Math 2D − Syllabus (Lecture C)

Fun in Several Variables

Monday, April 2, 2018

Welcome to Math 2D, a multi-dimensional adventure awaits you! This is
the survival manual for this course, where you can find all the administra-
tive info you need to know, such as office hours, grading, and other goodies.
Feel free to e-mail me if you have any other questions.

- **Instructor:** Peyam (Pie-Am) Ryan Tabrizian

- **E-mail:** tabrizianpeyam@hotmail.com or ptabrizi@uci.edu

- **Office:** 410P Rowland Hall

- **Class meeting times:** This course meets on MWF from 4 to 4:50 PM in
  1600 Donald Bren Hall. I do not take attendance, so whether you show
  up to class is entirely up to you. You are welcome to sit in on my other
  Math 2D lecture (MWF 2-2:50 PM in 120 Physical Sciences Classroom
  Building), but students officially enrolled in that lecture get priority seat-
  ing.

- **Office Hours:** Tuesdays and Thursdays from 4:30 to 5:30 pm, but if you
  catch me in my office at other times and I'm not busy, then I'd be glad to
  help. I'm usually around Mondays through Fridays from 2 pm to 6 pm.
  That said, I do not take office hours by appointment.

- **TA:**

  Name: TBA
  E-mail: TBA
  Office: TBA
  Office Hours: TBA

- **Discussion Sections:** There are two discussion sections, on Tuesdays and Thursdays from 2 to 2:50 PM in 114 Rowland Hall; and on Tuesdays and Thursdays from 6 to 6:50 PM in 103 Interim Classroom Facility. Attendance is completely optional, but remember that you have a quiz every Thursday during discussion section (except for the week of the midterm). What is covered in the discussion section is entirely up to the TA's discretion.

- **Enrollment and Waitlists: I have no control over the waitlist.** For any administrative issues such as class enrollment, please contact Mike Vo. His office is in 340B Rowland and his e-mail is myv@uci.edu

- **Important Dates:**
  - ▶ Friday, April 13: Last day to add/drop a course and to change the grading option.
  - ▶ **Friday, May 4, 4 – 4:50 pm: Midterm Exam** (during lecture)
  - ▶ Monday, May 28: No lecture (Memorial Day)
  - ▶ TBA, but *tentatively* on Wednesday, June 13, 10:30 AM to 12:30 PM: **Final Exam** (room TBA)

- **Online resources you can use:**

  - ▶ http://sites.uci.edu/ptabrizi/math2dsp18/: This is the main course website, where you can find the suggested homework, as well as practice exams.
  - ▶ https://canvas.eee.uci.edu/courses/9215: Mainly use this to check your grades and receive announcements. Solutions to all the homework from chapters 10, 12, 13, 14, 15 are posted there as well (under the Files tab)
  - ▶ https://www.youtube.com/channel/UCoOjTxz-u5zU0W38zMkQIFw: My YouTube channel; for calculus and other fun math videos. Feel free to subscribe to it if you want to!

- **Textbooks:**

  Required: *Calculus: Early Transcendentals, 8th edition* (Custom Math 2D/2E UCI edition) by James Stewart, Cengage Learning, ISBN 9781305755215. It is identical to the 8th edition of the Stewart Calculus book. *Single Variable Calculus: Early Transcendentals* by Stewart is fine too.

Note: You can even use an older edition, but do so at your own risk. The material is essentially the same, but the exercise numbers in the suggested homework are not correct. Do **NOT** bother buying the 'Calculus-enhanced webassign access that's recommended by the student store, it's a waste of money.

Recommended: There are tons of great calculus textbooks out there! I particularly recommend *Calculus − Early Transcendentals,* by Adams and Rogawski. There's also a fun book called *Zombies and Calculus* by Colin Adams, where you can apply your calculus-knowledge to kill zombies! Finally, if you're looking for a more rigorous treatment of calculus, I recommend *Calculus, Vol. 1* by Apostol. The latter is particularly suited for math majors, and is sometimes used in honors calculus classes.

- **Prerequisites:** Math 2B or Math 5B or AP Calculus BC with a minimum score of 4. That said, the only thing you'll really need from Math 2B is to know what an integral is. You do not need to know anything about series or any of those fancy integration techniques.

- **What people make you believe this course is about:** The official description includes "Differential and integral calculus of real-valued functions of several real variables, including applications and polar coordinates." Basically, we will re-do everything you've learned in Math 2A and 2B (differentiation and integration), but in several variables. One of my goals in this course is to show you that the techniques in this course are simply a natural extension of what you've learned in single-variable calculus. More precisely, we will cover the following chapters from the textbook:

  – Parametric Equations and Polar Coordinates (Chapter 10)
  – Vectors and the Geometry of Space (Chapter 12)
  – Vector Functions (Chapter 13)
  – Partial Derivatives (Chapter 14)
  – Multiple Integrals (Chapter 15)

- **What this course is *really* about:** I highly doubt that you'll forget the techniques you'll learn in this course because they are essential to human surival. That said, as Steve Krantz puts it in his book *"How to teach Mathematics,"* there is another goal of teaching this course. Namely, *real* purpose of this course is to teach you about *mathematical discourse* and

critical thought. Just like in rhetoric, philosophy or politics, mathematics has its own language and way of thinking. How do mathematicians deal with an unknown problem? What methods do they use? What do they do when a given method doesn't work? Getting acquainted with all those different types of discourses is what your college education is really about.

- **Grading:**
  - ▶ 20 % Quizzes, given on Thursdays during discussion section, lowest quiz dropped.
  - ▶ 30 % Midterm, given on Friday, May 4, from 4 PM to 4:50 PM in 1600 Donald Bren Hall
  - ▶ 50 % Final Exam, TBA, but *tentatively* on Wednesday, June 13, 10:30 AM - 12:30 PM (room TBA)

  You will be graded on a curve, which means that it only matters how you do *relative* to others. The way I will curve your class is that I will take all your raw grades (raw quizzes, raw midterm, raw final), calculate a raw total score, and *then* curve those grades. I will follow the standard curve suggested by the math department, which is 20 % A, 25 % B, 30 % C, 15 % D, and 10 % F, but I will try to be as generous as I can.

- **Suggested Homework:** Every week I will post some suggested problems from the textbook, which you do **NOT** have to turn in and which will **NOT** be graded. That said, the quizzes and exams will be similar to those problems, so I highly recommend you to do them!

- **Quizzes:** Quizzes are given on **Thursdays** during discussion section, and roughly cover the material from the 3 lectures prior the quiz-day, as well as the suggested homework problems. They are written by your TA, who has complete control over them, and who can give you more information about them. **No make-up quizzes will be given, but your lowest quiz will be dropped**. I highly recommend you to save that lowest quiz for the time when you'll get sick or have a personal emergency. There will be no quiz on Thursday, May 3, because it's the day before the midterm.

  Important: Your TA reserves the right to change the content and/or date of the quizzes, so make sure to keep in touch with your TA for any announcements.

- **Midterm:** The midterm exam will be given on Friday, May 4, from 4 to 4:50 PM in 1600 Donald Bren Hall (our usual lecture room), and will cover everything up to and including the material on Wednesday, May 2.**No make-up midterm will be given,** so if you cannot make it for the exams, please switch to another Math 2D-lecture. I will post more information about the midterm later in the quarter.

- **Final Exam:** The final exam is cumulative and will cover everything we have covered in this course. It is *tentatively* set for Wednesday, June 13, 10:30 AM to 12:30 PM, but the registrar will let us know a more official date sometime early in the quarter. I will definitely let you know once I get a more official announcement. Please let me know ASAP if you have a conflict with that time.

- **Cheating: DO NOT CHEAT!** I *will* catch you, and you will be prosecuted by the full extent of the UC Irvine law! In particular, by taking this course, you agree to abide by the following academic integrity policy:

  Academic Integrity Policy: All students are expected to complete a course in compliance with the Instructor's standards. No student shall engage in any activity involving any Academic Integrity Policy Violations. No student shall engage in any activity that involves attempting to receive a grade by means other than honest effort, and shall not aid another student who is attempting to do so.

- **Accommodations:** Students who may need disability-related accommodations are encouraged to talk to me and the deans as soon as possible.

- **LARC:** LARC is an academic support unit within the Division of Undergraduate Education (DUE) which provides academic assistance to UCI students through LARC Tutorials using the Supplemental Instructional method. Sessions are led by a LARC Tutorial Leader who has already mastered the course material and has been trained to facilitate group sessions by modeling key concepts and strategies and by organizing peer-to-peer activities. Tutorials improve student understanding of course material, review and discuss important concepts, develop study strategies and prepare for exams. Please see Student Success Initiatives, Athletics, Housing, or the DSC for Sponsorship opportunities. LARC is for everyone, and open to all students enrolled in this class; not just those students who are struggling. You can find more information here: `http://www.larc.uci.edu/stude`

- **Finally:** Sit back, relax, and enjoy the show! Remember that this course is fun and enlightening! I'm really looking forward to an exciting quarter together! :) On the next page, you can find a *very* *tentative* schedule of the lectures.

#		Date	Section	Lecture Title	
1	M	Apr 2	10.1	Introduction / Parametric Equations	
2	W	Apr 4	10.2	Calculus with Parametric Curves	
	Th	Apr 5			Quiz 1
3	F	Apr 6	10.3	Polar Coordinates	
4	M	Apr 9	12.1	Introduction to 3D	
5	W	Apr 11	$12.2 - 12.4$	The magical world of vectors	
	Th	Apr 12			Quiz 2
6	F	Apr 13	12.5	Fun with Lines	
7	M	Apr 16	12.5	Fun with Planes	
8	W	Apr 18	12.6	Important Surfaces	
	Th	Apr 19			Quiz 3
9	F	Apr 20	$13.1 - 13.4$	Vector Functions	
10	M	Apr 23	14.1	Functions of Several Variables	
11	W	Apr 25	14.2	Limits and Continuity	
	Th	Apr 26			Quiz 4
12	F	Apr 27	14.3	Partial Derivatives	
13	M	Apr 30	14.4	Tangent Planes and Applications	
14	W	May 2		Midterm $-$ Review	
	Th	May 3			**No Quiz**
15	**F**	**May 4**		**Midterm**	
16	M	May 7	14.5	The Chen Lou (Chain Rule)	
17	W	May 9	14.6	The Gradient and Applications	
	Th	May 10			Quiz 5
18	F	May 11	14.7	Maximum and Minimum Values (I)	
19	M	May 14	14.7	Maximum and Minimum Values (II)	
20	W	May 16	14.8	Lagrange Multipliers	
	Th	May 17			Quiz 6
21	F	May 18	15.1, 15.2	Double Integrals (I)	
22	M	May 21	15.1, 15.2	Double Integrals (II)	
23	W	May 23	15.1, 15.2	Double Integrals (III)	
	Th	May 24			Quiz 7
24	F	May 25	15.3	Double Integrals in Polar Coordinates	
	M	May 28		No lecture (Memorial Day)	
25	W	May 30	15.6	Triple Integrals (I)	
	Th	May 31			Quiz 8
26	F	Jun 1	15.6	Triple Integrals (II)	
27	M	Jun 4		Review	
28	W	Jun 6		Review	
	Th	Jun 7			Quiz 9
29	F	Jun 8		Review	
	W	**Jun 13**		**Final Exam**	