

INTRODUCTION TO CALCULUS

MATH 1A

Syllabus pointers

INSTRUCTORS

- This spring 2024 course is organized by Oliver Knill (knill@math.harvard.edu). You find his office in SC 432 near the math common room.
- Oliver's office hours are Tuesday, Thursday, Friday 4-5 PM and by appointment. Good times to meet away from office hours is right after classes or after the regular office hours.
- Course assistants are Maria Eugenia Briano, (mebriano@college), Jota Chamorro (jchamorro@college) and Jacobo Alvarez Martinez (jalvarezmartinez@college) will have MQC time and.

CLASS MEETINGS

- Our class meetings take place on Monday Wednesday and Fridays 9-10:15 in Room 309. This is in the third floor of the science center.
- During our class meeting, we develop the ideas and techniques together. Class attendance is required. If you should have to be absent, let Oliver know.
- Work together with classmates and contribute actively. Take notes during class. Bring writing utensils so that you can work on problem sets.
- Be intentional about how you communicate: we all have expertise and ideas to share, so we should take space and make space to be sure that everyone is learning.
- Celebrate mistakes! This is when a lot of our learning happens, so be fearless about sharing ideas and incrementally working towards solutions.
- Keep a growth mindset: this course is all about developing new skills and unfamiliar ideas, and that can be uncomfortable. Mistakes really are our best learning opportunities.
- You get the most out of the meeting by staying involved, by doing, by asking questions. Keep track of parts which you need to focus on more.

HOMEWORK

- Homework is posted on the course website of Oliver.
- Homework is due at the beginning of every class. As for homework, you are encouraged to collaborate with other students, get help from Oliver or the course assistants.

- Homework submissions are open for 12 hours past the deadline for emergency only. Late HW submissions come with a penalty.
- You find the assignments on Canvas but you submit homework on gradescope.
- Enroll to Gradescope with the entry code that is given to you. You find the gradescope link on the canvas page.
- The least 3 homework scores will be discarded.
- Even if you have only completed part of a Pset, submit what you have.
- We strictly follow the academic integrity policy stated in the honor code.

EXAMS

- The first midterm takes place on February 28, 2024
- The second midterm takes place on April 3, 2024
- The final 3 hour exam take place during the exam period and is organized by the registrar.

ACCESSIBILITY

- If you need accommodation for a documented disability, please get in touch with the Disability Access Office early in the semester as possible so that we can make sure your needs are addressed.
- We have flexibility for university sponsored events like athletic tournament, plays or musical performances, for religious holidays or extenuating circumstances like medical issues or family emergency.

GRADES

- 30 percent: One component is homework
- 30 percent: A second component are midterm scores, 15 percent each
- 40 percent: A third component is the final exam.

RESOURCES

- You should focus on the material which is handed out and worked on.
- There are libraries full of calculus books. There is a free textbook Active calculus: <https://activecalculus.org/acs>
- You can use calculators, and online tools like Desmos or Wolfram alpha, or computer algebra systems for homework. If you make use of a tool, then please acknowledge it.
- AI tools like Chat GPT can be used as a chat partner. You are not allowed to use AI output for solving your homework. This would be equivalent to having an other person do the homework for you.

MATERIAL

The warm-up Unit 0 is due on first class

Mon Jan 22:	Unit 1:	Introduction
Wed Jan 24:	Unit 2:	Functions
Fri Jan 26:	Unit 3:	Rates of change
Mon Jan 29:	Unit 4:	Limits
Wed Jan 31:	Unit 5:	Continuity
Fri Feb 2:	Unit 6:	Derivative
Mon Feb 5:	Unit 7:	Basic derivatives
Wed Feb 7:	Unit 8:	Derivative rules
Fri Feb 9:	Unit 9:	Hospital
Fri Feb 12:	Unit 10:	Hospital at infinity
Wed Feb 14:	Unit 11:	Linear Approximation
Fri Feb 16:	Unit 12:	Maxima and Minima
Mon Feb 19:	Presidents day	
Wed Feb 21:	Unit 13:	Absolute maxima
Fri Feb 23:	Unit 14:	Applications
Mon Feb 26:	Unit 15:	Review for first midterm
Wed Feb 28:	Unit 16:	First Midterm
Fri Mar 1:	Unit 17:	Flashback on midterm
Wed Mar 4:	Unit 18:	Chain rule
Wed Mar 6:	Unit 19:	Related rates
Fri Mar 8:	Unit 20:	Implicit differentiation
Spring Break March 9 -March 17		
Mon Mar 18:	Unit 21:	Logarithmic differentiation
Wed Mar 20:	Unit 22:	Inverse trig functions
Fri Mar 22:	Unit 23:	Net change
Mon Mar 25:	Unit 24:	Summation

Single Variable Calculus

Wed Mar 27: Unit 25: Definite integral
Fri Mar 29: Unit 26: Fundamental theorem 1

Mon Apr 1: Unit 27: Review for second midterm
Wed Apr 3: Unit 28: Second midterm
Fri Apr 5: Unit 29: Fundamental theorem 2

Mon Apr 8: Unit 30: Evaluating integrals
Wed Apr 10: Unit 31: Substitution
Fri Apr 12: Unit 32: Substitution II

Mon Apr 15: Unit 33: Topics in extremization
Wed Apr 17: Unit 34: Topics in data
Fri Apr 19: Unit 35: Topics in computer science

Mon Apr 22: Unit 36: Topics in statistics
Wed Apr 24: Unit 37: Review of the course