

Syllabus - Summer Session I 2025

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is located within the course in HuskyCT (Blackboard).

Course and Instructor Information

Course Title: Multivariable Calculus

Credits: 4

Format: Fully Online, accessed via the learning management platform [HuskyCT](#).

Prerequisites: [MATH 1132Q](#) or [1152Q](#) or a score of 4 or 5 on the Advanced Placement Calculus BC exam.

Recommended preparation: A grade of C- or better in [MATH 1132Q](#). Not open for credit to students who have passed MATH [2130Q](#), or [2143Q](#).

Professors: Anthony Rizzie, Ph.D. and Andrew Jaramillo, Ph.D.

Email: anthony.rizzie@uconn.edu and andrew.jaramillo@uconn.edu (preferred method of contact)

Office: office hours will be held online, WebEx links will be provided in HuskyCT

Office Hours/Availability: TBA, Likely two or three times per week, depending upon students' availability. We aim to respond to questions via email or Capuswire within 24 hours on business days. Weekend response time will be slower.

Course Materials

Required course materials should be obtained before the first day of class.

Texts are available through a local or online bookstore of your choice. The [UConn Bookstore](#) carries the required text(s), which can be shipped ([fees apply](#)).

Required Materials:

Item 1. STEWART, JAMES. *CALCULUS*. 8th ed., Brooks Cole; 8 Edition , 2015. ISBN-10: 1285740629 ISBN-13: 978-1285740621 (bundled with WebAssign)

There are two options for purchasing the book: the more expensive one is the full text that contains all chapters for Math 1131Q/1132Q/2110Q (Calculus I, II, & III), and the second one contains only the pertinent chapters for Math 2110Q. If you own the 7th edition, that will be fine, but please note that some of the section numbers and names have changed; however, you may still need a WebAssign access code, which is cheaper by buying it with a book bundle than on its own due to our arrangement with the publisher.

Note: WebAssign access is required in order to complete online homework for the course (one of your options for earning Practice Points, see below), but the textbook is not necessarily required or needed. The textbook is recommended and can serve as an excellent study resource, and the appropriate page numbers will be listed for further reading on all topics covered in the course. There are a wealth of practice problems that can provide an invaluable tool for studying as well.

WebAssign access without the textbook can be purchased directly through the WebAssign link in the Course Menu in HuskyCT. Do not buy an access code/card elsewhere as it is not guaranteed to work!

Optional Materials:

Item 1. Account on [Campuswire](#) (strongly encouraged, you can read and post anonymously!)

Item 2. Play-Doh (one small can will do, good for following along with occasional activity videos!)

Additional course readings and media are available within HuskyCT, through either an Internet link or Library Resources

Course Description

Three-dimensional space and coordinates, surfaces and graphs of equations, two- and three-dimensional vector algebra, differential calculus of functions of two or more variables and applications, double and triple integrals, coordinate transfer, parametric curves and surfaces, line and surface integrals.

Course Objectives

By the end of the semester, students should be able to:

1. Use three-dimensional Cartesian coordinates (including vectors and vector operations) to classify and distinguish between common equations and graphs of surfaces and curves.
2. Evaluate first and second partial derivatives of a multivariable function and relate these functions and their values to the behavior of a surface.
3. Use partial derivatives to determine equations of tangent planes, to locate and to classify critical points, and to calculate a rate of change of a surface in any direction.
4. Identify points in two-dimensional (Cartesian and polar) and three-dimensional (Cartesian, cylindrical, and spherical) coordinate systems and express common equations of surfaces and boundaries of regions in each system.
5. Write, reorder, evaluate, and interpret double and triple integrals of regions in the plane and space, respectively.
6. Set up, evaluate, and interpret line integrals of a scalar function or vector field over a given curve, applying famous results like the Fundamental Theorem for Line Integrals and Green's Theorem when appropriate.
7. Set up, evaluate, and interpret surface integrals of a scalar function or vector field over a given surface, applying famous results like Stokes' Theorem and the Divergence Theorem when appropriate.

Course Outline (See Course Calendar in Course for all Due Dates)

Module 1: Three-Dimensional Space (Sections 12.1-12.6)

Module 2: Differential Calculus in Two or More Variables (Sections 14.1, 14.3-14.8)

Module 3: Double Integrals (Sections 15.1-15.3)

Module 4: Triple Integrals (Sections 15.6-15.9)

Module 5: Parametric Curves and Line Integrals (Sections 13.1-13.3, 16.1-16.4)

Module 6: Parametric Surfaces and Surface Integrals (Sections 16.5-16.9)

Course Requirements and Grading

Summary of Course Grading:

| Course Components | Weight |
|---|--------|
| Practice Problem Points | 25% |
| Module 1 Exam (12.1-12.6) | 15% |
| Module 2 Exam (14.1, 14.3-14.8) | 15% |
| Modules 3 & 4 Exam (15.1-15.3, 15.6-15.9) | 15% |
| Module 5 Exam (13.1-13.3, 16.1-16.4) | 15% |
| Module 6 Exam (16.5-16.9) | 15% |

Lecture Videos

In each module, you will need to watch several lecture videos, which are accessed through HuskyCT. This will replace the typical lecture component of a traditional in-person class. You should plan ahead to make sure you keep up with the lecture videos, and be sure to watch them actively. This means you will likely do a lot of pausing, working through examples, rewinding, and rewatching - so they will take much longer than the posted video times.

Practice Problem Points (PPP, 25% of final grade)

This component of your grade encompasses several options, a "choose your own adventure" type of practice style to suit your individual studying needs and goals. Each option below has an associated point value, and you do NOT lose points if an assignment is not completed; instead, your score is additive over the full course, and completing an

assignment adds points to your total.

Your final percentage for this portion of your grade will be taken out of 100 points. Two important notes: (1) there are more than 100 points available, so you can pick and choose what works best for you individually and (2) you will be allowed to earn up to 110 points total, which grants a small amount of extra credit in this component of your grade.

In an effort to prevent anyone from working too far ahead in the course materials and to help keep everyone on pace with the suggested schedule, you will not be allowed to earn more than 50 PPP by the end of Module 3. After Module 3 and its associated assignments, there will be no limit to what you can complete (other than the extra credit cap at 110 for everyone in the course).

Option 1) WebAssign Assignments (2 points each, approx 60 points possible total)

In each module, you can complete assignments through WebAssign, which is accessed through HuskyCT. There are 30 graded assignments, each worth up to 2 points each; the points you earn are based on the problems completed correctly, and you do not have to complete the full assignment to get points. You can view your grades in HuskyCT anytime. WebAssign assignments for each module will be due on the day of the corresponding module exam.

Option 2) Quizzes (2 points each, approx 48 points possible total)

There will be a quiz to complete each day of the course (there will not be quizzes that have to be completed over the weekends but some are due on Sundays). The quizzes are short and meant to help you see how you are understanding the previous day's material. We strongly encourage you to see what you can complete without the use of any resources like your notes, textbook, etc. Quizzes will be good preparation for the exams. Quizzes are located in the corresponding folders in the Learning Modules where all of the videos are located. Quizzes will be graded on completion, and solutions will be posted the day after each quiz is due.

Option 3) Practice Worksheets (2 points each, approx 42 points possible total)

There are practice worksheets posted for every topic covered in the course (some are combined into a single worksheet, like Practice With Vectors that covers 12.2, 12.3, and 12.4). In contrast to WebAssign, these problems help to hone your understanding of the concepts and generally involve more abstract questions and explanations, though there are also computational problems throughout. These will be graded on completion. Numerical solutions are provided on the second page for most problems- if a problem is a setup or sketch question, the solution is likely not provided since it would give away how to do the full question.

Option 4) Post on Campuswire (1 point each post, approx 30 points maximum)

If you ask a new, meaningful question on Campuswire and/or provide a thoughtful reply to a question asked by a peer, you will receive 1 practice point each time you do so, with a limit of 30 points total.

Option 5) Practice Exams (4 points each, approx 20 points possible total)

There will be a set of practice problems to help prepare for each exam. These will be due on the day of the exams and will be graded on completion.

Exams (15% of final grade each, 75% total)

Module 1 Exam (Monday, June 9)

This exam will cover Module 1, which consists of Sections 12.1-12.6. See below under Assessment for more details.

Module 2 Exam (Monday, June 16)

This exam will cover Module 2, which consists of Sections 14.1 and 14.3-14.8. We will not assess Section 14.2 on Limits, but you are encouraged to work through the additional material provided for exposure and practice!

Module 3 & 4 Exam (Monday, June 23)

This exam will cover Modules 3 and 4, which consist of Sections 15.1-15.3 (Module 3, double integrals) and 15.6-15.9 (Module 4, triple integrals and change of coordinates).

Module 5 Exam (Monday, June 30)

This exam will cover Module 5, which consists of Sections 13.1-13.3 (vector-valued functions and parametric curves) and 16.1-16.4 (line integrals).

Module 6 Exam (Thursday, July 3)

This exam will cover Module 6, which consists of Sections 16.5-16.9.

Assessment

There will be five exams total in this course. You will have a window of time on each exam day to complete the exam and will then submit your work online via Gradescope. Calculators and other electronic devices will NOT be allowed, and you may not work with others, use notes, books, or any other resources that are not explicitly stated as allowed.

All questions on the exams will be graded on the following basis:

4 points- work and explanation is correct and complete, perhaps a small arithmetic or algebraic mistake

2 points- work and explanation make progress in solving but are incomplete and/or have multiple errors

0 points- no work submitted or no progress made in solving the problem in an appropriate manner

After each exam, you will have a chance to submit revisions of your work to earn half the points missed on a problem back. So, if you score a 2 out of 4 on a question, you can submit a revised version that will receive a score of 3 out of 4 if corrected appropriately. If you had previously scored a 0 on a question, you are still eligible to complete a revision and may earn a 2 out of 4 for submitting correct work. **Exam revisions will be due on or before the day of the next exam. For example, Module 1 Exam revisions are due on or before the date of the Module 2 Exam on June 7.**

IMPORTANT NOTE: Due to the Module 6 Exam occurring on the final day of the course, you will NOT be able to submit revisions for these problems. To account for this, the last exam will be a little shorter, and each problem will be graded more finely on a scale of 0-4 with partial credit given for correct work.

Feedback and Grades

We will make every effort to provide feedback and grades within 24-48 hours, with the exception of the Module 6 Exam and final course grades, which may take longer to finish. To keep track of your performance in the course, refer to My Grades in HuskyCT.

Grading Scale:

| Grade | Letter Grade | GPA |
|--------|--------------|-----|
| 93-100 | A | 4.0 |
| 90-92 | A- | 3.7 |
| 87-89 | B+ | 3.3 |
| 83-86 | B | 3.0 |
| 80-82 | B- | 2.7 |
| 77-79 | C+ | 2.3 |
| 73-76 | C | 2.0 |
| 70-72 | C- | 1.7 |
| 67-69 | D+ | 1.3 |
| 63-66 | D | 1.0 |
| 60-62 | D- | 0.7 |
| <60 | F | 0.0 |

Final grades will be rounded naturally (i.e., a 92.5 would be rounded up to 93 and receive an A and a 92.3 would be rounded down to a 92 and receive an A-).

Due Dates and Late Policy

Due to the large number of PPP available and ample opportunities to earn those points, no late work will be accepted.

All course due dates are identified in the **Course Schedule**. **Deadlines are based on Eastern Standard Time; if you are in a different time zone, please adjust the times accordingly to ensure your work will be graded.** *The instructor reserves the right to change dates accordingly as the semester progresses. All changes will be communicated in an appropriate and timely manner.*

I urge you to start assignments before they are due. There are no makeup exams except for in extenuating circumstances. If you think you will miss an exam for any reason, please contact the instructor as soon as possible.

Academic Integrity

All students shall act in accordance with the [Student Code](#) at the University of Connecticut, which states: "Academic misconduct is dishonest or unethical academic behavior that includes, but is not limited to, misrepresenting mastery in an academic area (e.g., cheating), failing to properly credit information, research, or ideas to their rightful originators or representing such information, research, or ideas as your own (e.g., plagiarism)."

In particular, this means that any work you submit in this course should be your own. It is expected that you will struggle with various aspects of this course, and you are encouraged to seek help from me, your peers, the Q Center, and other sources in understanding the concepts and computations. **However, you are expected to turn in work that reflects your own understanding of the topics and ideas. Therefore, your work should not bear resemblance to that of any other student in the course or to any other sources used, and any ideas used for which any other party had a share in developing should be cited as such.**

For example, it is a good idea to look at examples in the text, notes, or online for problems similar to the one you are stuck on, and looking for ways to adapt the ideas and methods to your current problem. **In the interest of both your learning and academic honesty, I do not recommend searching for solutions to the specific problem you are stuck on.** However, if you search for solutions to a specific assigned problem, you will need to carefully cite your source **and also write up a solution that is completely in your own words and honestly reflects your own understanding of the ideas (i.e., without looking at the solution, or possibly even at any notes you took while looking at the solution).**

Consequences of academic misconduct include, but are not limited to, a zero on the assignment or exam and/or a grade of F in the course. If you are unsure that what you are doing to complete the work of this course is acceptable, contact the instructor for helpful tips and advice on how to protect your work and ensure that you are not violating the academic integrity policies of the instructor, the course, or the university.

Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. Review these important [standards, policies and resources](#), which include:

- The Student Code
 - Academic Integrity
 - Resources on Avoiding Cheating and Plagiarism
- Copyrighted Materials
- Netiquette and Communication
- Adding or Dropping a Course
- Academic Calendar
- Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships
- Sexual Assault Reporting Policy

Students with Disabilities

The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or <http://csd.uconn.edu/>.

Blackboard measures and evaluates accessibility using two sets of standards: the WCAG 2.0 standards issued by the World Wide Web Consortium (W3C) and Section 508 of the Rehabilitation Act issued in the United States federal government." (Retrieved March 24, 2013 from [Blackboard's website](#))

Software/Technical Requirements (with Accessibility and Privacy Information)

The software/technical requirements for this course include:

- HuskyCT/Blackboard ([HuskyCT/ Blackboard Accessibility Statement](#), [HuskyCT/ Blackboard Privacy Policy](#))
- WebAssign ([Cengage Accessibility Statement](#), [Cengage Privacy Policy](#))
- Campuswire ([Privacy Policy](#))
- [Adobe Acrobat Reader](#) ([Adobe Reader Accessibility Statement](#), [Adobe Reader Privacy Policy](#))
- Microsoft Office (free to UConn students through [uconn.onthehub.com](#)) ([Microsoft Accessibility Statement](#), [Microsoft Privacy Statement](#))
- Dedicated access to high-speed internet with a minimum speed of 1.5 Mbps (4 Mbps or higher is recommended).
- Video recording capabilities, such as a webcam or smartphone.

NOTE: This course has NOT been designed for use with mobile devices.

Help

[Technical and Academic Help](#) provides a guide to technical and academic assistance.

This course is completely facilitated online using the learning management platform, [HuskyCT](#). If you have difficulty accessing HuskyCT, you have access to the in person/live person support options available during regular business hours through the [Help Center](#). You also have [24x7 Course Support](#) including access to live chat, phone, and support documents.

Minimum Technical Skills

To be successful in this course, you will need the following technical skills:

- Use electronic mail with attachments.
- Save files in commonly used word processing program formats.
- Copy and paste text, graphics or hyperlinks.
- Work within two or more browser windows simultaneously.
- Open and access PDF files.
- Create, upload, and view video files.

University students are expected to demonstrate competency in Computer Technology. Explore the [Computer Technology Competencies](#) page for more information.

Evaluation of the Course

Students will be provided an opportunity to evaluate instruction in this course using the University's standard procedures, which are administered by the [Office of Institutional Research and Effectiveness](#) (OIRE).

Additional informal formative surveys may also be administered within the course as an optional evaluation tool.