Fall 2016 MATH 125g: Calculus I Section 39465
Syllabus

Last updated: Aug 20, 2016. Changes may be made throughout the semester.

Instructor: Leonard Wong
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Time and location:
Lecture (39465): MWF 10:00–10:50 at LVL16
Discussion (39466): TH 12:00–12:50 at GFS213
Discussion (39467): TH 1:00–1:50 at GFS213

Textbook: *Essential Calculus (2nd ed.)*, by James Stewart

Prerequisites: MATH 108 (Precalculus)

Course description
This course is the first semester of a standard calculus sequence (125g-126-226). We introduce the concepts of function, limit, differentiation and integration, covering Sections 1.1 – 5.5 of the textbook.

Motivations. Calculus is important in many aspects:

- Calculus is useful. As the mathematical study of "change" that happens "continuously" and "smoothly", it has found widespread use in science and daily life (Newton invented calculus to study planetary motion). Mastery of basic calculus is essential in all quantitative disciplines.
- Calculus is basic. It provides the motivations and basic forms of many abstractions found in higher mathematics. If you understand calculus well, you are in a good position to go deeper. Indeed, the basic ideas of calculus are quite simple and natural (once you understand)!
- Calculus is beautiful. It has an elegant logical structure and enables us to derive amazing results.

More motivations will be given in class. In the meanwhile, you may read the first section of

`https://en.wikipedia.org/wiki/Calculus`

to get some idea of what calculus is about as well as its history.

Learning objectives

- Understand the basic concepts of calculus and develop computational skills
- Develop quantitative thinking skills (how to think about a problem mathematically)
- Develop problem solving skills (a good companion is *How to Solve It* by Polya)

Midterms and exams
There will be two midterms and a final exam. No notes (including cheat sheets) and calculators are allowed in the midterms. Rules of the final exam will be announced later.

- Midterm 1: Sep 28 (Wed) in class

- Midterm 2: Nov 2 (Wed) in class
- Final exam: Dec 7 (Wed) 2-4pm

Note that all sections of MATH 125g share a common final exam (i.e., same problems). See

`https://classes.usc.edu/term-20163/finals/`

for the final examinations schedule.

Important: No make up midterm/exam will be given. If you miss a midterm/exam with a valid reason, please come to see me as soon as possible.

Grading policy
The final score will be calculated using the following weights:

- 10% Homework
- 10% Quizzes
- 20% Midterm 1
- 20% Midterm 2
- 40% Final exam

Homework and quizzes
Homework. Homework will be assigned on Friday in lecture (and posted on Blackboard) and due on the next Thursday in the discussion class. There will also be computer assignments (details will be given later). You are encouraged to discuss the problems with your classmates (and TA and the instructor). However, you must write down your solution independently. In order to get full credits, you have to show your work clearly and provide sufficient details. Late homework will not be accepted.

Quizzes. Short quizzes will be given on Thursdays during the discussion class.

Useful resources
Math Center. You may get help in the Math Center (KAP 263), see

`https://dornsife.usc.edu/mathcenter`

At the Math Center, you can discuss problems with math graduate students. You can find past exams on the webpage of the Math Center.

Further readings. It is often instructive and fun to read more than one textbook. Some suggestions:

- *The Calculus Lifesaver: All the Tools You Need to Excel at Calculus* by Adrian Banner – It contains lots of worked examples with great explanations. Highly recommended.
- *Introduction to Calculus and Analysis, Vol. 1* by Richard Courant and Fritz John – This book is *much more* advanced than the textbook. You can learn a lot if you are willing to pay the effort.

Statement for students with disabilities
If you need academic accommodations based on a disability, please register with Disability Services and Programs (DSP) and let me known as soon as possible. We are very willing to help.

Academic Integrity
Academic dishonesty (including but not limited to cheating and copying other students' work) is not tolerated and will be reported immediately.