V63.0122: Calculus II

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Goals and Topics

Welcome to Calc II!

"The book of the universe is written in the language of mathematics." Galileo wrote this four hundred years ago, even before Newton and Leibniz discovered calculus. The statement is as valid today as ever: We use functions in all the sciences, and calculus allows us to analyze the functions and draw scientific conclusions.

Calc II is a second semester calculus course for students who have previously been introduced to the basic ideas of differential and integral calculus. Over the semester we will study three (related) topics, topics that form a central part of the language of modern science:

- applications and methods of integration,
- differential equations,
- infinite series and the representation of functions by power series.

The material we take up in this course has applications in physics, chemistry, biology, environmental science, astronomy, economics, statistics, and just about everything else. We want you to leave the course not only with computational ability, but with the ability to use these notions in their natural scientific contexts, and with an appreciation of their mathematical beauty and power.

Course Details

Class Meetings

Courses meet 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.

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 II" 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. *Four* 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 524 of Warren Weaver Hall. The times are to be determined by the schedules of the tutors. Check the signs posted throughout WWH.

Exams

There will be one midterm exam, held in class on March 4 (for MW sections) and 5 (for TR sections).

The final exam for all sections (including evening sections) will be Friday, May 8, from 2:00-3:50pm. 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 will not be able to accommodate out-of-sequence exams, quizzes, and finals for purposes of more convenient travel, including already purchased plane tickets.

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 II must meet *one* of the following prerequisites:

- Calculus I (V63.0121) with a C or higher.
- A score of 4 or higher on the Advanced Placement (AP) Calculus AB test
- A score of 4 or higher on the Advanced Placement (AP) Calculus BC test
- Our department's Calculus II 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 II!