MATH 10A - Techniques of Calculus (a)

Summer 1, 2024

Instructor:	Xiaoying He	**Time:**	MTWR 11:20AM - 1:40PM
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Course Description:

Calculus is one of the greatest intellectual achievements of humankind. The beautiful idea at the heart of this subject allows us to explore both the infinite and the infinitesimal. This gives us the tools to model and then analyze phenomena that change. We will learn the ideas and skills of differential calculus in this course.

Office Hours:

After class, or by appointment.

Textbooks:

Calculus, Volume I, by Gilbert Strang: https://openstax.org/details/books/calculus-volume-1
The textbook is freely available online.

Prerequisites:

A solid working knowledge of precalculus.
You can check whether your precalculus is sufficient by taking the online math placement self-test: http://www.brandeis.edu/registrar/newstudent/testing.html#mathtest

Grading Criteria:

Homework (30%)	:	We will have 4 Homeworks. The lowest one will be dropped.
Midterm (60%)	:	We will have 3 in-class Midterms. The lowest one will be dropped.
Presentation (10%)	:	We will have 1 in-class Presentation.

* There will be an optional Final Exam.

Other Information:

Calculators are not allowed during exams.

Tentative Schedule:

Section	Topic	Date
2.1	A Preview of Calculus	June 3
2.2	Limit of a Function	June 3
2.3	Limit Laws	June 3
2.4	Continuity	June 3
3.1	Defining the Derivative	June 4
3.2	Derivative as a Function	June 4
3.3	Differentiation Rules	June 4
3.5	Derivatives of Trig Functions	June 5
3.6	Chain Rule	June 5
3.8	Implicit Differentiation	June 6
3.9	Derivatives of Exp and Log Functions	June 6
4.3	Maxima and Minima	June 10
4.5	Derivatives and the Shape of a Graph	June 10
4.6	Limits at Infinity and Asymptotes	June 17
4.8	l'Hospital's Rule	June 17
4.10	Antiderivatives	June 18
5.1	Approximating Areas	June 18
5.2	Definite Integral	June 18
5.3	Fundamental Theorem of Calculus	June 24
5.4	Integration Formulas and Net Change Theorem	June 24
5.5	Substitution	June 25
5.6	Integrals involving Exp and Log Functions	June 25

Midterm 1	:	June 11	Up to Section 3.9
Midterm 2	:	June 20	Up to Section 4.10
Midterm 3	:	June 27	Up to Section 5.6
Presentation	:	July 1 & July 2	