

# Math 2E — Syllabus

Even more fun in several variables

Monday, January 6, 2020

Welcome to Math 2E, a multivariable adventure awaits you! This is the survival manual for the course, where you can find all the administrative 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:** drpeyam@gmail.com
- **Office:** 410N Rowland Hall
- **Class meeting times:**

**Lecture A:** MWF 11–11:50 AM in 104 Rowland Hall

**Lecture F:** MWF 10–10:50 AM in 1600 Donald Bren Hall

You are welcome to attend any lecture that you want, as long as you take the exams in the lecture you're enrolled in. I do not take attendance, so whether you show up to class is entirely up to you.

- **Office Hours:** W 12–1:30 PM in 410N Rowland Hall and W 6:30–7:00 via YouTube. If you catch me at other times, I'd be happy to help; I'm generally in my office M–F 2–6 PM.
- **Discussion Sections:**

**Lecture A:** TuTh 8–8:50 PM in SH 128 or TuTh 2–2:50 PM in HICF 100M with TA Whisky Tsang.

Name: Tin Yau (Whisky) Tsang

Email: tytsang@uci.edu  
 Office: 540W Rowland Hall  
 Office hour: By appointment

**Lecture F:** TuTh 4–4:50 PM in MSTB 118 or TuTh 1–1:50 PM in 1200 DBH with TA Hongseok Chang.

Name: Hongseok Chang  
 Email: hongseoc@uci.edu  
 Office: 440T Rowland Hall

Attendance in discussion section is completely optional, and you are welcome to attend any discussion section you want, except that you have a quiz every Thursday during discussion section. 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 Jezelle Rabath. Her office is in 340B Rowland and her e-mail is younanj@uci.edu
- **Important Dates:**
  - ▶ Friday, January 17: Last day to add/drop a course and to change the grading option.
  - ▶ Monday, January 20: No lecture (MLK Day)
  - ▶ **Friday, February 7: Midterm Exam** (during lecture)
  - ▶ Monday, February 17: No lecture (Presidents' Day)
  - ▶ **Lecture A: Friday, March 20, 8–10 AM: Final Exam in 104 RH**
  - ▶ **Lecture F: Monday, March 16, 10:30–12:30 PM: Final Exam in 1600 DBH**
- **Online resources you can use:**
  - ▶ Course website: This is the main course website, where you can find the lecture notes, suggested homework, solutions to all the problems from chapters 15 and 16, as well as practice exams.
  - ▶ Canvas: Mainly use this to check your grades.
  - ▶ Dr Peyam: My YouTube channel; for calculus and other fun math videos. Feel free to subscribe to it if you want to!
  - ▶ Chapter 15 Playlist
  - ▶ Chapter 16 Playlist

- **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 buy the ‘Calculus-enhanced webassign access.’

**Highly Recommended:** *Div, Grad, Curl and all that: An Informal Text on Vector Calculus* (4th edition) by H.M.Schey, ISBN 978-0393925166. As you’ll soon see, chapter 16 of Stewart is garbage, and this book gives a much clearer presentation of the beautiful world of vector calculus.

- **Prerequisites:** Math 2D

- **What people make you believe this course is about:** In this course we will first finish up the material on triple integrals started in Math 2D by covering cylindrical and spherical coordinates (a 3D analog of polar coordinates), and change of variables (a multivariable analog of  $u$ -substitution). Then we will enter the beautiful world of vector calculus, where we will encounter vector fields, line and surface integrals (integrating functions on lines or surfaces, wow), and finally discuss four (!) fundamental theorems of calculus: the fundamental theorem of line integrals, Green’s theorem, Stokes’ theorem, and the divergence theorem. We will cover the following two chapters from the textbook:

- Multiple Integrals (Chapter 15)
- Vector Calculus (Chapter 16)

- **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 survival. 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 2 quizzes dropped.
- ▶ 30 % Midterm, Friday, February 7, during lecture
- ▶ 50 % Final Exam. For Lecture A (11-11:50 AM lecture), it's on Friday, March 20, 8–10 AM in 104 RH and for Lecture F (10-10:50 AM lecture), it's on Monday, March 16, 10:30–12:30 PM in 1600 DBH

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 scores (quizzes + midterm + final), calculate a raw total score, and *then* curve those grades. I will use the following standard math department curve, but I'll try to be as generous as I can:

$$20\%A \quad 25\%B \quad 30\%C \quad 15\%D \quad 10\%F$$

Grade distribution for Math 2E in Fall 2018:

$$24\%A \quad 21\%B \quad 30\%C \quad 16\%D \quad 9\%F$$

Rough Grade cutoffs for Math 2E in Fall 2018 (with + and – attached):

$$A = [80, 100], B = [70, 80), C = [60, 70), D = [46, 60), F = [0, 46)$$

**Note:** Please take the above distributions and cutoffs with a grain of salt, you are **NOT** guaranteed to have the same cutoffs this quarter.

- **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, and who can give you more information about them. **No make-up quizzes will be given, but your lowest two quizzes will be dropped.** I highly recommend you to save the lowest quizzes for the time when you'll get

sick or have a personal emergency.

**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, February 7, during the usual lecture time and the usual lecture room and will cover everything up to and including section 16.3 (The Fundamental Theorem of Line Integrals). **Please take the midterm in the lecture you're officially enrolled in, not the one you usually attend. No make-up midterm will be given, but the final exam replaces your midterm score if you do better on the final**
- **Final Exam:** The final exam is cumulative and will cover everything we have covered in this course. For Lecture *A* (11-11:50 AM) is set for Friday, March 20, 8–10 AM in 104 Rowland Hall, and for Lecture *F* (10-10:50 AM), it is set for Monday, March 16, 10:30–12:30 PM in 1600 DBH. **You HAVE to take the final in the lecture you're officially enrolled in, not the one you usually attend, and you cannot take the final earlier! No make-up final will be given**, so if you cannot make it for the final, please switch to another Math 2E-lecture. That said, if you do better on the final exam than on the midterm, your final exam score replaces your midterm score.
- **Cheating: DO NOT CHEAT!** I *will* catch you, and you will be prosecuted by the full extent of the UC Irvine law! **If you are caught cheating, no matter how small the incident (even cheating on a quiz), you will receive an automatic F in the course and will be reported to the UCI Office of Academic Integrity.** 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.

- **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 schedule of the lectures.

#		Date	Section	Lecture Title	
1	M	Jan 6	15.2, 15.3	Review: Double Integrals	
2	W	Jan 8	15.6	Review: Triple Integrals (I)	
	Th	Jan 9			Quiz 1
3	F	Jan 11	15.6	Review: Triple Integrals (II)	
4	M	Jan 13	15.7	Cylindrical Coordinates	
<b>5</b>	<b>Tu</b>	<b>Jan 14</b>	<b>15.8</b>	<b>Spherical Coordinates (I)</b>	<b>During Discussion</b>
	<b>W</b>	<b>Jan 15</b>		<b>Discussion</b>	<b>During Lecture</b>
	Th	Jan 16			Quiz 2
	F	Jan 17		No lecture	
	M	Jan 20		No lecture (MLK Day)	
<b>6</b>	<b>Tu</b>	<b>Jan 21</b>	<b>15.8</b>	<b>Spherical Coordinates (II)</b>	<b>During Discussion</b>
7	W	Jan 22	15.9	Change of Variables (I)	
	Th	Jan 23			Quiz 3
8	F	Jan 24	15.9	Change of Variables (II)	
9	M	Jan 27	16.1	Vector Fields	
<b>10</b>	<b>M</b>	<b>Jan 27</b>	<b>16.2</b>	<b>Line Integrals (I)</b>	<b>Make-up Lecture</b>
	W	Jan 29		No lecture	
	Th	Jan 30			Quiz 4
11	F	Jan 31	16.2	Line Integrals (II)	
12	M	Feb 3	16.3	FTC of Line Integrals (I)	
<b>13</b>	<b>M</b>	<b>Feb 3</b>	<b>16.3</b>	<b>FTC of Line Integrals (II)</b>	<b>Make-up Lecture</b>
	W	Feb 5		No Lecture	
	Th	Feb 6			Quiz 5
<b>14</b>	<b>F</b>	<b>Feb 7</b>		<b>Midterm Exam</b>	<b>Covers Lec 1–13</b>
15	M	Feb 10	16.4	Green's Theorem (I)	
16	W	Feb 12	16.4	Green's Theorem (II)	
	Th	Feb 13			Quiz 6
17	F	Feb 14	16.6	Parametric Surfaces (I)	
	M	Feb 17		No lecture (Presidents' Day)	
18	W	Feb 19	16.6	Parametric Surfaces (II)	
	Th	Feb 20			Quiz 7
19	F	Feb 21	16.7	Surface Integrals (I)	
20	M	Feb 24	16.7	Surface Integrals (II)	
21	W	Feb 26	16.5, 16.9	Divergence Theorem (I)	
	Th	Feb 27			Quiz 8
	F	Feb 28		No Lecture	
22	M	Mar 2	16.9	Divergence Theorem (II)	
23	W	Mar 4	16.5	Curl	
	Th	Mar 5			Quiz 9
24	F	Mar 6	16.8	Stokes' Theorem (I)	
	M	Mar 9		No Lecture	
25	W	Mar 11	16.8	Stokes' Theorem (II)	
<b>26</b>	<b>Th</b>	<b>Mar 12</b>		<b>Review: Surface Integrals</b>	<b>During Discussion + Quiz 10</b>
27	F	Mar 13		Review: Line Integrals	
<b>28</b>	<b>F</b>	<b>Mar 13</b>		<b>Review: Surface Areas</b>	<b>Make-up Lecture</b>