

Math 252: Calculus II

The University of Oregon

CRN 33461

Spring 2021

Class Meetings: MTWF, 9:30–10:25, over Zoom

Instructor: Cruz Godar

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Office Hours: over Zoom — MF 11:00–12:20, W 11:00–11:50, and by appointment

Learning Outcomes

A successful student can:

- Set up and evaluate formulas for Riemann sums, given the function, interval, and number of rectangles
- State and use the fundamental theorem of calculus

- Evaluate integrals of polynomial and exponential functions, as well as sine and cosine.
- Evaluate integrals using substitution and integration by parts
- Use standard trig identities where appropriate as part of integral computations for some trig functions
- Interpret the area between two graphs as an integral
- Set up one-variable integrals that represent the solutions to a variety of modeling problems.
- Evaluate improper integrals
- Compute volumes of surfaces of revolution using both the disk and shell methods and recognize which method is most appropriate to a given problem
- Compute average values of functions over a closed interval
- Determine if a given function is a solution to a given differential equation
- Write down a linear differential equation that models a given situation that is described in words, typically where the rate of growth is a linear function of the amount
- Find general and particular solutions to basic separable differential equations
- Evaluate integrals using appropriate trigonometric substitutions?—if time
- Evaluate integrals using partial fraction decomposition?—if time

Materials

Zoom: to interface with the class. It's [free to download](#) on just about every operating system there is.

Textbook: *Calculus Volume 2* by Herman and Strang. This is a free textbook which you can access online at the following link: <https://openstax.org/details/books/calculus-volume-2>
I recommend downloading the pdf file so that you have offline access to the textbook. You are

also welcome to purchase a physical copy (they're around \$30), but this is unnecessary. We will also briefly use *Calculus Volume 1* by Herman and Strang, which you can find at <https://openstax.org/details/books/calculus-volume-1>.

Calculator: A scientific calculator will save you time doing simple computations. You will only be allowed to use one of the following calculators on quizzes and exams: Casio fx-260, Casio fx-300MS (or Plus), Casio fx-300ES (or Plus), TI-30X (a, S, or IIS), TI-34. **No graphing calculators will be allowed.** The Casio fx-300MS is available from the UO Bookstore for about \$13.

Assignments and Grading

Your total grade in the class is determined by your attendance and participation, and your scores on the homework, quizzes, midterm exams, and the final exam, weighted in the following manner:

Attendance and Participation: 2.5%

Weekly Homework: 20%

Weekly Quizzes: 7.5%

Midterm Exams: 20% each (40% total)

Final Exam: 30%

Your total grade at the end of the quarter will be rounded up to the nearest whole number. For example, a total grade of 88.2% will be rounded up to 89% and awarded a B+.

Attendance and Participation: On Mondays and Wednesdays, we'll spend the full 50 minutes (with a 5 minute break) on lecture. On Tuesdays, we'll spend the last 20 minutes in breakout rooms, where you can discuss the homework with other students. To get credit for participation, you must attend class on Mondays and Wednesdays, and turn on your camera and actively participate in discussion on Tuesdays. If this isn't possible for you (for example, your computer doesn't have a

camera), please let me know!

Homework: The homework is graded out of 32 points, and split into two or three parts:

- A handful of book problems, which are graded on completeness (i.e. only on whether you attempted them, not whether you did them correctly). These are collectively worth 16 points.
- Two custom exercises, written by me and graded on correctness. These are intended to be similar in material and difficulty to the textbook problems — the only difference in how you should approach them is writing up your solutions very carefully. Each problem is worth 8 points, for a total of 16.
- Sometimes, a third custom exercise that's extra credit. These often leave the standard scope of the class and ask you to think about material that's slightly more difficult or strange. They aren't representative of the quizzes or exams, so you shouldn't feel obligated to attempt them or worry if they don't make sense. They are worth 4 points.

Homework will be assigned every Wednesday and due at the start of class the following Wednesday. Working with others is strongly encouraged, but the final work you submit must be your own. Your lowest homework score will be dropped. **No late work will be accepted unless there is a documented, excusable circumstance.** Such circumstances include sports events in which you are involved in an official capacity (competing or playing in the band, for example), or illnesses with doctor's notes. If this is the case and you are given a make-up opportunity, the late work must be submitted no more than one week after its original due date.

This is an online course, and so all homework will be submitted via Canvas. You have two options:

- Handwrite your homework as usual and scan it, via a scanner or your smartphone. A series of pictures will **not** be accepted — only a single pdf file may be submitted. To use your smartphone for this, use the built-in document scanner in iOS (accessible through the Files app by tapping the ... menu and selecting *Scan Documents*), or the Adobe Scan app for Android.
- Typeset your homework. All the course documents (like this syllabus) are written in a language called LaTeX which compiles to the clean-looking pdf file you see. Although it takes an hour

or two to become comfortable with, LaTeX is used by people in nearly every STEM-related field, and learning it now will give you a major headstart. To get started, make an account at [Overleaf](#) and create a new project. You can type as usual, and to render math expressions, surround them in dollar signs — for example, $\frac{1}{2}$ will render as $\frac{1}{2}$. I'm more than happy to help with any difficulties you run into here.

Quizzes: We'll have a quiz every week on Friday, during the last 20 minutes. You'll write your work on a separate sheet of paper, scan it, and upload it to Canvas within 20 minutes of the start time. Your lowest quiz will be dropped. The quizzes are only worth 7.5% of your final grade, and we'll have 7 quizzes, so each one is worth roughly 1%. Because of this, the quizzes serve more as a barometer for how well you're prepared for the exams than an evaluation of your ability at the time. If you aren't getting the scores you'd like on the quizzes, **reach out for help** before the exam. As with the homework, **no late work will be accepted unless there is a documented, excusable circumstance**. Such circumstances include sports events in which you are involved in an official capacity (competing or playing in the band, for example), or illnesses with doctor's notes.

Exams: Our class will have two midterms on the Fridays of weeks 4 and 8. Each midterm will cover multiple sections of material, and the final exam will cover all of the sections covered in the course. **No make-up or early exams will be offered, except in the case of a documented, excusable circumstance**. If this is the case, the exam must be taken as soon as possible, and no more than a week after it was originally given.

You'll need to have your camera on during the midterms and quizzes. If that doesn't work for you for any reason, let me know during the first week of classes and we'll find a solution.

- Midterm 1: Friday, April 23
- Midterm 2: Friday, May 21
- Final: 10:15 AM on Friday, June 11

A note on grading: the vast majority of problems in this class are graded on a four-point scale

that is curved to an eight-point one:

8: Work that shows command of the material and has only a few small mistakes, if any.

7: Work that shows a strong understanding of the relevant material, but contains enough errors that they get in the way of the demonstration of that understanding.

5: Work that shows elements of understanding, but is too clouded with mistakes to be considered on the right track.

3: Work that demonstrates a very small amount of understanding — but still some.

0: No work shown for any problem where work is required or work that demonstrates no understanding at all of the relevant material.

Course Schedule

This schedule is tentative, and may change slightly throughout the quarter.

Week	Material
1	1.1, 1.2
2	1.3, 4.10*, 1.4
3	1.5, 1.6
4	1.7, 2.1, 2.2
5	2.2, 2.3
6	2.4, 2.5
7	2.6, 3.1
8	3.1–3.3
9	3.4, 3.7
10	4.1–4.4

*From *Calculus Volume I*.

Other Things

Accessibility: For those of you who are currently registered with Accessible Education Center for a documented disability, please present your paperwork to me during the first week of the term (or earlier) so that we can design a plan for you. Those of you with a disability, or who think they might have one, but are not registered with AEC should contact them as soon as possible. It is much more likely that measures can be taken to provide adequate special accommodation if the organization is done through AEC. Please let me know if you need additional accommodations.

Prohibited Discrimination and Harassment Reporting: I am a student-directed employee. For information about my reporting obligations as an employee, please see [Employee Reporting Obligations](#). Students experiencing any form of prohibited discrimination or harassment, including sex or gender based violence, may seek information on safe.uoregon.edu, respect.uoregon.edu, titleix.uoregon.edu, or aaeo.uoregon.edu or contact the non-confidential Title IX office (541-346-8136), AAEO office (541-346-3123), or Dean of Students offices (541-346-3216), or call the 24-7

hotline 541-346-SAFE for help. I am also a mandatory reporter of child abuse. Please find more information at [Mandatory Reporting of Child Abuse and Neglect](#).

Conduct: This university exists for your benefit. If you believe something is not as it should be, don't hesitate to let me know.

And as you should hold the university to a high standard, I will hold all of you to one in return. Academic dishonesty, including looking at other students' quizzes or tests or using any materials other than those allowed during a testing period, submitting others' work as your own, or altering returned work and resubmitting it, will be met with the strictest disciplinary action possible.

A word on learning: Math is not a subject that is learned passively. It is one thing to understand examples from lecture and another thing entirely to work through problems by yourself. Students who come to lecture expecting it to be enough on its own to pass the tests — and therefore don't put much or any effort into the homework — typically end up with very poor class grades. For your own benefit, it's crucial to stay on top of the homework, to follow along with lecture, and to seek help — from a friend, from my office hours, from the textbook, or from a tutor — when that becomes difficult. In the same vein, it's critical that if you're struggling, you reach out before large assignments, not after. I want to help however I can, but if a test has already been graded and handed back, there's usually nothing I can do.