

Math 2B: Calculus

Spring 2020 Course Information and Syllabus

Professor: Nathan Kaplan, nckaplan@math.uci.edu,
Zoom Office Hours: MWF 12:00-12:50PM

TA: Jennifer Pi, jspi@uci.edu,
Jenny's Office Hours: M 4-5PM, Tu 3-4PM, W 3-4PM, Th 2-3PM.
TA: Samuel Lopez, samuel7@uci.edu
Samuel's Office Hours: Tu,Th 11AM-1PM.

Discussion Sections:

44151	Dis	1	0	PI, J.	TuTh 9:00- 9:50
44152	Dis	2	0	PI, J.	TuTh 10:00-10:50
44153	Dis	3	0	LOPEZ, S.	TuTh 6:00- 6:50p
44154	Dis	4	0	LOPEZ, S.	TuTh 4:00- 4:50p

Introduction

Welcome to Math 2B online! I know this online quarter is a big challenge for all of us. I want to say at the start that I am going to try to be really flexible and understanding about all the different stuff that people are dealing with right now.

Course Goals

In Math 2A, you learned all about derivatives. We can think of derivatives as telling us the instantaneous rate of change of a function. For example, the derivative of a position function is a velocity function. In integral calculus, we will study a related question: if we know the rate of change of a function (for example, velocity), can we figure out the “net change” (how much did our position change?). We will see the Fundamental Theorem of Calculus, which describes a deep connection between integral and differential calculus. We will learn lots of techniques for working with integrals. In the final part of the course we will turn our attention to the study of infinite sequences and series, which builds on our study of limits from Math 2A.

The goal of this course is not only to learn the techniques of integral calculus, but also to develop mathematical problem solving skills. We will focus on learning things like how to break a problem down into smaller sub-problems, flexibility in problem solving (How can I solve this most efficiently? What is the best tool to use?), and the ability to make connections among different topics and strategies. We will solve problems that will help you to apply the skills, concepts, and problem solving strategies from this course to problems that you may encounter in the future.

Textbook: *Calculus: Early Transcendentals*, 8th edition (Custom UCI edition) by James Stewart, Cengage Learning, ISBN 9781305756083. It is identical to the 8th edition of the Stewart Calculus book. *Single Variable Calculus: Early Transcendentals* by Stewart is fine too. For more information on the textbook see <http://www.math.uci.edu/undergraduate/courses/calculus-2a2b-resources>.

Course Website: <https://canvas.eee.uci.edu/courses/25661>.

Please check your email address on file with <https://eee.uci.edu> regularly.

Course Plan

Here is a description of how I would like this class to work:

1. **Lecture Videos:** Before each assigned lecture time, I will post several 5-15 minute videos covering the material for that day's 'lecture'. I taught Math 2B in the Winter and in the Fall, and my plan is to cover the same material that I would in a traditional lecture format, but to break it up into pieces— I know nobody wants to sit and watch 50 minutes of an online math lecture all at once! These videos will contain questions that pop up to test your understanding and make sure that you are following along. You will be graded on whether or not you respond to the questions in the videos. You won't be graded for whether or not your answers are correct, only on whether you made an attempt. Getting things wrong is ok! When I see what kinds of questions people answer incorrectly, it will help me to understand what the most confusing points are and will let me know what I should clear up in future videos.
2. **Office Hours:** The assigned lecture times for this course are MWF 12:00 - 12:50. We will use these lecture times for a kind of online office hours using Zoom. These sessions are not required, but I think they will be really helpful. I am not planning to record these office hour sessions, so please attend if you can.

The course TAs will also have weekly office hours that will run in a similar style. The TA office hours will begin in Week 2 of the course.
3. **Discussion Sections:** The two course TAs will be running discussion sections on Zoom every Tuesday and Thursday. Your TA will be in contact to give you additional information about these sessions. Discussion sessions are a really important part of this course. It is a good opportunity for you to practice working through problems on your own and in small groups. Going over challenging problems with the help of your TA is the best thing you can do to prepare for the quizzes and exams.
4. **Quizzes:** There will be approximately 2 quizzes per week, except in weeks when we have an exam where there might be only 1. The quizzes will be given online through Canvas. Generally a quiz will open up at 7PM on Tuesdays and Thursdays and will be due by 12PM the next day. You can take the quiz at any time during that window. Quizzes will be a few questions and last approximately 15 minutes. These quizzes are not designed to test new material in a clever way, but rather are meant to reinforce the basic definitions and results of the course. If you keep up with the homework and the reading in the textbook then the quizzes should not be a problem. There will be no makeup quizzes, but we will drop your lowest two quiz scores.
5. **Exams:** There will be two midterm exams and one final exam. These exams will be given online as Canvas quizzes. Exams will require Respondus LockDown Browser and use the Respondus Monitor proctoring system. I will give you more information about how this will work before the first midterm.
6. **Canvas Discussion Board:** We will be using the Discussion Board on Canvas to ask and answer questions about the course. If you have a question about something in the course you can ask a question about it on the discussion board. I will regularly check the board and will write in answers that everyone will be able to see. It will be a lot easier for me to manage answering questions on the discussion board than it would be to answer individual questions by email.

Prerequisites: Math 2A or equivalent. Contact mathinfo@math.uci.edu if you have any questions.

Enrollment and Waitlists: **I have no control over the waitlist.** For any administrative issues such as class enrollment contact mathinfo@math.uci.edu.

Important Dates

- **Wednesday, April 22nd, 12:00 - 12:50 PM: Midterm 1.**
- **Monday, May 11th, 12:00 - 12:50 PM: Midterm 2.**
- **Wednesday, June 10th, 4:00 - 6:00 PM: Final Exam.**

Grading

- Final Exam: 30%
- Midterm 1: 20%
- Midterm 2: 20%
- Quizzes: 15%
- WebWork (Online Homework): 10%
- Questions in Lecture Videos (only for completeness, not correctness): 5%

A Note about Grading: The math department strongly suggests that grades for Math 2B are approximately

20% A's, 25% B's, 30% C's, 15% D's, and 10% F's.

The median grade for Math 2B is almost always between a C and a B-. This grade distribution has been developed through experience since this course gets taught many times every year. It is possible that the final grades will deviate from this distribution a little bit, but likely not by much. It is possible that I will scale individual quiz or exam grades to account for things like exams being unexpectedly difficult. I will add together your raw scores for the different parts of the grade to get a raw total score. I will then decide the cutoffs between grades once I have all of the data. I do not decide what score you need to get a certain grade until after the final exam. No extra credit will be given.

Homework

WebWork: Homework will be due **online** via WebWork on Fridays at 11PM. There will be 8 assignments in total; each given out on Mondays (starting on Monday, April 6) and due 11 days later. **I did not create the assignments and I have no control over the WebWork system. If you have trouble with the WebWork system, email Richard North. rnorth@uci.edu.** Please start your homework early– we will not be able to help you with login problems on Friday nights!

Assignment	Sections Covered	Posting Date	Due Date @11PM
1	Up to 5.3	April 6	April 17
2	Up to 6.1	April 13	April 24
3	Up to 6.5	April 20	May 1
4	Up to 7.3	April 27	May 8
5	Up to 7.5	May 4	May 15
6	Up to 7.8	May 11	May 22
7	Up to 11.2	May 18	May 29
8	Up to 11.8	May 25	June 5

The main Webwork page is <http://homework.ps.uci.edu>. You can access the assignments by selecting your class and course number on the login page.

Note: It is normal that WebWork is not working yet. It will be set up by the second week of the course. Also, in order to access WebWork off campus you will need to have a VPN set up. For more info see <https://www.oit.uci.edu/help/vpn/>.

Textbook Homework: I have posted suggested homework problems taken from the textbook. These problems will not be collected or graded, but **I highly recommend that you do them!** The best way to become comfortable with a new and challenging subject is to do lots of problems. The exam problems will be very similar to the suggested textbook homework problems (and some might even be identical). Some of these problems are more challenging than the problems you see on WebWork.

Makeup Exams: Only in extreme circumstances will make-up exams be offered. If an emergency causes you to miss an exam, let the instructor know as soon as possible. In such cases, we will most likely re-weight the later exams and/or final rather than offering a make-up exam.

Additional Information

Academic Honesty: Cases of academic dishonesty can have very serious consequences. We will adhere to the university's academic honesty policy. For more information see: <https://aisc.uci.edu/students/academic-integrity/index.php>.

LARC: LARC is an academic support unit within the Division of Undergraduate Education 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. LARC sessions this quarter will run using Canvas and Zoom. For more information see <https://enroll.larc.uci.edu/>.

Accommodation Policies: If you need an accommodation to participate in this course, please come see me no later than the end of the second week of class. Review the policies on accommodation at: <http://disability.uci.edu/>.

The schedule below is tentative and subject to change. I will update it throughout the course to reflect what we have actually covered.

#		Date	Section	Topic	
1	M	Mar 30	4.9	Antiderivatives	
2	W	Apr 1	5.1	Areas and Distances	
3	F	Apr 3	5.2	Definite Integral	
4	M	Apr 6	5.3	Fundamental Theorem of Calculus	
5	W	Apr 8	5.4	Indefinite Integrals/Net Change Theorem	
6	F	Apr 10	5.5	Substitution Rule	
7	M	Apr 13	6.1	Areas between Curves	
8	W	Apr 15	6.2	Volume	
9	F	Apr 17	6.2, 6.5	Volume, Average Value of a Function	HW 1
10	M	Apr 20	7.1	Integration by Parts	
11	W	Apr 22		Midterm 1	
12	F	Apr 24	7.2	Trigonometric Integrals	HW 2
13	M	Apr 27	7.3	Trigonometric Substitution	
14	W	Apr 29	7.4	Partial Fractions	
15	F	May 1	7.5	Strategy for Integration	HW 3
16	M	May 4	7.8	Improper Integrals	
17	W	May 6	11.1	Sequences	
18	F	May 8	11.2	Series	HW 4
19	M	May 11		Midterm 2	
20	W	May 13	11.3	Integral Test	
21	F	May 15	11.4	Limit Comparison Test	HW 5
22	M	May 18	11.5, 11.6	Alternating Series/Absolute Convergence	
23	W	May 20	11.6	Ratio Test and Root Test	
24	F	May 22	11.7	Strategies for Testing Series	HW 6
	M	May 25	No Class (Memorial Day)		
25	W	May 27	11.8	Power Series	
26	F	May 29	11.9	Representations of Functions as Power Series	HW 7
27	M	June 1	11.10	Taylor and Maclaurin Series	
28	W	June 3	11.8–11.10	Final Exam Review 1	
29	F	June 5		Final Exam Review 2	HW 8
	W	June 10		Final Exam	