ECE/ME 4161: Robotics Systems Laboratory

Instructors:
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Class Meetings: Days - TDB, Time - TBD

Textbook:
There is no textbook for this course.

Course Overview and Details:
The course provides hands on introduction to modeling, control, path planning, sensing and perception aspects of robotics. We will conduct several exciting experiments on different robotic platforms such as Q-bot, quadcopter, robot manipulator. The students will get an experience of hands-on implementation of planning, sensing, and control algorithms for several practically relevant experiments.
The broad description of experiments is as follows:
1. Kinematics and control design of a Q-bot
2. Path planning, obstacle avoidance using Q-bot
3. Control of robot manipulator
4. Computer vision for object recognition/detection
5. Vision-based control of robot

Prerequisite: ECE 3163
Required, elective, or selected elective: Required

Specific Outcomes of the Course: Hands on introduction to autonomous robotics emphasizing the synergy between hardware (microprocessors, sensors, actuators), technology (optimization, control system, machine learning) and systems (integration, programming) to achieve perception, action and behavior in real world environment. Students will be able to apply principles of robot modeling, planning and control to the real world platforms.

Grading Criteria:

Laboratory Assignments	80%
Quiz	15%
Laboratory Notebook	5%
Total	100%