



MATH 134: Calculus II

Spring 2023

Oberlin College

Lectures:

MTuWF, 10:00–10:50 AM

King 327 (location likely to change)

Instructor:

Nathan Gray

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King 204

Office Hours: TBA

Note: In general, I will respond to emails between 8:00 AM and 6:00 PM, Monday–Friday. If you write to me at other times, it may take me longer to respond.

Prerequisites: MATH 132, MATH 133, or comfort with the material from MATH 133 (even if you do not have Oberlin credit) is required. If you are comfortable with the material from this course already, then you should instead take MATH 220 or MATH 231.

Textbook: *Calculus*, Volume 2 from OpenStax, 2016. The book is freely available at <https://openstax.org/details/books/calculus-volume-2>. Print copies may be purchased.

Course Description: Calculus is one of the greatest achievements of human thought, worthy of study in its own right, yet it also is the essential language of technical applications (e.g., biology, economics, physics, political science, psychology). It is the study of how quantities change. We model quantities by using functions (such as polynomial, rational, exponential, logarithmic, and trigonometric functions), and we apply techniques of calculus to study such functions.

This is the second of two semester-long courses in single-variable calculus. The first course (MATH 133) introduced our two main tools: the derivative and the definite integral. This second course uses those two tools in both mathematics and applications. The main topics include:

- (*Chapter 1 — review*) integration
- (*Chapter 2*) applications of integration
- (*Chapter 3*) techniques of integration; l'Hospital's rule and indeterminate forms; improper integrals
- (*Chapter 4*) introduction to ordinary differential equations
- (*Chapter 5*) sequences; infinite series
- (*Chapter 6*) power series
- (*Chapter 7*) parametric equations; polar coordinates.

Course Load: Oberlin College complies with federal regulations defining a credit hour. In this course, all students are expected to have 12 hours per week of academically engaged time throughout the semester. This amounts to 9 hours per week of additional academic work outside of lectures.

Grade Items:

Homework: There will be weekly homework assignments. The two lowest homework grades will be dropped at the end of the semester. Assignments must be submitted through Gradescope (see page 2).

Students are expected to complete the written assignments on their own. However, collaboration with classmates *before the write-up* is acceptable and encouraged, as long as each student writes and submits their own work. Collaboration during the write-up stage of a written assignment, or handing in a written assignment that is practically identical to a fellow classmate's work, is cheating and may result in a grade of zero for the assignment. Late homework is not accepted.

Exams: There will be three in-class exams and a cumulative in-person final exam.

Grading Policy: Course grades will be based on homework, quizzes, and exams. Every student's grades are a reflection of the student's mastery of the course material and the student's ability to communicate that mastery through written work.

Earning 90%, 80%, and 70% of the total points in the course will result in course letter grades *no stricter than A–, B–, and C–*, respectively. The boundaries (cut-offs) between letter grades may be relaxed at the instructor's discretion, depending on the distribution of course numeric grades. This grading scheme rewards hard work, leaving little room for miraculous recovery.

| Category | Grade Basis | Weight (each) | Weight (total) |
|--------------|------------------|---------------|----------------|
| Homework | lowest 2 dropped | | 30% |
| Exams (×3) | | 15% | 45% |
| Final Exam | | | 25% |
| Total | | | 100% |

Technology:

Google Drive Folder: All course materials will be posted there.

Gradescope: This course will use the website Gradescope in order to provide fast and accurate feedback on students' work.* Homework will be submitted and graded through Gradescope. Once the grades are posted, students will be notified immediately so that they can log in and see their feedback. Each student may also submit regrade requests if they feel that the grader has made a mistake.

After the instructor registers students into Gradescope, students should log in using their Oberlin email addresses. The initial password for each student can be changed at gradescope.com/reset_password. The same link can be used if students need to set their passwords for the first time.

Calculators: All electronic devices are banned from use during exams.

Schedule: A tentative schedule can be found in the course Google Drive folder. It will be updated frequently.

Attendance, Make-Up Policy: Students should understand the importance of attending lectures and doing the assigned work. A student who misses a lecture is responsible for any announcements made during that time. To determine what they missed, they should talk to a classmate. **Late homework is not accepted.** A legitimate absence due to a recognized Oberlin-related activity, a religious holiday, a verifiable illness, or an emergency will be reviewed on an individual basis. Concerning the exams, if a student must miss one, then they must obtain permission from the instructor in advance.

With that said, **students who are sick should notify the instructor and stay home.**

Accommodations: Oberlin College is committed to providing equitable access to learning opportunities for all students. If you have a disability and are seeking accommodations, please contact the Disability Resources at the Center for Student Success. All requests for accommodations must go through that office. You should also contact the instructor *at least* two weeks before the accommodations are needed.

Liberal Education: An important part of any liberal education is learning to use abstract thinking and symbolic (mathematical) language to solve practical problems. Calculus is one of the pillars of modern mathematical thought and has diverse applications. In this course, students will be exposed to theoretical concepts at the heart of calculus and examples of real-world applications.

*www.gradescope.com

Scholastic Dishonesty: This includes: cheating on exams; taking or using past/present exam materials without instructor permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain grades dishonestly. *All students are expected to follow the Honor Code.* If it is determined that a student has cheated, they may be given a grade of F for the course and may face additional sanctions from Oberlin College.

Course Help: Studying mathematics can be difficult. Here is some advice:

Reading: The relevant material should be read *before* lecture. Try to read and understand every statement mentioned in all of the examples. If necessary, reread the same material after lecture.

Homework: Begin it immediately after lecture, doing as much as you can *on your own* for the first few days that it is assigned. During this period, you should not be discussing solutions with others. Once you have completed all that you can, spend the last few days discussing the problems with one or more classmates to get further help. ***Do not search for homework solutions online.*** This creates a destructive habit; it also violates the Oberlin Honor Code.

QUAIL: Meet with our QUAIL. Their schedule will be made available at the beginning of the semester.

Office hours: Attend them when you can.