Math 121: Calculus I

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Goals

Welcome to Calc I! In this course, we will study the foundations of calculus, the study of functions and their rates of change. We want you to learn how to model situations in order to solve problems. If you have already taken calculus before, we want you to gain an even deeper understanding of this fascinating subject.

Topics

The derivative measures the instantaneous rate of change of a function. The definite integral measures the total accumulation of a function over an interval. These two ideas form the basic for nearly all mathematical formulas in science. The rules by which we can compute the derivative (respectively, the integral) of any function are called a calculus. The Fundamental Theorem of Calculus links the two processes of differentiation and integration in a beautiful way.

Course Details

Class Meetings

Courses meet in one of two varieties.

- One variety (sections 001–019) meets MW or TR for 110 minutes each class period. These sections are further arranged by meeting time into teams of three sections. Each team will collaborate on teaching practices and will share a grader.

- The other variety (sections 20, 27, and 34) meets MW or TR for 75 minutes each class, along with a 50 minute recitation section (21–26, 28–33, and 35–40). You must register for lecture and recitation separately.

A list of sections, their meeting times and locations, and their instructors can be found on through the Registrar's Class Schedule Search. If you enter "Calculus I" in the course name search field, the current term's listings will automatically come up.

Homework

There will be a list of homework problems on the course website. The homework list includes "practice" problems. These are neither collected nor graded. Rather, they are listed as a resource to help

you study. Do as many of those as you need to make yourself confident that you understand the basic techniques. They are all odd-numbered problems, and the answers are in the back of the book.

Each week a problem set of about ten problems will be collected. Three problems will be chosen at random and graded.

Some of the problems will be rather straightforward. These are to test the basic techniques. Often there is a practice or odd-numbered problem that is very similar to help with these. But others will require a little more thought. One of the major goals of college-level mathematics education is to move students from computational processes to conceptual thinking and communication. That is the biggest difference between this course and a high school course, even an Advanced Placement course. Mathematics is more than a bag of tricks and there are not a limited number of "types" of problems that can be asked. The goal in class is to *prepare* you to do the homework and not necessarily to *show you* how to do your homework. The learning occurs when you can move yourself into the unknown territory.

Graders will grade the homework promptly, and solutions will be made available on the course website. Graders will be expecting you to express your ideas clearly, legibly, and completely, often requiring complete English sentences rather than merely just a long string of equations. This means you could lose points for unexplained answers. See the homework page for a more detailed rubric.

In fairness to fellow students and to graders, late homework will generally not be accepted. Because sometimes things more important than math homework come up, you have some free passes: Your lowest problem set score will be dropped in the final grade calculation.

By all means you may work in groups on the homework assignments. Collaboration is a big part of learning and of scholarship in general. However, each student must turn in his or her *own* write-up of the solutions, with an acknowledgment of collaborators.

There is free math tutoring sponsored by the math department, meeting in room 620 of Warren Weaver Hall. Check the signs posted throughout WWH and the tutoring web page.

Exams

There will be one midterm exam, held in class on October 15 (for MW sections) and 16 (for TR sections).

The final exam for all sections will be Friday, December 19, from 12:00-1:50pm. Please make a note of it and plan your travel schedule accordingly.

Exams will contain a mixture of computational and conceptual problems. Some of them will resemble homework problems, while some will be brand new to you.

Quizzes will also be given during class or recitation. The schedule will be determined by your teaching team and published in advance (i.e., no pop quizzes). Quiz scores will be averaged together, again dropping the lowest, and constituting one grade equal in weight to the midterm grade.

Policy on out-of-sequence exams and missed quizzes

We are only able to accommodate a limited number of out-of-sequence exams due to limited availability of rooms and proctors. For this reason, we may approve out-of-sequence exams in the following cases:

1. A documented medical excuse.

2. A University sponsored event such as an athletic tournament, a play, or a musical performance. *Athletic practices and rehearsals do not fall into this category.* Please have your coach, conductor, or other faculty advisor contact your instructor.

3. A religious holiday.

4. Extreme hardship such as a family emergency.

We must give priority to these students. If there is space available, we will consider other requests. Everyone feels that their request is the most important and pressing, so we consider these requests on a first-come, first-served basis.

Scheduled out-of-sequence exams and quizzes (those not arising from emergencies) must be taken *before* the actual exam. Otherwise, please talk to your insructor before you return to class.

If you require additional accommodations as determined by the Center for Student Disabilities, please let your instructor know as soon as possible.

Prerequisites

Students who wish to enroll in Calculus I must meet *one* of the following prerequisites:

- An SAT Math score of 750 or higher.
- An ACT/ACTE Math score of 34 or higher.
- A score of 4 or higher on the Advanced Placement (AP) Calculus AB test
- A score of 3 or higher on the Advanced Placement (AP) Calculus BC test
- Completion of Algebra and Calculus (V63.0009) with a grade of C or higher.
- Our department's Calculus I placement test.

See the math deparment's placement web page for more information.

Grades

Your course score will be determined as the following weighted average:

Item	Weight
Midterm	25%
Homework	10%
Quizzes	25%
Final	40%
Total	100%

We will convert this score to a letter grade beginning with these values as cutoffs:

Cutoff	Letter Grade
93	A
90	A-
87	B+
83	B
80	B-
75	C+
70	C
65	C-
50	D

These cutoffs might be adjusted, but only in the downward direction (to make letter grades higher).

Text(s)

Essential Calculus: Early Transcendentals by James Stewart. Thomson/Brooks Cole, ISBN-10 0495014281. It's available at the NYU bookstore and countless online bookstores, and will be on reserve in the library.

Please note that if you buy the book online and have it shipped, you are still responsible for doing the homework while your book is in transit. Note also that different editions of the book may have different problem sequences (unfortunately, this is to make sure you buy the most current edition); if you buy another edition you are still responsible for doing the correct problems.

Calendar

The day-by-day calendar is also available.

Conclusion

We look forward to seeing you in Calculus I!