Engineering Standing

This course is an advanced study of modern control systems focused on control theories and system applications. It covers the basic theoretical methods and mathematical tools for analysis and design of control systems.

MTRE 4100: Instruments and Controls

4 Credit Hours

Prerequisite: EE 2501 and (MTRE 3800 (may be concurrently), or ENGR 3343 or EE 3701 or CPE 4010) and (MTRE 4001 and MTRE 4002L) or EE 4201 or (ME 3501 and ME 4501)) and MATH 2306 and Engineering Standing

Characteristics of instruments used in mechanical systems for determining parameters such as temperature, pressure and flow are studied. The use of these devices in automated systems is covered both using feedback control and programmable logic controllers. Laboratory exercises illustrating the use of pertinent instrumentation for determining the performance of mechanical equipment are conducted.

MTRE 4200: Robotics Analysis and Synthesis

4 Credit Hours

Prerequisite: ((MTRE 4001 and MTRE 4002L) or EE 4201 or (ME 3501 and ME 4501 and ME 1311)) and (MATH 2203 or MATH 3260) and Engineering Standing

This course introduces the basic principles of robotic manipulators. Students will learn how to derive the mathematical models, plan trajectories, and design controllers for robot applications. Software tools, such as MATLAB, are employed to analyze and simulate the robot system.