# Math 1131Q — Calculus I (Spring 2022)

*Course Coordinator (Storrs): Erin Rizzie*

**Online course communication:** Lecture videos and most communication for this course will occur online, via HuskyCT, email, and/or this page. Please monitor this page, course HuskyCT announcements, and your UConn email regularly for updates related to MATH 1131Q.

**Time Zone:** *All times* for due dates, online and in-person classes, office hours, Supplemental Instruction, and Q Center hours in this course are given in **US Eastern Time**.

**Description:** This course is an introduction to differential and integral calculus, which is the mathematical language used in any science concerned with dynamically changing quantities. The main topics it covers are limits, derivatives, integrals, the Fundamental Theorem of Calculus, and some basic applications of these ideas.

**Prerequisites:** A qualifying score of 22 on the mathematics placement exam (MPE). Students who fail to achieve this minimum score are required to spend time on the preparatory and learning modules before re-taking the MPE, or to register for a lower level Mathematics course. Not open for credit to students who have passed MATH 1132Q or 1152Q.

**Face Coverings:** To ensure a safe learning environment, masks/face coverings must be properly worn at all times in buildings, including classrooms, regardless of vaccination status. That includes covering both the mouth and nose, not just the mouth. Activities that involve temporarily removing the mask, such as eating or drinking, are not allowed in classrooms.

A student who is not wearing a mask/face covering will be asked by the instructor to put one on immediately or leave the room. Repeatedly failing to follow this expectation will result in a referral to Community Standards. Please join us in encouraging your peers and instructors to wear face coverings properly at all times in the classroom.

## Text:

The textbook for the course is *Calculus Early Transcendentals, Single Variable* by James Stewart (8th Edition), which is bundled with a *WebAssign* code for doing online homework. **You only need to buy ONE of the three textbook/WebAssign bundles listed at the bookstore, OR a 1-term Cengage Unlimited Subscription**; your choice will depend on what math classes you plan to take in the future. Below is a PDF detailing your different options for buying the textbook and WebAssign online homework access:

Math 1131 Textbook Purchasing Instructions.pdf

NOTE: the least expensive way to get WebAssign access for all courses (MATH 1131Q, 1132Q. 2110Q, and 2410Q) in the Calculus sequence is to purchase a $120, 1-term Cengage Unlimited subscription online, directly from WebAssign, at the start of the term. This will give you access to all four courses and corresponding eBooks whenever you take them, even after the 1-term subscription expires. The only downside to this is that you do not get any physical textbook(s) included with it.

**Calculators:** The use of calculators is **NOT allowed** on quizzes or exams.

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# Course Objectives:

Successful completion of this course will require you to learn to:

1. Apply fundamental algebra skills to calculus problems.
2. Use common techniques to evaluate limits, and connect limits to derivatives.
3. Interpret derivatives as rates of change.
4. Combine ideas from algebra and trigonometry with knowledge of limits and derivatives to recognize features of the graph of a function.
5. Use derivatives to describe the features of a function and its graph, including maximum and minimum values and where they occur.
6. Identify applications of differential and integral calculus, and explain how calculus can be used in these applications.
7. Apply the Fundamental Theorem of Calculus and the substitution rule to evaluate definite and indefinite integrals.
8. Demonstrate how integrals are connected to the area under the graph of a function.

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# Lecture Videos and Live Classes:

Course content will be delivered primarily through online lecture videos, available through your lecture section in HuskyCT.

Live online classes each Tuesday and Thursday will focus on review of needed precalculus/algebra topics and problem-solving with some of the harder problems and topics each week..

The online videos, which will introduce the new mathematical concepts each week, can be watched at any time that is convenient to you, but we strongly urge you to watch them during (or before) the week they are listed on the Course Schedule. The live lectures on Tuesdays and Thursdays will build on the online videos by providing problem-solving practice and a discussion of topics that often present difficulty for students. You will receive information from your instructor about how to access the live lectures, which you are strongly urged to attend for a better understanding of the course material.

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# Discussion:

Discussion sessions will be offered during your scheduled Discussion Section time. Pending University guidance, these will be online for the first two weeks, then in person on the Storrs UConn campus. Please check HuskyCT well before the start of the first class to be sure you have the correct link to join your first class meeting. Active participation in these sessions is designed to help you with the course material, worksheets, and WebAssign homework. These sessions are also where you will turn in your Worksheets and take your Calculus Skills Quizzes. See the corresponding sections below for more information on these assessments.

**NOTE:** During the COVID-19 pandemic, it is especially important for you to stay home if you are feeling ill. Please contact your TA and instructor ASAP via email if you need to miss a discussion section due to illness or other personal reasons, and plan to include with your email attachments of any work that is due that day.

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# WebAssign Online Homework:

**Homework:** You will have a WebAssign online homework assignments due for each covered section of the text. You will need to access WebAssign via the link in your HuskyCT lecture section. Each assignment will be made available on WebAssign before the section is covered in class. The due date for each assignment will be set by your instructor.

**You will get five attempts for each question that is not multiple choice and fewer than five attempts for each multiple choice question; the exact number of attempts will depend on the number of choices.** After each attempt, you will be told whether your answer is correct or not. If you are not able to get the correct answer after your initial attempts, we recommend that you seek help from your peers, your TA or instructor via office hours, the Q-Center, a tutor, or another student before attempting to answer the problem again.

*Warning: When accessing your online homework, use Firefox or Chrome as your browser; there are problems that can occur if you use Internet Explorer or Safari. Please use this WebAssign Tips.pdf document for help with accessing WebAssign and entering your answers correctly.*

Your lowest WebAssign score will be dropped from your grade at the end of the semester.

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# Worksheets

There will be a worksheet each week that provides an opportunity to reinforce your knowledge and understanding, and provide practice with writing coherent, well-reasoned answers to questions. You can access the worksheets at the **Learning Activities** tab at the top of this page, or via HuskyCT.

Worksheets will not be collected for grading, but we urge you to do them and check your answers – then bring your questions to discussion, office hours, and/or the Q Center.

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# Calculus Skills Quizzes

You will need to complete four Calculus Skills Quizzes during your Wednesday discussion section meetings, each with a score of 70% or higher. The four skill areas that students should demonstrate understanding of are:

1. Precalculus/Algebra Skills
2. Limit Evaluation Skills
3. Derivative Evaluation Skills
4. Integral Evaluation Skills

Each of these Calculus Skills Quizzes will be offered during multiple weeks in your Discussion section; you may retake as long as it is offered it until you have a passing score. See the Course Schedule/Outline for the dates when these quizzes will be offered.

Once you pass a Calculus Skills Quiz with a score of 70% or higher, you will receive full credit and will not be able to retake it.

If you have not scored 70% or higher on a Calculus Skills Quiz and it is still being offered in discussion, you may take it there. If you have not scored 70% or higher on a Calculus Skills Quiz and it is no longer being offered in discussion, then you will need to take it during a Calculus Skills Quiz Make-up Period. Each Calculus Skills Quiz will be offered in Make-up Periods during the weeks of the subsequent Skills Quiz. The schedule for these Make-Up periods will be available in HuskyCT.

For example, you can take the Limit Skills Quiz during Weeks 5, 6, and 7 in Discussion, until you pass. If you have not passed after Week 7, you may take the Limit Skills Quiz during weeks 9, 10, and 11, while the Derivative Skills Quiz is being offered in discussion.

We strongly urge you to see your instructor and/or TA in office hours, and/or visit the Q Center, ASAP if you score lower than 70% on any Calculus Skills Quiz so that we can help you build the skills needed to pass the class.

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# Exam information

**There will be four in-class exams.** Exams 1-3 will be administered during your scheduled discussion section time on Wednesday of the 4th, 8th, and 12th weeks of the semester. Please put these dates in your calendar – you are expected to be in attendance.

Exam 4 will be during the week of May 2-7, during your scheduled Final Exam period; the exact date and time will be scheduled by the University and will be shared under the Exam Info tab above once it is known.

Each exam will primarily cover material from the 3-4 weeks prior to the exam, but Exams 2-4 will each also include some material from previous exams.

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# Grading

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|---|---|---|
| **Online Homework** | WebAssign | 8% |
| **Calculus Skills Quizzes** | Take in Discussion on Wednesdays | 40% |
| **Exam 1:** Wednesday, Week 4 | Discussion | 13% |
| **Exam 2:** Wednesday, Week 8 | Discussion | 13% |
| **Exam 3:** Wednesday, Week 12 | Discussion | 13% |
| **Exam 4:** Week of May 2-7 | See Student Admin for date, time, and location information | 13% |

*Grading Scale:*

| **Final Percentage** | **Letter Grade** |
|---|---|
| 93 -100 | A |
| 90.00-92.99 | A- |
| 87.00-89.99 | B+ |

| | |
|---|---|
| 83.00-86.99 | B |
| 80.00-82.99 | B- |
| 77.00-79.99 | C+ |
| 73.00-76.99 | C |
| 70.00-72.99 | C- |
| 67.00-69.99 | D+ |
| 63.00-66.99 | D |
| 60.00-62.99 | D- |
| <60 | F |

**Makeup Policy:** During the COVID-19 pandemic, it is especially important for you to stay home if you are feeling ill. Please contact your TA and instructor ASAP via email if you need to miss a discussion section due to illness or other personal reasons, and plan to attach to your email any work that is due that day. If you are missing a quiz or exam due to illness or other personal reasons, please include in your email your available times for a make-up quiz or exam over the next few days.

**In case of a missed assignment, quiz, or exam please make every effort to contact your instructor as soon as you know you will miss it, and no later than 24 hours after the missed assessment or due date.**

**Per University policy, all requests to reschedule or make up Exam 4 must be submitted to the Dean of Students for approval.** Please note that vacations, previously purchased tickets or reservations, social events, misreading the exam schedule and over-sleeping are not viable excuses for missing a final exam. If you think that your situation warrants permission to reschedule, please contact the Dean of Students Office with any questions. Thank you in advance for your cooperation.

# Academic Integrity/Misconduct

This course expects all students to act in accordance with the Guidelines for Academic Integrity at the University of Connecticut. In mathematics, this means that all work that you turn in should be written up independently by you, in your own words, and should represent your honest understanding of the material. On exams and quizzes, it should be noted in particular that this means you must not consult any sources or materials: neighbors' papers, calculators, and any notes, books, or electronic devices are off-limits. If you have questions about academic integrity or intellectual property, you should consult with your instructor. Additionally, consult UConn's guidelines for academic integrity.

The use of calculators, other outside resources, or collaboration with others are NOT allowed on quizzes and exams.

# How to Succeed in this Course

1.
    1. Participate regularly for understanding, not just for credit.
    2. Schedule your study time each week! You are expected to **spend a minimum of 16 hours per week** working for a 4-credit course.
    3. Follow all the instructions provided in the learning modules on HuskyCT.
    4. Read the explanations and examples in the textbook.
    5. Do online homework, quizzes, and worksheets on time. Remember to follow these tips! WebAssign Tips.pdf.pdf
    6. Check your understanding via Section Concept Guides (in HuskyCT modules).

# 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/.

# Software/Technical Requirements (with Accessibility and Privacy Information):

The software/technical requirements for this course include:

- Computer with microphone, speaker, and camera for live video/audio interaction
- HuskyCT/Blackboard (HuskyCT/ Blackboard Accessibility Statement, HuskyCT/ Blackboard Privacy Policy)
- Adobe Acrobat Reader (Adobe Reader Accessibility Statement, Adobe Reader Privacy Policy)
- Google Apps ( Google for Education Privacy Policy)
- WebAssign (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).

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

Please see UConn's Keep Learning Page for more help using the online portions of your classes.

# 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.
- Create and upload a PDF or JPG file showing your handwritten work.
- Work within two or more browser windows simultaneously.
- Open and access PDF files.

University students are expected to demonstrate competency in Computer Technology. Explore the Computer Technology Competencies page for more information.

# Help:

Technical and Academic Help provides a guide to technical and academic assistance.

This course is 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 24×7 Course Support including access to live chat, phone, and support documents.

# 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

**Copyright Notice:** All course content on this page and in HuskyCT is the intellectual property of UConn and/or its creator(s). These materials are only for the use of students enrolled in this course for purposes associated with this course and may not be retained or further disseminated.

**Note:** This schedule is subject to change as needed according to content coverage and unforseen events.

You are expected to work through the course content for the sections listed below during the weeks listed.

| Week | Dates | Section | Topic |
|---|---|---|---|
| 1 | 1/18-1/21 | | **Wednesday: Algebra/Precalculus Skills Quiz during Discussion** |
| | | | Course Orientation; Algebra/Precalculus Review |
| | | 2.1 | The Tangent and Velocity Problems |
| | | 2.2 | The Limit of a Function |
| 2 | 1/24-1/28 | | **Wednesday: Algebra/Precalculus Skills Quiz during Discussion** |
| | | 2.3 | Calculating Limits Using the Limit Laws |
| | | 2.5 | Continuity |
| | | 2.6 | Limits at Infinity; Horizontal Asymptotes |
| 3 | 1/31-2/4 | | **Wednesday: Algebra/Precalculus Skills Quiz during Discussion** |
| | | 2.4 | The Precise Definition of a Limit |
| | | 2.7 | Derivatives and Rates of Change |
| | | 2.8 | The Derivative as a Function |
| 4 | 2/7-2/11 | **Exam 1** | **Wednesday, February 9 – Sections 2.1-2.3, 2.5-2.8** |
| | | 3.1 | Derivatives of Polynomials and Exponential Functions |
| | | 3.2 | The Product and Quotient Rules |

| Week | Dates | Section | Topic |
|---|---|---|---|
| 5 | 2/14-2/18 | | **Wednesday: Limit Evaluation Skills Quiz during Discussion** |
| | | 3.3 | Derivatives of Trigonometric Functions |
| | | 3.4 | The Chain Rule |
| | | 3.5 | Implicit Differentiation |
| 6 | 2/21-2/25 | | **Wednesday: Limit Evaluation Skills Quiz during Discussion** |
| | | 3.6 | Derivatives of Logarithmic Functions |
| | | 3.8 | Exponential Growth and Decay |
| 7 | 2/28-3/4 | | **Wednesday: Limit Evaluation Skills Quiz during Discussion** |
| | | 3.9 | Related Rates |
| | | 3.10 | Linear Approximations and Differentials |
| 8 | 3/7-3/11 | **Exam 2** | **Wednesday, March 9 – Sections 3.1-3.6, 3.8-3.10, plus previous material** |
| | | 4.1 | Maximum and Minimum Values |
| | | 4.2 | Mean Value Theorem |
| **Spring Break** | **3/13-3/19** | **No Class** | **Spring Break** |
| 9 | 3/21-3/25 | | **Wednesday: Derivative Evaluation Skills Quiz during Discussion** |
| | | 4.3 | How Derivatives Affect the Shape of a Graph |
| | | 4.4 | Indeterminate Forms and l'Hospital's Rule |
| 10 | 3/28-4/1 | | **Wednesday: Derivative Evaluation Skills Quiz during Discussion** |
| | | 4.7 | Optimization Problems |
| | | 4.8 | Newton's Method |
| 11 | 4/4-4/8 | | **Wednesday: Derivative Evaluation Skills Quiz during Discussion** |
| | | 4.9 | Antiderivatives |

| Week | Dates | Section | Topic |
|---|---|---|---|
| | | 5.1 | Areas and Distances |
| | | 5.2 | The Definite Integral |
| 12 | 4/11-4/15 | **Exam 3** | **Wednesday, April 13 – Sections 4.1-4.4, 4.7-4.9, 5.1, plus previous material** |
| | | 5.3 | The Fundamental Theorem of Calculus |
| | | 5.5 | The Substitution Rule |
| 13 | 4/18-4/22 | | **Wednesday: Integral Evaluation Skills Quiz during Discussion** |
| | | 5.4 | Indefinite Integrals and the Net Change Theorem |
| | | 6.1 | Areas Between Curves |
| 14 | 4/25-4/29 | | **Wednesday: Integral Evaluation Skills Quiz during Discussion** |
| | | 6.2 | Volumes |
| | | | **Thursday: Integral Evaluation Skills Quiz extra make-up** |
| **Finals Week** | **May 2-7** | **Exam 4** | **Exam 4 during University-scheduled Final Exam time – Sections 5.2-5.5, 6.1-6.2, plus previous material** |