EECS 106A/206A
Introduction to Robotics

Instructor: Shankar Sastry
Head TA: Valmik Prabhu
course LOGISTICS
Prerequisites

- Knowledge of **linear algebra**
- Programming in **Python**
- **Curiosity** about how things work
- Interest in **experimental work**
- Willingness to explore
Course Resources

Course website: https://inst.eecs.berkeley.edu/~ee106a/

- Lectures, Webcasts, Labs, Homework, etc

Piazza:

- Communication, Questions, Homework Solutions

Gradescope: Code 9V4W5V

- Turning in homework
Grading Breakdown

- 20% for ~7 homeworks
- 20% for 2 midterms
- 20% for 8 labs
- 40% for the final project
Homework

Homework will be assigned approximately **weekly** during September, October, and early November. Homeworks will be posted at least one week before they’re due. Solutions will be released on the third day after the homework is due.

<table>
<thead>
<tr>
<th>Assignment Number</th>
<th>Date Due</th>
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<tbody>
<tr>
<td>Homework 0: Python</td>
<td>Tuesday Sept 3, 2019</td>
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<tr>
<td>Homework 1: Rotations</td>
<td>Monday Sept 9, 2019</td>
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<tr>
<td>Homework 2: Forward Kinematics</td>
<td>Wednesday Sept 18, 2019</td>
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<tr>
<td>Homework 3: Inverse Kinematics</td>
<td>Friday Sept 27, 2019</td>
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Slip Days

- You will have **5 slip days** to spend on homework with no loss of points.
- You may use a **maximum of 2 slip days** per assignment
- Assignments turned in after your slip days have expired will be decreased by 50% for the first day late, and 75% for the second.
- Slip days may not be used on labs or project milestones
Midterms

There are two midterms in this class. Both will be held on Thursday at 7:00 pm. There will be no class the Friday after each midterm. There will be an in-class midterm review the week of the midterm. If you have a conflict with a midterm, let us know ASAP. There is no final exam.

Midterm 1: Rotations, and Kinematics
October 3, 7:00 pm

Midterm 2: Jacobians, Dynamics, and Control
November 14, 7:00 pm
Labs

There will be 8 labs, the first of which will start **next week**. You are required to attend your assigned lab section. We will send out a form for potential lab switches, but we cannot make any guarantees.

★ Labor day: There will be a makeup lab Wednesday 6-9pm. If you cannot make this time, you can attend any section **next week only**

Labs 1-2: Intro to ROS

- labs are due the start of the following lab
Lab Blocks

Each block of labs will take **three weeks**. Half the class will do each lab the first week, and switch the second week. The third week is an off-week which, while meant for midterms or project meetings, can be used to catch up.

Labs are due **before** the start of the next block

Labs 3-4: Forward Kinematics, and 3D Vision

Labs 5-6: Inverse Kinematics and Pick and Place, and Turtlebot Control

Labs 7-8: Path Planning and Control, and Mapping
Final Project Guidelines

Students choose their own final projects, but they **must be approved** by course staff. Projects will be done in groups of four.

- Projects are expected to apply **multiple aspects of course material**.
- Every project should include some **sensing**, **planning**, and **actuation**.
- Projects should **demonstrate good designer/experimentalist rigor**:
  - What did you measure? What are your assumptions? What did your measurements tell you?
  - How did you evaluate your results? How do you account for error?
  - What lessons did you learn?
Final Project Timeline

● Project Ideas: September
  ○ We’ll release a list of project ideas and hold a discussion in early October
● Mini-proposal: October 10
  ○ We’ll review these and schedule individual meetings with each group
● Project Meetings: week of October 21
● Final Proposal and Parts List: October 26
● Project Work: After Midterm 2
  ○ No more homework, discussions, labs
● Demos: December 12th and 13th
● Final Reports: December 20
Discussions/Office Hours

- Discussions and OH’s start next week
- Valmik, Isabella, and Jun will be the most familiar with homeworks
- Isabella will not answer lab questions
- Prof. Sastry is the best for deep conceptual questions
- If you need extra help, post on Piazza. Valmik may be able to hold extra hours.