Math 54: Linear Algebra and Differential Equations

We will have TWO classrooms for the final exam: Stanley 105 (292 seats) and LeConte 1 (216 seats.) Stanley 105 will be for Sections 201 through 216, and LeConte 1 will be for Sections 217 through 226.

The final exam will cover all sections required in Math Department Course Outline for Math 54 except Section 10.7 of Part II, and the 2D equations in Sections 10.5 and 10.6. There will be around 6-7 questions, with 3-4 questions for Part I and 3 questions for Part II. All questions will be based on exercises in the book.

I will have office hours on Friday, Dec. 9, in the afernoon 2:00-3:00PM, and Monday, Dec. 12, in the afternoon 3:00-5:00PM.

Important message from book publisher: There are errors within the custom edition of Lay's Linear Algebra text for the Math 54 course. Here is a link to the first 4 chapters. They are set to expire on 9/28 and are non-downloadable and can only be accessed via this link with a password. https://collaborativeworkflow.box.com/v/9781256873211 Password: Welcome1 Any student that has purchased a defective copy, they can go back to the bookstore for a replacement. Both on-campus and off campus stores will have the replacement, corrected copies of the textbook in the next 10 to 14 business days.

Introduction

In this course, we will learn some of the most basic concepts in linear algebra and differential equations, two different but related subjects.

Many physical phenomena are governed by differential equations. For example, the rotation of the solar planets around the sun can be accurately described by a set of time-dependent differential equations. Linear algebra provides the basic tools necessary to solve these differential equations (most commonly) on a computer.

This information document covers the following subjects: enrollment, how to contact the staff, prerequisites, textbook, handouts and announcements, course work and grading and exam dates, grade range, homework assignments, sample tests, and academic integrity.

Enrollment

Enrollment is entirely done online. So if you are waitlisted, check online often to see if you can enroll. If you have questions about enrollment, please immediately contact Thomas Brown of the Math Department at thomasbrown@math.berkeley.edu.

Staff

Instructor Prof. Ming Gu
Office: Evans 861
Office Hours: MWF 3:30-4:30PM or by appointment.
Phone: 642-3145
Email: mgu@math

GSIs and Their Section Assignments

- Alexander James Carney
  Office Hours: Mondays 9:30-10:30; Thursdays 11:00-12:00
  Email: acarney@berkeley.edu.
- Alexander Bertoloni Meli
  Office Hours: Mondays 6:00-7:00PM, Thursdays 1:00-2:00PM
  Email: a.b.m@berkeley.edu .
- Dan Daniel Erdmann-Pham
  Office Hours: Thursdays 17:00—19:00 in 1066 Evans.
  Email: d.erdmann-pham@berkeley.edu .
- David A Keating
  Office Hours: TBA
  Email: dkeating@berkeley.edu .
- Eric Hallman
  Office Hours: Mondays 3:30-5:30PM, 1087 Evans
  Email: ehallman@berkeley.edu> .
- Eugene S Rabinovich
  Office Hours: Tuesdays 10:30-12:30, 869 Evans
  Email: e.rabin@berkeley.edu .
- Ian Andrei A Gleason Freidberg
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- Jianwei Xiao
  Office Hours: Mondays 3:30-5:00PM, 1085 Evans
  Email: jwxiao@berkeley.edu .
- Kubrat Aleksandrov Danailov
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  Email: danailov@berkeley.edu .

Prerequisites

1A and 1B or equivalent. It is important to note that calculus courses at most institutions either have no differential equations, or less than Berkeley's Math 1B. Transfer students who have taken such a course need to learn **on their own** that differential equations material from

- Nagle, Saff and Snider, Fundamentals of Differential Equations, 8th Ed., Chs. 1 through 3; **or**
- Stewart, Calculus: Early Transcendentals, 5th Ed., Chs. 9 and 17.

This should be done by approximately the week of Oct. 21. Please contact me if you have any concerns on this issue.

Textbook

Our textbook is

- Second Custom Edition for University of California, Berkeley *Linear Algebra and Differential Equations*.

We plan to cover the book strictly according to the Math Department Course Outline for Math 54. We will try to cover all the sections required in this outline within the required hours. Please pay close attention to this outline when you preview and review class material. **To make sure we complete this outline, the instructor will leave any material he did not have time for during lectures to both the discussion sections and the students.**

Handouts and Announcements

There will be no handouts to be distributed in the class. All material is posted on the class home page at http://www.math.berkeley.edu/~mgu/MA54F2016.
Announcements will be made through the class website.

Course Work and Grading

There are a total of 100 points you can earn toward your final grade in the course. There will be two midterm exams. The better of the two is worth 25 points and the worse 15 points. The final exam is worth 30 points. All exams will be graded by the GSI and myself. In addition to exams, there will be up to 13 homeworks and 12 quizzes. Only the best 10 homeworks and best 10 quizzes will be counted towards the final grade, with each homework and quiz worth 1.5 points.

Homework is due on Tuesday during discussion. The homework is a written assignment to be done individually, although group discussion is allowed. Quizzes are on the days homework is due, to be given at the begining of discussion sections for 15 minutes. But there will be no quiz on Sept. 20 or Oct. 25, when we will have midterms. We will have a review and provide a sample test before each exam.

Since the GSI is limited in their work hours, they will only grade ONE problem of their choice in each homework. In addition, he will make most quiz problems to be similar to the problems in homework that is due on the day of the quiz. Doing **all** the homework problems is worth 1 point; and doing the graded problem correctly is worth additional 0.5 point.

Exam Dates

- **Midterm I: Sept. 21, Wednesday in class.** This exam likely covers Sections 1.1-1.5, 1.7-1.9, 2.1-2.3, 3.1-3.3,4.1-4.3. No calculators, but everyone is allowed a one-sided cheat sheet on an A4-sized sheet of paper.
- **Midterm II: Oct. 26, Wednesday in class.** This exam likely covers all materials in Part One and Chapter 4 in Part Two.
- **Final: 3:00-6:00PM, Dec. 15, Thursday.**

Grade Range

Your final letter grade will be based on class performance curve. Our target is to have about 40% people in the A range, 30% in the B range, and 30% the rest. Additionally, the top 2-3% of the class will receive A+.

We will give no credit for homework turned in after the due date. The exams will be cumulative, and there will be no make-up exams or quizzes. However, you can skip or cancel one of the midterms (but not both) if you notify the instructor within 48 hours after the test. In this case, your other midterm and final will be worth 30 points and 40 points, respectively. Grades of Incomplete will be granted only for dire medical or personal emergencies that cause you to miss the final, and only if your work up to that point has been satisfactory.

Sample Exams

Note that the sample exams only serve to familiarize students with the format of the actual exams, without any explicit or implicit suggestions as to the scoop.

- Sample Midterm I.
- Sample Midterm II.
- Sample Final.

Homework Assignments

- Homework Assignment #1 , Due August 30, 2016 in discussion. Homework problems can be accessed here for those with misprinted textbooks.
    - Section 1.1 problems .
    - Section 1.2 problems .
    - Section 1.3 problems .
    - Sections 1.3-1.4 problems .
    - Section 1.4 problems .
- Homework Assignment #2 , Due Sep. 6, 2016 in discussion (modified on Sept. 2.) Homework problems:
    - Homework Set 2 problems.
- Homework Assignment #3 , Due Sep. 13, 2016 in discussion.
- Homework Assignment #4 , Due Sep. 20, 2016 in discussion.
- Homework Assignment #5 , Due Sep. 27, 2016 in discussion.
- Homework Assignment #6 , Due Oct. 4, 2016 in discussion.

- Homework Assignment #7 , Due Oct. 11, 2016 in discussion.
- Homework Assignment #8 , Due Oct. 18, 2016 in discussion.
- Homework Assignment #9 , Due Oct. 25, 2016 in discussion.
- Homework Assignment #10 , Due Nov. 1, 2016 in discussion.
- Homework Assignment #11 , Due Nov. 8, 2016 in discussion.
- Homework Assignment #12 , Due Nov. 15, 2016 in discussion.
- Homework Assignment #13 , Due Nov. 22, 2016 in discussion.
- Homework Assignment #14 , Due Nov. 29, 2016 in discussion.
- Homework Assignment #15 , not to be handed in.

Academic Integrity

The University policy on academic integrity can be found at http://sa.berkeley.edu/conduct/integrity. Any forms of cheating on homework, quizzes or exams will be actively investigated and reported to ensure honesty and fairness in the class.