

# SAAST Robotics

## Syllabus-Summer 2012

### Instructors:

#### **Dr. Jonathan Fiene (Lead)**

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

#### **Rebecca Stein**

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

#### **Ian McMahon**

Teaching Assistant

#### **Nikolay Vladimirov**

Teaching Assistant

**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%