Mathematical Methods for Robotics, Vision, and Graphics
CS 205A, Spring 2017

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 362
  - **Telephone:** 650-723-0104
  - **Email:** djames@stanford.edu
  - **Office hours:** Tu 5-6pm, Th 5-7pm (Gates 362)

- **Course assistant:** Alex Jin
  - **Email:** agbjin@stanford.edu
  - **Office hours:** Thu 10am-noon (Lathrop Tech Lounge) (will start 2nd week)

- **Course assistant:** Rafael Musa
  - **Email:** rmusa@stanford.edu
  - **Office hours:** Wed 2-4pm (Huang Basement) (will start 2nd week)

- **Course assistant:** Leon Yao
  - **Email:** leonyao@stanford.edu
  - **Office hours:** Tue 12:30-2:30pm (will start 2nd week)

1.2 Class

- **Time:** TuTh 3:00-4:20am
- **Place:** Gates B1

1.3 Section

- **Time:** F 11:30am-12:20pm
- **Place:** Hewlett Teaching Center 201
1.4 Web

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

http://graphics.stanford.edu/courses/cs205a-17-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/spring2017/cs205a

Gradescope: Homworks are to be submitted electronically online using gradescope at

https://gradescope.com/courses/7422

Registered students can use this entry code to add themselves: MZXEBM. 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:

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework (approx. weekly)</td>
<td>60%</td>
</tr>
<tr>
<td>Midterm</td>
<td>15%</td>
</tr>
<tr>
<td>Final</td>
<td>25%</td>
</tr>
<tr>
<td>Participation</td>
<td>±5%</td>
</tr>
</tbody>
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2.2 Late Assignments

There will be several assignments throughout the quarter, with late submissions handled as follows. The deadline to upload your work to Gradescope will be Thursday 11:59 pm. You have a total of 3 late periods. Using a late period means you can submit an assignment by Sunday 11:59 pm. If you exhaust your late periods, late assignments will be penalized at 50%. No work will be accepted after the late deadline.

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.