

# 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.

Assignment Number	Date Due
Homework 0: Python	Tuesday Sept 3, 2019
Homework 1: Rotations	Monday Sept 9, 2019
Homework 2: Forward Kinematics	Wednesday Sept 18, 2019
Homework 3: Inverse Kinematics	Friday Sept 27, 2019

# 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.