

# MTH 251: Differential Calculus (Section 020) – Fall 2023

As your MTH 251 instructor this term, my goal is to support your learning so you can be successful in this course and beyond. We are striving to create a course that will be informative, engaging, and fun learning experience!

## INSTRUCTOR CONTACT INFORMATION

**Instructor:** Ali Ahammed Mozumder

**Email:** mozumdea@oregonstate.edu

**Office:** Kidder Hall 342

**Office hours:** MWF 10:30 – 11:30 AM or by appointment

**Teaching Assistant:** Keith Gallegos

**Email:** gallegke@oregonstate.edu

## COURSE INFORMATION

Weekly “Lecture”:	Monday, Wednesday, & Friday, 12:00 – 12:50 PM
Recitation:	Thursdays at various times, check your course schedule
Course Outline:	The course is divided into 5 Units. Each Unit will be covered in about 2 weeks of class. There will be an assessment for each Unit when it is complete during Weeks 3, 5, 7, 9 and Finals Week.

## CATALOG DESCRIPTION

Differential calculus for engineers and scientists. Rates of change: the derivative, velocity, and acceleration. The algebraic rules of differential calculus and derivatives of polynomial, rational, and trigonometric functions. Maximum-minimum problems, curve sketching, and other applications. Antiderivatives and simple motion problems.

Enforced prerequisites:	MTH 112 with C-, or at least 75% on the ALEKS math placement test
Course Credits:	4
Terms Offered:	Fall, Winter, Spring, Summer

## LEARNING OUTCOMES

### MTH 251 MEASURABLE STUDENT LEARNING OUTCOMES

A successful student in MTH 251 will be able to:

1. Calculate average and instantaneous rates of change and identify instantaneous rates of change with derivatives.
2. Apply ideas of differential calculus to motion problems (velocity, speed, and acceleration).
3. Apply the algebraic limit laws and the standard rules of differentiation including the chain rule to calculate particular limits and derivatives.
4. Use methods of calculus to solve maximum and minimum problems.
5. Use methods of calculus to determine the shapes of curves.

## BACCALAUREATE CORE LEARNING OUTCOMES

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MTH 251 satisfies the Baccalaureate Core Skills category for Mathematics and successful completion of the Mathematics category is one of OSU's First Year Skills requirements.

1. Identify situations that can be modeled mathematically.
2. Calculate and/or estimate the relevant variables and relations in a mathematical setting.
3. Critique the applicability of a mathematical approach or the validity of a mathematical conclusion.

## REQUIRED LEARNING RESOURCES

**Textbook:** *Calculus Volume 1*, by OpenStax

**Online Homework:** Achieve, purchase options are available in Canvas

**Desmos Account:** *This is recommended.* Desmos is an online graphing tool which we will often use in class. You can visit [Desmos.com](https://www.desmos.com) and there is a free smartphone app, as well.

## ASSESSMENT & GRADING

CATEGORY	PERCENT
Online Homework – Achieve	14%
Written Homework and Reflections	14%
Course Engagement	12%
Unit 1 Mini-Exam	12%
Unit 2 Mini-Exam	12%
Unit 3 Mini-Exam	12%
Unit 4 Mini-Exam	12%
Unit 5 Mini-Exam	12%
<b>Total</b>	<b>100%</b>

At the end of the term your final grade will be based on the following categories and weights, calculated and rounded to the nearest tenths place, and assigned a letter grade, no stricter than the scale given below.

**A** 100–92.5%    **A-** 92.4–90%    **B+** 89.9–87.5%

**B** 87.4–82.5%    **B-** 82.4–80%    **C+** 79.9–77.5%

**C** 77.4–72.5%    **C-** 72.4–70%    **D** 69–60%

**F** 59% and  
below

I will use Canvas for individual assignment grades. The overall total provided in Canvas may not be accurate during the term, but will be when final grades are calculated.

## ONLINE HOMEWORK (ACHIEVE) – DUE THURSDAYS & SUNDAYS BY 11:59PM

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The online homework is a time to practice solving problems and applying conceptual ideas mathematically. The online homework system will tell you immediately if you have “gotten the correct answer” or not. This allows you to self-correct and learn from your mistakes as you work the problems.

You can access our Achieve course by clicking on the *Macmillan Learning* menu option on the left-hand side of our Canvas page. There is information about purchase options in our Canvas page. **DO NOT** delay signing up for Achieve.

**NOTE:** No due date extensions are granted. Homework completed after the initial due date will be graded with a 5% score deduction per day.

## WRITTEN HOMEWORK & REFLECTIONS – DUE THURSDAYS & SUNDAYS BY 11:59PM PDT

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### Written Homework – Due Thursdays

The written homework is a great way to practice problems without the added structure and guidance that the online homework system provides. This should help you (the student) to assess what your strengths and weaknesses are. Attempting to solve these problems is an important part of understanding what we are learning.

The written homework will be posted to canvas every week. The written homework will be handed in Gradescope as a **SINGLE PDF** using the given template or on separate sheets of paper, keeping the spacing from the template, by the date and time posted in Canvas and Gradescope. These assignments are graded for completion, effort, work shown, and at least one question will be graded for correctness. **Late homework will not be accepted. Turn in what you have completed by the due date. You need to figure out how to scan your homework before the due date.** Gradescope has a free app available for iOS and Android that can be used to scan and upload your homework. Also, there are free scanners available in the library.

### Written Homework Reflection – Due Sundays

By looking at the provided solutions and comparing them to your own solutions you will start to find what your weaknesses and strengths are in the material covered. By responding about why you made mistakes or had misconceptions about a problem(s), you are solidifying that understanding while practicing your communication skills!

Immediately after the due date of the written homework a discussion board will become available and the **solutions** to the written homework will become available. The task for the student is to look over the posted solutions and compare to the student's submitted assignment. There also can be additional reflection prompts given in the discussion board. Detailed instructions for this assignment are in each discussion board on canvas.

**NOTE:** No due date extensions are granted. If you believe there are extraordinary circumstances, please speak with your instructor. Your two lowest assignments in this category will be dropped.

## COURSE ENGAGEMENT

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### Pre-Class Quizzes – Due each day before class

The pre-class quizzes provide an opportunity to practice skills introduced in the pre-class materials (videos and readings), answer survey questions, and inform your instructor about questions you will have about the pre-class materials. These quizzes will be graded on correctness. *Your three lowest pre-class quiz scores will be dropped.*

### Recitation Activities – Done in Recitation

We will be working on active learning activities during each weekly recitation. These activities could be answering poll questions, working on a group activity with your peers, reflecting on the recent big ideas in the course, or other active learning activities. You will earn points for these activities by being an active participant and answering questions posed in recitation. *Your lowest Recitation score will be dropped.*

## UNIT MINI-EXAMS – DURING WEEKS 3, 5, 7, 9, & FINALS WEEK

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Unit quizzes will assess procedural fluency and concepts based on key learning outcomes.

<i>Mini-Exam</i>	<i>Dates Available</i>
Unit 1	Thursday, October 19 <sup>th</sup> during recitation
Unit 2	Thursday, November 2 <sup>nd</sup> during recitation
Unit 3	Thursday, November 16 <sup>th</sup> during recitation
Unit 4	Thursday, November 30 <sup>th</sup> during recitation
Unit 5 & Cumulative Retake	Tuesday, December 12 <sup>th</sup> at 7:30am

### Mini-Exam policies:

- Mini-Exams cannot be rescheduled or taken early.
- If you have extenuating circumstances, a make-up mini-exam **may** be given, must be completed within 5 days of the scheduled mini-exam, and only **one** make-up will be given per student per term.
- The mini-exams for this class will be graded using the online platform, Gradescope.
- Regrade requests in Gradescope will only be considered within one week of being released from Gradescope.

### Mini-Exams

- Mini-Exams 1 – 4 will be taken during the times listed above.
- We expect the quiz itself to take you approximately 50 minutes. The instructor will collect the quizzes and upload them into Gradescope.
- Mini-Exam 5 will be taken during finals week. Every student will need to take Mini-Exam 5.

### Cumulative Retake Mini-Exam

- In addition to taking the Unit 5 Mini-Exam during the designated time during finals week, you also have the option to take a cumulative mini-exam. This mini-exam will cover Units 1 – 4 and your score on this mini-exam will replace the lowest score that you have on Mini-Exams 1 through 4 (if the grade is higher).  
**You MUST take the Unit 5 Mini-Exam**, but the Cumulative Retake Mini-Exam is optional.

## IN CLASS

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The classroom experience should prepare you for success in your career. Students are expected to behave in a professional manner, to be courteous to each other and the instructor. Students should make every effort to arrive to class on time, and stay for the entire class, participating actively during in-class activities. If, for whatever reason, you are unable to attend class, you are expected to get the notes from canvas or from a peer.

## ACADEMIC SUPPORT

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The **Math & Statistics Learning Center, MSLC, in Kidder 108B** is open 9am to 5pm Tuesday through Thursday and 9am to 4pm on Monday and Friday. There is also virtual tutoring available 7pm - 10pm Sunday - Thursday. Tutoring is available starting Week 2 through Week 10.

Any student who would like free assistance with affording sufficient groceries, or who lack a safe and stable place to live, and believes this may affect their academic success in any way, should contact the Human Services

Resource Center(HSRC) for support ([hsrc@oregonstate.edu](mailto:hsrc@oregonstate.edu), 541-737-3747). The HSRC has a food pantry, assistance signing up for SNAP, textbook lending program and many other resources to help you succeed.

## REACH OUT FOR SUCCESS

University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success at [oregonstate.edu/ReachOut](https://oregonstate.edu/ReachOut). If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255)

## ACADEMIC CALENDAR

All students are subject to the registration and refund deadlines as stated in the [Academic Calendar](#).

## STATEMENT REGARDING STUDENTS WITH DISABILITIES

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

## POLICY ON INCOMPLETES

Incompletes are given only in accordance with the University [incomplete grade policy](#).

## ACADEMIC HONESTY AND STUDENT CONDUCT EXPECTATIONS

In this class students are expected to follow [OSU's Student Conduct Code](#), outlined on the Student Conduct and Community Standards website, where academic dishonesty is defined as "an act of deception in which a Student seeks to claim credit for the work or effort of another person, or uses unauthorized materials or fabricated information in any academic work or research, either through the Student's own efforts or the efforts of another." Academic misconduct includes five categories of behavior:

- Cheating- use or attempted use of unauthorized materials, information, or study aids
- Fabrication- falsification or invention of any information
- Assisting- helping another commit an act of academic dishonesty
- Tampering- altering or interfering with evaluation instruments and documents, or
- Plagiarism- representing the words or ideas of another person as one's own.

## STATEMENT REGARDING RELIGIOUS ACCOMMODATION

Oregon State University is required to provide reasonable accommodations for employee and student sincerely held religious beliefs. It is incumbent on the student making the request to make the faculty member aware of the request as soon as possible prior to the need for the accommodation. See the [Religious Accommodation Process for Students](#).

## STUDENT BILL OF RIGHTS

OSU has twelve established [student rights](#). They include due process in all university disciplinary processes, an equal opportunity to learn, and grading in accordance with the course syllabus.