Schedule of Classes

Class		Lecture	Discussion	Homework
Number	Date			
L0	Aug 28	Organisation	—	
L1	Sept 02	Rigid Body Motion	L0,1	HW1
L2	Sept 04	Rotation Matrices	—	L1-3
L3	Sept 09	Homogenous Coordinates	L2,3	
L4	Sept 11	Exponential Coordinates	—	—
L5	Sept 16	Forward Kinematics	L4,5	HW2
L6	Sept 18	2D Vision	—	L3-5
L7	Sept 23	3D Vision	Review	
L8	Sept 25	Rigid Body Velocities	—	—
L9	Sept 30	Inverse Kinematics	HW1,2	
L10	Oct 02	Review	—	—
L11	Oct 07	MIDTERM 1 L1-5	L6,7	HW3
L12	Oct 09	Jacobians	—	L8-12
L13	Oct 14	Path Planning Intro	L8,15	
L14	Oct 16	Path Planning Algorithms	—	—
L15	Oct 21	Force Wrenches	L16,17	HW4
L16	Oct 23	Inertial Properties	—	L15-18
L17	Oct 28	Newtonian Dynamics	L18	
L18	Oct 30	Lagrangian Dynamics	—	
L19	Nov 04	Dynamics of Open Chains	Review	
L20	Nov 06	Dynamics of Open Chains	—	
L21	Nov 11	Holiday	HW3,4	—
L22	Nov 13	Review	—	
L23	Nov 18	MIDTERM 2 L8-12,15-18	Projects	
L24	Nov 20	Feedback Control	—	
L25	Nov 25	Medical Robotics	Projects	
L26	Nov 27	Holiday	—	
L27	Dec 02	Projects	Projects	
L28	Dec 04	PROJECT REVIEWS	—	

Course Information

Instructors

Role	Name	Email	Office Hours	Location
Professor	Ruzena Bajcsy	bajcsy@eecs	MW 0900-1000	719 SDH
GSI	Aaron Bestick	abestick@eecs	-	-
GSI	Austin Buchan	abuchan@eecs	-	-
GSI	Robert Matthew	rpmatthew@eecs	M 10-11, 15-16	337A Cory

Lectures

Day	Time	Instructor	Location
Tu Th	1400-1530	Ruzena Bajcsy	521 Cory

Labs

Day	Time	Instructor	Location
W	1100-1400	Austin Buchan	119 Cory
W	1400-1700	Austin Buchan	119 Cory
Th	1100-1400	Aaron Bestick	119 Cory
F	1200-1500	Aaron Bestick	119 Cory

Discussions

Day	Time	Instructor	Location
Tu	1000-1100	Robert Matthew	293 Cory
W	1000-1100	Robert Matthew	247 Cory

Grading:

Labs 20%

There will be a total of eight labs spaced over the start of the semester. Labs will ask you to complete a number of exercises, including derivation of equations as implementation in Python, ROS, OpenCV for use with cameras, the Baxter robot and other hardware. Performance in the labs will be based on both attendance and a lab report.

Homeworks 20%

The timetable has been structured so that you have at least one dedicated discussion section before the deadline, and to ensure that you get a graded assignment in time for the midterms.

No extensions will be allowed.
Please plan accordingly.

Homework	Set Date	Due Date	Return Date
1	Aug 29	Sept 12	Sept 18
2	Sept 12	Sept 26	Oct 02
3	Oct 10	Oct 24	Oct 30
4	Oct 24	Nov 7	Nov 13

The homework grade has two components:

Solutions: 40 points Homework solutions should be clear and complete, demonstrate important intermediate steps, and provide references to the textbook or outside materials as appropriate. Students may work together on the assignments, but each individual must write their own solutions independently.

Presentation: 10 points The homework writeup must be legibly hand written or typeset and free of excessive erasing, scratched-out text, etc. We urge students to solve the homework on scratch paper, then copy completed solutions onto new sheets of paper.

Questions about grading should be sent to the GSIs.

Exams 30%

Before each exam, you should have your relevant homeworks returned, and both an inclass review and dedicated discussion section.

Please let us know in advance if you are unable to make any of the dates below or require any special arrangements.

	Date	Topics	Location
Midterm 1	Oct 07	Lecture 1-5	Inclass
Midterm 2	Nov 18	Lecture 8-12,15-18	Inclass
Final		None	

Final Project 30%

A substantial part of your grade will depend on the final group project. Groups comprise of 2 or 3 people, and can include people outside of your lab group.

The choice of project topic is up to you, but the final project must integrate perception, planning, and action in some non-trivial way.

There are three milestone deliverables for the projects. The first is a two side project brief that includes the team, the task and an outline of your project. Details on required parts and materials and initial analysis of the problem is required.

The bulk of the project is allocated later in the semester. Projects will be graded based on a presentation & Demo during dead week, and a final report. The final report will be in the form of a website that will go live on the final day of the semester.

Deliverable	Deadline	Weighting
Project Brief	Oct 16	5 %
Presentation & Demo	Dec 12	10 %
Final Report (Website)	Dec 19	15 %

Students with special requirements

If you have been issued a letter of accommodation from the Disabled Students Program (DSP), please contact either Professor Bajcsy or a GSI as soon as possible to work out the necessary arrangements. If you need an accommodation and have not yet seen a Disability Specialist at the DSP, please do so as soon as possible.

If you would need any assistance in the event of an emergency evacuation of the building, the DSP recommends that you make a plan for this in advance. (Contact the DSP access specialist at 643-6456.)

Discussions

Discussion sections are designed to provide supplement the lectures by highlighting key ideas and providing sample questions. Attendance is not mandatory, though it is recommended. Class participation is encouraged and questions welcome.

Labs

Laboratory sections are used to provide hands on experience with some the techniques presented in the course. Attendance is mandatory and is limited to students registered for that particular lab section. This restriction is due to limited resources in the labs. The lab grade has three components:

Participation: 10 points Students are expected to exhibit friendly, active involvement in the lab, and to keep the laboratory facilities clean and functional throughout the semester.

Tasks, questions, and code: 30 points Complete each task specified in the lab assignment, answer lab questions thoughtfully, and provide supporting mathematics and references where appropriate.

Report: 10 points The laboratory writeup should be a self-contained document providing detail about each task and question. It should be written in complete sentences with full questions statements; however, information about the lab setup and motivation is unnecessary. All figures need clear captions, legends, and labels, and must be readable when printed in grayscale. Matlab code should be included in an appendix.

Questions about grading should be sent to the GSIs.

Conduct

This course aspires to be a safe space for all students regardless of age, sex, gender, race, nationality, ability etc. Any discriminatory behavior, or failure to respect personal boundaries will result in removal from the course. If you feel harassed my any member of the instructional team, a colleague or anyone, bring it to the attention of a trusted instructor, counselor, or campus police.

UCB Police police.berkeley.edu

Sexual Harassment & Survivor Support survivorsupport.berkeley.edu

University Health Services- Social Services uhs.berkeley.edu

Gender Equity Resource Center geneq.berkeley.edu

Office for the Prevention of Discrimination and Harassment ophd.berkeley.edu