

Mathematical Methods for Robotics, Vision, and Graphics

CS 205A, Spring 2016

Course Description

Continuous mathematics background necessary for research in robotics, vision, and graphics. Possible topics: linear algebra; the conjugate gradient method; ordinary and partial differential equations; vector and tensor calculus. Prerequisites: 106B or X; MATH 51; or equivalents.

1 Basic Information

1.1 Staff

- { **Instructor:** Prof. Doug James
Office: Gates 363
Telephone: 650-723-0104
Email: djames@stanford.edu
Office hours: Th 11-noon, F 1-3pm (Gates 363)

- { **Course assistant:** Qifeng Chen
Email: cqf@stanford.edu
Office hours: MW 2-4pm (Huang basement outside ICME)

- { **Course assistant:** Christina Lee
Email: escllee@stanford.edu
Office hours: MW 1-2pm (Huang basement outside ICME), and
Th 10:30am-12:30pm (Lathrop Tech Lounge)

- { **Course assistant:** Michela Meister
Email: mmeister@stanford.edu
Office hours: MW 10-noon (Huang basement outside ICME)

1.2 Class

- { **Time:** TuTh 9:00-10:20am
Place: Gates B1

1.3 Section

- { **Time:** F 10:30-11:20am
Place: Huang 018

1.4 Web

The **course web page**, which will contain lecture slides, homeworks, announcements, and other important materials, can be found at:

<http://cs205a.stanford.edu>

<http://graphics.stanford.edu/courses/cs205a-16-spring>

Piazza: We will be using Piazza to host a course bulletin board and for some online announcements; be sure to register for the CS 205A page. All students are expected to register at:

<http://piazza.com/stanford/spring2016/cs205a>

Gradescope: Homeworks are to be submitted electronically online using *gradescope* at

<https://gradescope.com/courses/3035>

Registered students can use this entry code to add themselves: MG6YG9. For each homework, you will scan/photograph or electronically author your submission, then submit it online via *gradescope*.

2 Course Policies

2.1 Grading

Your grade will be evaluated using the following distribution:

Item	Percentage
Homework (approx. weekly)	60%
Midterm	15%
Final	25%
Participation	±5%

2.2 Late Assignments

Assignments by the end of class on the listed due date. You will be permitted a total of *four* late days over the course of the quarter, measured in periods of 24 hours; only two late days can be applied to any single assignment. Beyond this total, late assignments will lose 25% credit per day (additively).

2.3 Textbook

The primary textbook for CS 205A is *Numerical Algorithms*, by Justin Solomon (a former CS205a instructor and Stanford PhD student, and now an MIT professor); the text was written specifically for this course. The textbook is available from common book vendors, and a PDF is available online from the author's MIT website. A supplementary optional textbook is *Scientific Computing*, by Heath. This textbook covers similar material and has alternative explanations that may appeal to some students.