



MATH 203: Calculus III

Spring 2019

Mt. Holyoke College

Course Information:

Course Duration: Jan. 23–May 6

Lectures:

| Section 01 | Section 02 |
|-------------------|-------------------|
| MWF, 1:30–2:45 PM | MWF, 2:55–4:10 PM |
| 216 Shattuck Hall | 216 Shattuck Hall |

Instructor:

Nathan Gray

Office: 415B Clapp Lab

Office Hours: TBA

Email: ngray@mholyoke.edu

Prerequisites: A passing grade in MATH 102, or its equivalent, is required.

Textbook (required): Hughes-Hallett, Gleason, McCallum et al., *Calculus: Multivariable*, 7th ed., Wiley, 2017. (Library call number: QA303.2.M85 2017.) We will cover most of chapters 12–20. Additional topics from chapter 21 could be covered (time permitting).

Course Description: In this course, we extend the concepts and techniques covered in single-variable calculus (MATH 101, 102) by studying functions of two or more variables. The main topics include:

- vectors, lines, planes, quadric surfaces
- differential calculus (limits and continuity; partial differentiation; local/global extrema; gradients; directional derivatives)
- integral calculus (double integrals using rectangular or polar coordinates; triple integrals using rectangular, cylindrical, or spherical coordinates)
- vector analysis (line and surface integrals; surface integrals over parameterized surfaces; the theorems of Gauss, Green, and Stokes).

Homework, Redos:

Homework: There will be weekly homework assignments, each due during a Monday lecture. The lowest two homework grades will be dropped at the end of the semester.

Collaboration *before the write-up* is encouraged. However, each student must write and submit their own work. Collaboration during the write-up stage of an assignment, or handing in an assignment that is practically identical to a fellow classmate’s work, is cheating and may result in a grade of zero for the assignment.

Redos: For every homework assignment, *students who scored below 75% on the assignment* may redo the graded problems to improve their grades. The new grades will be worth at most 75%. The new work must be stapled together with the original graded work; otherwise, the redo will be returned with no grade change. Students are not allowed to redo an assignment if they scored 75% or higher. But again, the lowest two homework grades will still be dropped at the end of the semester.

The day(s) to resubmit a redo for an assignment will be announced in lecture; after that time, a redo for the assignment will no longer be accepted.

Quizzes, Exams:

Quizzes: There will be seven in-class quizzes. Each quiz is closed-book and closed-notes, will be given during a Monday lecture, and will be on some of the latest material covered.* The lowest quiz grade will be dropped at the end of the semester. Dates of the quizzes:

- Quiz 1: Feb. 4
- Quiz 2: Feb. 11
- Quiz 3: Feb. 18
- Quiz 4: Mar. 25
- Quiz 5: Apr. 1
- Quiz 6: Apr. 8
- Quiz 7: Apr. 29.

Exams: There will be two in-class exams and a comprehensive, self-scheduled, two-hour final exam. Each exam is closed-book and closed-notes. Dates of the exams:

- Exam 1: Mar. 4
- Exam 2: Apr. 22
- Final Exam: May 3–7
(self-scheduled).

Grading Policy: Course grades will be based on homework, quizzes, and exams. Table 1 gives the weights of these grade items. Students may check their grades on the course Moodle site throughout the semester.

Warning: *The grades displayed on Moodle are raw scores.*

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.

Table 1. Course Grades

| Category | Grade Basis | Weight (each) | Weight (total) |
|--------------|--------------------|---------------|----------------|
| Homework | lowest two dropped | | 20% |
| Quizzes (×7) | lowest one dropped | | 15% |
| Exams (×2) | | 20% | 40% |
| Final Exam | | 25% | 25% |

Course Help: Studying mathematics, particularly in college, can be difficult. Here is some advice:

- Read the relevant material in the textbook before lecture.
- Complete the homework.
- Attend the evening Group Study sessions, and work in a small group while there.†
- Attend office hours.

Schedule: A tentative schedule can be found on the course Moodle site. Students should consult the schedule and read the relevant material *before* it is presented in lecture. The schedule will be updated frequently.

*The exact coverage of any upcoming quiz will be announced during lecture.

†Students are allowed and encouraged to attend *any* of the MATH 203 Group Study sessions.

Attendance, Make-Up Policy: Students should understand the importance of attending lectures and doing the assigned work. When writing each exam and quiz, the instructor will assume that every student has attended every lecture. A student who misses a lecture is responsible for any announcements made during that time.

There are **no** opportunities to complete homework, exams, or quizzes either before or after their scheduled dates. In particular, **late homework is not accepted**. A student who does not complete a grade item on time will earn a grade of 0 (zero) for that item.

A legitimate absence due to a recognized MHC-related activity, a religious holiday, a verifiable illness, or an emergency will be reviewed on an individual basis (documentation required). If a student must miss an exam, they must obtain permission from the instructor in advance.

Electronics/Technology Policy: Only scientific calculators with one-line displays are allowed on exams and quizzes.

Students are encouraged to use Wolfram Alpha,^{*} Mathematica, GeoGebra,[†] or SageMath for computational purposes or for visualization of graphs of functions seen in the course.

Disability Accommodations: Mt. Holyoke College is committed to providing equitable access to learning opportunities for all students. If you have a disability and seek accommodations, please make an appointment with the instructor within the first two weeks of the semester so that appropriate arrangements can be made; documentation from the AccessAbility Services Office is required. You can contact AccessAbility Services in Mary Lyon Hall, or at accessability-services@mtholyoke.edu, or at (413) 538-2634.

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.

Scholastic Dishonesty: This includes: cheating on exams or quizzes; 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 MHC.

^{*}<https://www.wolframalpha.com/examples/Calculus.html>

[†]<https://www.geogebra.org>