Section Syllabus, Math 54

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> The introduction of numbers as coordinates... is an act of violence.
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> — Hermann Weyl

1 Introduction and Goals

The goals of this class are two-fold. First, we want to develop the machinery necessary to be able to solve general systems of linear equations if solutions exist. We will be able to distill into abstract form the important properties of linear systems. The abstract formulation, while more conceptually difficult, will help us both to handle the large number of equivalent ways to present any one system of linear equations and to tackle our second goal, which is to be able to solve linear *differential* equations. Eventually, we'll be able to understand the above quote by Hermann Weyl; it's a quote that represents a philosophy around which a large quantity of modern and classical math is built.

I also have two goals not directly related to the subject matter of this course. First, since linear algebra is the intro-sequence course that is closest to what actual math is about, I want us to begin taking ourselves seriously as mathematicians. The second goal is to promote an environment of inclusiveness. To that end, you should feel free to correct me if I mispronounce your name or use the wrong pronouns and more generally to approach me if something I or another student does or says makes you uncomfortable.

2 Homework

There will be weekly homeworks, due Tuesdays. I will grade each homework on a 0,1, or 2 basis. 1 point will be awarded for completion, and I will spot check one problem for accuracy for the other point. Your 10 best homeworks will be used to compute the homework grade, which is 10 percent of your final grade. This amounts to four homeworks to be dropped in the final homework grade. Late homeworks will not be accepted.

You are encouraged to work together, but your homework should not be someone else's work. In any case, the best way to master the skills necessary to do well in this class is to do the homework and understand how what you do on the homeworks works.

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3 Quizzes

Quizzes will be every Tuesday at the beginning of section. They will take 15 minutes (hard cut-off) and will be on homework material to be turned in that day. I will attempt to make the quizzes pitched at about the level of the medium-difficulty problems on the homeworks.

Your ten best quizzes will be used to compute the quiz score, which is worth 15 percent of the final grade; although participation and attendance are not explicitly part of this, they will be used to decide borderline cases. Also, participation and attendance are the sort of things that benefit you more the more sincerely you do them.

4 Office Hours

Office hours will be 10:30-12:30 on Tuesdays. This will give you the chance to ask about homeworks and quizzes before section. If you sincerely would like to go to office hours, but the times don't work out, let me know and we can work something out.

5 Academic Dishonesty

Don't cheat.

6 Advice for this Course

The pace for this course is quite slow for a while and will pick up dramatically when we get to the differential equations part. Therefore, since the material from the second half of the course is based on the techniques from the first part, it's crucial to make sure that you really understand the material from the beginning and fill in any gaps you have in your understanding before we get to the differential equations portion.

There is often a perception that one is either good at math or not, but the truth is that doing math successfully involves working hard to understand something even when the first few (or many) attempts don't pan out. Ironically, doing math well feels a lot like failing to do math; actually,this is part of the process and it's important not to feel discouraged when this happens. If you ever feel discouraged, feel free to come talk to me.

7 Section Website

The course website can be found at `https://math.berkeley.edu/~erabin/F16.html`. At the very least, I'll put quizzes and solutions on the website, along with information about office hours. I might also put up lesson plans and/or notes.

I taught this course last semester, and the section website for that semester is available at `https://math.berkeley.edu/~erabin/S16.html`. You might find the past quizzes and solutions useful; I will be making the quizzes this semester a bit shorter.