

Math 50: Analytic Geometry and Calculus

Fall 2021 Syllabus

Instructor: Mark Sing (they/them)

Office: Kassar 012

Office Hours: Kassar 205, Monday 2:00-3:30 and online TBD

Email: mark_sing@brown.edu

Course Description

Together, Math 50 and Math 60 cover the calculus material in Math 90, as well as review of the necessary precalculus topics. My goal is for you to leave this course with both solid mathematical knowledge in precalculus and single variable calculus, as well as a strong conceptual understanding of the material to apply it to future courses you take here.

To achieve this, we ask that you engage actively with the coursework and learning process. In turn, we will assist you by presenting the material carefully and with many examples of different approaches to problem solving, emphasizing understanding both the underlying mathematics and how we connect the mathematics to applications drawn from a wide range of disciplines. Students completing this course will be prepared for Math 100.

A brief list of topics we aim to cover:

1. Functions and modeling with functions
2. Polynomials and power series
3. Continuity and limits
4. Derivatives and their calculation
5. Exponential, logarithmic, and trigonometric functions
6. Extrema and optimization

Textbook

The following textbook is optional. It is typically the assigned textbook for Math 60 and Math 100, so you will probably use it again if you buy it now.

Thomas' Calculus: Early Transcendentals, Single Variable 14th Edition by Thomas, Weir, and Hass (ISBN 978-0-13-4439419)

Course Structure

Each week there will be two lectures (TR 2:30 - 3:50pm) and one recitation (R 4:00-4:50pm).

To help organize the material and your learning, most lessons are structured around a worksheet (mainly adapted from those of Professor Yu-Wen Hsu). During the lesson there will be some lecture and some time spent working on the problems from the worksheets in small groups. Groups will be asked to explain their work and questions to each other.

Typically there will not be enough time to finish the entire worksheet, and you should spend some time out of class working through problems you can't get to. Each worksheet will be posted before class, and solutions afterwards.

Homework

Homework is crucial to success in this course. It is nearly impossible to learn and master any course without spending time working on problems. The only way to learn math is by doing math!! Homework will usually be slightly different than problems discussed in class; presenting the material in different contexts will help you develop a more flexible understanding. And you are always welcome to come to office hours with questions!!

Each homework set is short and two are due each week to ensure you are continuously engaging with the material without overwhelming your schedule. Problem sets and their due dates will be posted on the course website. Homework will typically be released Fridays and Mondays, and due during class on Tuesday and Thursday (sometimes moved slightly to accommodate holidays and exams).

Homework grading will emphasize conceptual understanding and a willingness to put effort into the assignment.

Late homework ***WILL BE*** accepted with no penalty but we ask that you email the instructor in advance to let them know that you won't be able to finish the homework on time and to work out an alternative time to submit your assignment (ideally within a week of the original due date).

Recitation

In addition to the main lecture, there is a (mandatory) recitation section held by the TA on Thursdays 4:00-4:50pm (immediately after the Thursday lecture).

During the recitation, you will work with other students in small groups, much like the lecture.

Exams

There will be one midterm exam and one final exam. Tentatively, the first exam will fall in Week 9, and the final exam during the usual final exam period. The final exam is not cumulative.

Grading

Math 50 is only offered on an S/NC basis.

The breakdown of your grade will be as follows:

- 25% Exam 1

- 25% Exam 2
- 50% Homework

We aim to provide will provide ample feedback and opportunities to submit corrections on all assignments. Your learning is our priority!

Academic Integrity and Collaboration Policy

We take academic integrity very seriously. Our goal, above everything else, is that you work hard and learn the material as well as you are able.

You are strongly encouraged to work together on your homework assignments, but we ask that you write and submit your own solutions, rather than copying those of other students. The best way to follow this policy is to start problems on your own and work until you get stuck before consulting others for help you finish. Violation of this policy, cheating on exams, or any other form of academic dishonesty is prohibited by Browns Academic Code and may have serious consequences.

Accomodations

If you have a letter from SAS, please contact me with it as soon as possible.

If there are other accommodations not within the scope of SAS that you feel might help you, please get in touch and we will do our best to help you out! (e.g. if something happens and you are not able to get in touch about a homework assignment before the due date)