

# Course Syllabus



## MATH 172 | Calculus I Winter 2021

### General Information

**Scheduled Class Time:** None (Course is asynchronous)

**Location:** Online Learning Management System (Canvas)

**Instructor:** Dr. Emilie Hancock (she/her/hers)

**Email:** emilie.hancock@cwu.edu

**Office:** Samuelson 218C

**Phone:** 509-963-2402

**Office Hours:** Thursdays 2-5pm (Hosted in Zoom, No Appointment Necessary)

**Schedule an Appointment:** If you can't make it to office hours due to work, scheduled class, family care, or other major time commitments, email me to schedule a meeting (as appointments are available).

**Email Correspondence:** I will respond to student communications during business hours (M-F, 8am-5pm). You can typically expect a reply within approximately 24 hours, not including weekends. If you email me with questions about specific problems, I can be more helpful if you send pictures of what you've tried so far.

### Course Description<sup>1</sup> and Learning Objectives

Calculus is the foundation of the study of continuous processes, and thus a gateway to the physical, biological, and social sciences. At its heart, calculus is about understanding *covariation*<sup>2</sup>, how continuous change in one quantity is reflected in changes to other, linked quantities. Success in calculus relies heavily on your existing knowledge of functions. In Calculus I and II, you will focus on the relationship between *two* quantities at a time. (In Calculus III and IV, you will investigate more than two quantities.) There are two related branches of calculus: differential calculus and integral calculus. The *derivative* is the instantaneous rate of change, or a measure of *sensitivity* of change, in one quantity to change in another. The *integral* is a measure of the accumulation of quantities. In this course we will focus on the derivative, and you will look at the integral in Calculus II. (You will move back to the derivative in Calculus III, but for more than two variables. Calculus IV covers integration in more than two variables.)

Exploration of differentiation of functions of two variables will follow the outline:

Unit 1: Functions, Function Representations, and Function Properties

Unit 2: The Derivative

Unit 3: Modeling the Real-world with the Derivative

Upon successful completion of this course, you will be able to:

- Understand and determine limits and continuity of functions. [Unit 1]

- Make connections between the definition of the derivative of a function and its different representations: numerical/tabular, verbal description (often of a real-world situation), symbolic (algebraic expressions and equations), and graphical [Unit 2]
- Determine the derivative of a function algebraically using the definition of derivative and using derivative shortcuts/rules. [Unit 2]
- Apply the derivative to determine properties of functions, including maxima/minima. [Unit 3]
- Model situations using the derivative of a function, including the optimization of quantities. [Unit 3]

## Required Course Materials

- A **Computer** (or iPad)
- Decent **Internet** connection
- A **method to convert images to PDF**. If you write anything by hand and need to submit to Canvas, you may not have access to a scanner and need to take photos of your work. There are phone apps like CamScanner that will convert photos to PDF. You can also send photos to your computer and use your computer or an online tool to convert to PDF.
- **Zoom Access**: Weekly office hours will be held on Zoom. There is a 'Zoom' tab in the lefthand menu in Canvas, but you can also download Zoom directly to your computer, tablet, or phone. If you haven't used Zoom before, CWU has created a [Zoom Tutorial handout \(https://www.cwu.edu/online-learning/sites/cts.cwu.edu/online-learning/files/documents/Zoom%20Tutorial%20for%20Students.pdf\)](https://www.cwu.edu/online-learning/sites/cts.cwu.edu/online-learning/files/documents/Zoom%20Tutorial%20for%20Students.pdf) to help you get started. The [Zoom website \(https://support.zoom.us/hc/en-us/categories/200101697\)](https://support.zoom.us/hc/en-us/categories/200101697) also has some helpful articles and videos. After trying these resources, feel free to reach out to me with any questions! You will need the following login information to access Zoom office hours this quarter:

**Meeting ID:** 844 3328 2155

**Meeting Password:** 1i612r

- A hardcover or digital version of the **textbook**: *Calculus, 4th Edition (Early Transcendentals)* by Rogawski, Adams, and Franzosa
  - **You are automatically enrolled in Inclusive Access for a digital version of the book.** The eBook can be accessed through Canvas in the 'Bookshelf' tab.
    - **A charge for this material has been charged to your student account.** If you drop the course or opt out of the IA program, a refund will be automatically applied to your student account.
      - **In order to receive a refund, you must opt out by the last day of the add/drop period for the quarter.**
      - You may opt out of this program through Canvas or by logging in with your student ID to wildcatshop.net.
    - If you have any questions regarding the IA program, please email [textbooks@cwu.edu](mailto:textbooks@cwu.edu). Please include your student ID, the course number (MATH 172.002), as well as the question or problem you are experiencing. If you are having a technical problem accessing the material, including a screenshot of the problem you are experiencing will help to provide the opportunity for the quickest resolution to the issue.
  - **If you would prefer a hardcover book**, you will need this ISBN: 9781319050740. Make sure to opt out of Inclusive Access.

## Grading Scale and Method of Evaluation

Final letter grades will be determined based on your weighted percent grade, rounded to the nearest whole percent.

Letter Grade	F	D	D+	C-	C	C+	B-	B	B+	A-	A
Percent	0-59	60-66	67-69	70-72	73-76	77-79	80-82	83-86	87-89	90-92	93-100

Overall grades will be determined as a weighted average:

31% Homework

21% Lab Reports (7% each)

36% Unit Exams (12% each)

12% Final, Cumulative Exam (Units 1-3)

## Emergency Pass/Fail Grades (Winter 2021)

To help you do your best work in this time of unusual stress and change, CWU is providing a grading option called Emergency Pass/Fail (EP/EF) Grades.

- You may elect EP/EF conversions on a course-by-course basis. Upon such election, letter grades of C- or higher shall be converted to a passing grade of EP; grades of D+ or lower shall be converted to EF.
- You will have 3 days after the date on which final grades are due to choose to retain the assigned letter grade or to choose an EP/EF grade. This choice will be available on a course-by-course basis.
- Credits earned with a grade of EP/EF are not included in the computation of grade point averages. Credits earned with a grade of EP shall count toward program-specific passing requirements and general education requirements. Moreover, a grade of EP shall satisfy the prerequisites of subsequent courses.
- Transcripts that show a grade of EP/EF shall include a statement indicating that a state of campus emergency existed during the quarter in which the grade was posted. Credentialing for some programs/scholarships may require you to select the graded option.
- **Consult with your major advisor before choosing the EP/EF grade.**

## Covid-19 Exigency: Late Work Policy

Usually "excused" and "unexcused" absences are used to justify modifications for missed deadlines. Excused absences are valid and verifiable, requiring documentation. However, getting documentation right now could be difficult and potentially unsafe, so I am not keeping track of "excused" and "unexcused" absences this quarter. Your default assumption should be that **late assignments will not be accepted**. However, if you will miss an assignment deadline due to illness, bereavement, or school-related activities for which turning assignments in early is not feasible, you should communicate with me as soon as possible so that we can determine an appropriate course of action.

University Policy, [CWUP 5-90-040\(38\)](http://www.cwu.edu/resources-reports/cwup-5-90-040-academic-and-general-regulations#Class%20Attendance%20and%20Participation) (<http://www.cwu.edu/resources-reports/cwup-5-90-040-academic-and-general-regulations#Class%20Attendance%20and%20Participation>), provides for reasonable accommodation of student absences for religious holidays in accordance with [RCW 28B.137.010](https://apps.leg.wa.gov/rcw/default.aspx?cite=28B.137.010) (<https://apps.leg.wa.gov/rcw/default.aspx?cite=28B.137.010>). Students seeking reasonable accommodations under this policy must provide written notice to their instructors within the first two weeks of class specifying the dates for which religious accommodations are requested. Contact the Dean of Student Success at (509) 963-1515 for further information.

## Descriptions of Evaluation Components

### Homework (31%)

So that you can practice the primary skills in the course, we will use the online system WeBWork to submit and assess homework. These problems are mostly computerized versions of problems from the book. There are several benefits to using this online homework system, including:

- You will get immediate feedback on your submitted answers.
- You can attempt problems multiple times before the submission deadline, so if you get a problem wrong, you can reflect/practice/seek help and try again. You can work your way up to 100% on every assignment.

For extra problems you can complete odd-numbered textbook exercises which have answers provided at the end of the book.

### Lab Reports (21%, 7% each)

There is one lab for each major unit in the course. Each lab is a set of challenging problems that develop the central concepts in this course and serve several crucial purposes:

1. They provide an opportunity to explore real-world problems via multiple representations (verbal, graphical, tabular, symbolic).
2. They allow you to carefully communicate your mathematical reasoning.
3. They highlight the role of estimation and approximation in important calculus applications/scenarios.

### Unit Exams (36%, 12% each) and Final, Cumulative Exam (12%)

We will have three exams covering textbook and lab topics for each unit, as well as a cumulative final exam covering all course material. All exams will be taken on Canvas, will be timed, and you will be allowed to use your book and notes.

## Academic Honesty and Student Conduct

Consult university policies [CWUP 5-90-040\(25\)](http://www.cwu.edu/resources-reports/cwup-5-90-040-academic-and-general-regulations#Class%20Attendance%20and%20Participation) (<http://www.cwu.edu/resources-reports/cwup-5-90-040-academic-and-general-regulations#Class%20Attendance%20and%20Participation>), [CWUR 2-90-040\(24\)](http://www.cwu.edu/resources-reports/cwur-2-90-040-academic-and-general-regulations#Academic%20Dishonesty) (<http://www.cwu.edu/resources-reports/cwur-2-90-040-academic-and-general-regulations#Academic%20Dishonesty>), and [WAC 106-125-020](https://apps.leg.wa.gov/WAC/default.aspx?cite=106-125-020) (<https://apps.leg.wa.gov/WAC/default.aspx?cite=106-125-020>) for student conduct, cheating, plagiarism, and other academic expectations. CWU's policies and recommendations for academic misconduct will be followed, leading to disciplinary action up to and including failing the course.

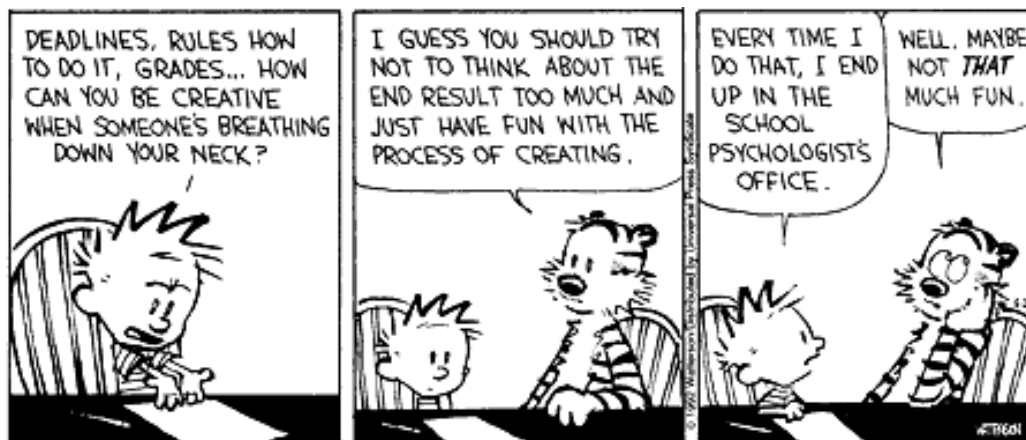
Central Washington University is committed to providing all community members with a learning and work environment that is free from sexual harassment and assault. Students have options for getting help if they have experienced sexual assault, relationship violence, and sexual harassment, or stalking. Information can be found at <http://www.cwu.edu/wecare> (<http://www.cwu.edu/wecare>) and in [CWUP 2-35-050](http://www.cwu.edu/resources-reports/cwup-2-35-050-equal-opportunity-policies-and-programs#Harassment) (<http://www.cwu.edu/resources-reports/cwup-2-35-050-equal-opportunity-policies-and-programs#Harassment>): Sexual Harassment. Faculty are required to report information regarding sexual misconduct or related crimes. Students may speak to someone confidentially by contacting the CWU Wellness Center, 509-963-3213, or the CWU Student Counseling Clinic, 509-963-1391.

## Disability Support Services

Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any obstacles to learning, contact Disability Services to discuss a range of available options to removing barriers, including accommodations. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email [ds@cwu.edu](mailto:ds@cwu.edu) (<mailto:ds@cwu.edu>) for more information.

## Changes

I reserve the right to amend, adjust, or otherwise modify the syllabus at any time during the course.



## Footnotes

1. Taken/adapted from Zorn, P. (Ed.). (2015). *CUPM Curriculum Guide to Majors in the Mathematical Sciences*. Mathematical Association of America.
2. M. Carlson, S. Jacobs, and S. Laursen. (2001). An Investigation of Covariational Reasoning and Its Role in Learning the Concepts of Limit and Accumulation. *Proceedings of the North American Chapter of the International Group for the Psychology of Mathematics Education Conference*, 2, 517–523