

Instructors:

Dr. Jonathan Fiene (Lead)

Lecturer and Director of Laboratory Programs, MEAM (fiene@me.upenn.edu)

Dr. Edward Steager

GRASP Research Staff (esteager@seas.upenn.edu)

Rebecca Stein

GRASP Associate Director, Research and Educational Outreach (restein@seas.upenn.edu)

David Simpson

MEAM MSE Student (dsimp@seas.upenn.edu)

Course Description: The purpose of this course is to provide an introduction to robotics technology. **The course ties together engaging classroom discussions on a variety of topics including sensing, actuation, control, and embedded programming with a rigorous series of laboratory exercises and projects to provide hands-on experience with mechanical prototyping methods, electronic circuits, robotic systems, and much more.**

Course Materials: All lectures, assignments and labs will be available online. The SAAST Robotics website (<https://alliance.seas.upenn.edu/~medesign/wiki/index.php/Courses/SAAST>) will have general course information and Blackboard (<https://courseweb.library.upenn.edu/>) will be used to post grades.

Assignments: Assignments will reinforce lecture material. All assignments will be done individually unless otherwise specified.

Assignment 1: Mechanical Design- SolidWorks and the Laser Cutter

Assignment 2: Basic Circuits- LEDs and Phototransistors

Assignment 3: Introduction to the microcontroller

Assignment 4: Controller Design- Preliminary Project Plan

Assignment 5: Controller Realization

Assignment 7: Robot Test (Group)

Assignment 8: Poster (Group)

Quizzes: The quizzes will cover material discussed in the lectures and will be given without notice.

Final Project: Students will be split into groups of three for the final project. Each group will design and build three robots to work cooperatively to solve a challenge.

Grading Policy

Individual Assignments: 50%

Team Assignments: 15%

Quizzes: 10%

Final Project: 25%