Math 1071Q — Calculus for Business and Economics (Fall 2024)

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Course Coordinator (Storrs): Katie Hall

About the course

Welcome! This course is an introduction to calculus and applications designed primarily for students majoring in business, economics, or the life and social sciences. We will cover essential concepts of differential and integral calculus.

Textbook

OpenStax Calculus Volume 1: UConn Custom Business Calculus Edition. Available here: https://www2.math.uconn.edu/ClassHomePages/Math1071/Textbook2

Course Objectives

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

1. Use mathematical models to represent various business and economics related functions, including cost, revenue, profit, and demand.
2. Understand and work with exponential and logarithmic expressions, especially as related to interest and other exponential growth problems.
3. Understand the idea of a limits and limits at infinity. Evaluate various types of limits and define concepts like asymptotes, continuity and derivatives in terms of limits.
4. Understand the derivative as the instantaneous rate of change and also the slope of the tangent line to a curve. Use the tangent line to approximate functions.
5. Evaluate the derivative of functions using standard derivative rules.
6. Understand elasticity of demand.
7. Use the first and second derivative of a function, as well as its properties like domain, asymptotes and symmetry, to understand the overall shape of a function and draw its graph.
8. Setup and solve optimization and related rates problems in various contexts, using derivatives.
9. Evaluate both indefinite and definite integrals, using basic antiderivative rules, including substitution. This includes developing an understanding of the Fundamental Theorem of Calculus.
10. Use integrals/antiderivatives to solve problems, like finding cost from marginal cost, net change from a rate of change, or the area under or between curves.

Calculators

In general, calculators, including graphing calculators, are allowed on exams. Models that can perform symbolic manipulation (e.g. take derivatives) are not allowed.

Graphing calculators: TI 82, 83, 84, 84 plus, 85 or 86 may be used. Models TI-89 and above **(including TI-Nspire CAS)** are not permitted on the exams. See this link (from the University of Arizona) for more detailed description of what is and is not allowed (including Casio brand calculators). At your instructor's discretion, you may also use the Desmos Test Mode app, a free calculator app.

Online Homework

There will be an online homework component of the course. Students will have multiple attempts at questions and get feedback on their answers before getting another chance. Access to online homework will be through HuskyCT.

Worksheets, Quizzes and Exams

Worksheets on HuskyCT

There are weekly worksheets designed to give you an idea of what exam questions will look like. They are due each Friday with a no-penalty late deadline of Monday. Worksheets that are submitted will be graded for completeness and correctness. Refer to your HuskyCT page for additional details.

Midterm Exams

There will be three midterm exams on Sept 18, Oct 16 and Nov 13. They will consist of a mix of multiple choice and free response questions. Exams will be given during class, in person. In the event of make-up exams, exams will be proctored using either WebEx or Lockdown Browser with Respondos Monitor or will be in-person. This is at your instructor's discretion.

Final Exam

There will be a cumulative final exam during the final exam week consisting of both multiple choice and free response questions. Students who score higher on the final than their lowest midterm will automatically have their final exam grade replace their lowest midterm grade. All students, including students with Dean's approval for rescheduled final exams, are required to take the final exam in-person.

Extra Credit

Some extra credit questions may be available on each exam. All extra credit opportunities will be made available to the entire class. At no time will extra credit assignments be made available for individual students.

Grading

Category	Where	Description	Percentage Toward Grade
Online Homework	Access through HuskyCT	Due weekly	20%
Worksheets/Other Graded Assignments	Access through HuskyCT. See your instructor for section specific details.	Worksheets are due Weekly on Fridays. See instructor for section specific details.	20%
Exam 1 (Sept 18)	In-person during class time	Covers Chapter 1. See the Exam Info tab for more info.	15%
Exam 2 (Oct 16)	In-person during class time	Covers Chapter 2 and 3, See the Exam Info tab for more info.	15%
Exam 3 (Nov 13)	In-person during class time	Covers Chapter 4.1-6, See the Exam Info tab for more info.	15%
Final Exam (TBA)	In-person during final exam period assigned by Registrar	Cumulative, See the Exam Info tab for more info.	15% (will count as 30% if it replaces lowest midterm)

Grading Scale:

Grade	**Letter Grade**	**GPA**
93-100	A	4.0
90-92.99	A-	3.7
87-89.99	B+	3.3
83-86.99	B	3.0
80-82.99	B-	2.7
77-79.99	C+	2.3
73-76.99	C	2.0
70-72.99	C-	1.7
67-69.99	D+	1.3
63-66.99	D	1.0

60-62.99	D-	0.7
<60	F	0.0

Due Dates and Late Policy

All due dates for online homework and worksheets will be listed in HuskyCT. Deadlines are based on Eastern Time unless otherwise specified. *The instructor reserves the right to change dates accordingly as the semester progresses. All changes will be communicated in an appropriate manner.*

Please reach out to your instructor for their policy on late submissions of worksheets and online homework.

If you miss an exam, you must contact your course instructor within 24 hours to discuss the possibility of a make-up. Generally, makeups are only offered in the case of extenuating circumstances or with a penalty.

Feedback and Grades

We will make every effort to provide feedback and grades within a week of your submissions. To keep track of your performance in the course, refer to My Grades in HuskyCT.

Weekly Time Commitment

You should expect to dedicate 9 to 12 hours a week to this course. This expectation is based on the various course activities, assignments, and assessments and the University of Connecticut's policy regarding credit hours. (More information related to hours per week per credit can be accessed at the Online Student website).

Academic Integrity

"A fundamental tenet of all educational institutions is academic honesty. Academic work depends upon respect for and acknowledgement of the research and ideas of others. Misrepresenting someone else's work as one's own is a serious offense in any academic setting and it will not be condoned." A student who knowingly assists another student in committing an act of academic misconduct shall be equally accountable for the violation, and both shall be subject to the sanctions and other remedies. See the Uconn Student Code, Appendix A.

All students shall act in accordance with the Student Code at the University of Connecticut, which states that: "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 your instructor, 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, you may NOT search for solutions to the specific problem you are stuck on.** In all cases, you must **write up a solution that is completely in your own words and honestly reflects your own understanding of the ideas.**

While you may look online for help, as clearly stated on each Worksheet, **you may not view solutions to specific Worksheet, Exam Review problems or Exam problems (or small variations to these problems) on paid sites like Chegg or Bartleby.** You may still use (with proper citations) class discussion boards, Office Hours, and other free outside resources like Khan Academy and YouTube. This means that if you use these allowed resources, even just for a push in the right direction, you should mention that you used them and then still write the solution in our own words to reflect your own understanding.

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.

How to Succeed in this Course

All students can succeed in this course and we are here to help you along the way. Please do not hesitate to ask questions during class or attend office hours.

Success in this course program depends heavily on your personal health and well-being. Recognize that stress is an expected part of the college experience, and it often can be compounded by unexpected setbacks or life changes outside the classroom. We strongly encourage you to reframe challenges as an unavoidable pathway to success. Reflect on your role in taking care of yourself throughout the semester, before the demands of exams and projects reach their peak. Please feel free to reach out to us about any difficulty you may be having that may impact your performance in your courses or campus life as soon as it occurs and before it becomes too overwhelming. In addition to your academic advisor, we strongly encourage you to contact the many other support services on campus that stand ready to assist you.

Here are some helpful links: Dean of Students Office, Academic Achievement Center, Writing Center, Quantitative Learning Center, Center

for Students with Disabilities, ~~Title IX Office~~, Student Health and Wellness — Mental Health

*This statement was adapted from one prepared by CLAS. We feel it very much represents our thoughts and feelings, and so are including it in a largely unedited way. (With this citation!)

Husky Study Groups

Are you interested in forming a study group with other students in the class? There is a study group application in Nexus that can help you get started. Check out this video and go here (https://nexus.uconn.edu/secure_per/studygroups/index.php) for more information.

Resources for Students Experiencing Distress

The University of Connecticut is committed to supporting students in their mental health, their psychological and social well-being, and their connection to their academic experience and overall wellness. The university believes that academic, personal, and professional development can flourish only when each member of our community is assured equitable access to mental health services. The university aims to make access to mental health attainable while fostering a community reflecting equity and diversity and understands that good mental health may lead to personal and professional growth, greater self-awareness, increased social engagement, enhanced academic success, and campus and community involvement.

Students who feel they may benefit from speaking with a mental health professional can find support and resources through the **Student Health and Wellness-Mental Health** (SHaW-MH) office. Through SHaW-MH, students can make an appointment with a mental health professional and engage in confidential conversations or seek recommendations or referrals for any mental health or psychological concern.

Mental health services are included as part of the university's student health insurance plan and also partially funded through university fees. If you do not have UConn's student health insurance plan, most major insurance plans are also accepted. Students can visit the **Student Health and Wellness-Mental Health located in Storrs on the main campus in the Arjona Building, 4th Floor,** or contact the office at **(860) 486-4705, or https://studenthealth.uconn.edu/** for services or questions**.**

Accommodations for Illness or Extended Absences

Please stay home if you are feeling ill and please go home if you are in class and start to feel ill. If illness prevents you from attending class, it is your responsibility to notify your instructor as soon as possible. You do not need to disclose the nature of your illness, however, you will need to work with your instructor to determine how you will complete coursework during your absence.

If life circumstances are affecting your ability to focus on courses and your UConn experience, students can email the Dean of Students at dos@uconn.edu to request support. Regional campus students should email the Student Services staff at their home campus to request support and faculty notification.

COVID-19 Specific Information: For the latest infomation related to UConn's COVID policies, see https://studenthealth.uconn.edu/updates-events/coronavirus/

Students with Disabilities and Special accommodations

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/.

Student Athletes and Students with Disabilities should inform your instructor of your commitments as an athlete, any special needs that you have, etc. within the first three weeks of the semester. You will be expected to bring in a letter from the Athletics Department or the Center for Students with Disabilities.

The University Senate passed a motion on about religious observances which stipulated that Students anticipating such a conflict should inform their instructor in writing within the first three weeks of the semester, and prior to the anticipated absence, and should take the initiative to work out with the instructor a schedule for making up missed work. For conflicts with final examinations, students should, as usual, contact the Dean of Students.

Note: We know that this transition to online classes has the chance to increase the number of students who need accommodations and the form those accommodations will take. We will work with all students to the best of our ability to ensure their specific needs are met the best we can. Please contact your instructor to discuss any needs to you.

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
- Credit Hours and Workload
- Netiquette and Communication
- Adding or Dropping a Course

- Academic Calendar
- Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships
- Sexual Assault Reporting Policy

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)
- ~~Adobe Acrobat Reader~~ (~~Adobe Reader Accessibility Statement~~, ~~Adobe Reader Privacy Policy~~)
- Google Apps (Google Apps Accessibility, Google for Education Privacy Policy)
- Dedicated access to high-speed internet with a minimum speed of 1.5 Mbps (4 Mbps or higher is recommended).
- WebCam

For information on managing your privacy at the University of Connecticut, visit the University's Privacy page.

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 uses 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 Technology Training

Student technology training is now available in a new HuskyCT short course created by students for students. It will prepare you to use the IT systems and services that you will use throughout your time at UConn, whether learning online or on-campus. It is available at https://lms.uconn.edu/ultra/courses/_80016_1/cl/outline .

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.
- Scan handwritten work to PDFs.
- Copy and paste text, graphics or hyperlinks.
- 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..

Evaluation of Course Experience

Students will be given an opportunity to provide feedback on their course experience and instruction using the University's standard procedures, which are administered by the Office of Institutional Research and Effectiveness (OIRE).

The University of Connecticut is dedicated to supporting and enhancing teaching effectiveness and student learning using a variety of methods. The Student Evaluation of Teaching (SET) is just one tool used to help faculty enhance their teaching. The SET is used for both formative (self-improvement) and summative (evaluation) purposes.

Additional informal formative surveys and other feedback instruments may be administered within the course.

Contact

The course coordinator: Professor Katherine Hall(katie.hall@uconn.edu). Or your instructor.

Tentative Outline/Calendar

Textbook: OpenStax Calculus – Custom UConn Business Calculus edition

https://www2.math.uconn.edu/ClassHomePages/Math1071/Textbook2

WEEK	MONDAY	WEDNESDAY	FRIDAY	What's due Friday/ Monday?	Friday Date
1	Intro and 1.1 Exponents	1.2 Function Review: Part A	1.3 Function Review: Part B	Worksheet 1: Syllabus Online HW 1.1-1.2	August 30
2	NO CLASSES	1.4: Basic Classes of Functions (lines)	1.5: (polynomial and rational)	Worksheet 2: 1.1-1.4 Online HW 1.3-1.4	Sept 6
3	1.6: Mathematical Models	1.7: Exponential Functions	1.8 Logarithms	Worksheet 3: 1.5 and 1.6 Online HW 1.5 -1.6	Sept 13
4	Review	Exam 1: Chapter 1.1-1.8 (**Sept 18**)	2.1: Calculus Preview	Worksheet 4: 1.7 and 1.8 Online HW 1.7 and 1.8	Sept 20
5	2.2: Intro to Limits	2.2/2.3: Limit Laws	2.4: Continuity	Worksheet 5: 2.1 and 2.2 Online HW 2.1 and 2.2	Sept 27
6	3.1: Defining the Derivative	3.2: Derivative as a Functions	3.3: Differentiation Rules	Worksheet 6: 2.3 and 2.4 Online HW 2.3 and 2.4	Oct 4
7	3.4: Derivatives as Rates of Change	3.6: The Chain Rule	3.9: Derivatives of Exponential and Logarithmic Functions	Worksheet 7: 3.1-3.3 Online HW 3.1-3.3	Oct 11
8	Review	Exam: Chapter 2 and 3 (**Oct 16**)	4.1: Elasticity of Demand	Worksheet 8: 3.4, 3.6, 3.9 Online HW 3.4, 3.6, 3.9	Oct 18
9	4.2: Linear Approximations	4.3 Part A: Absolute Extrema		Worksheet 9: 4.1 and 4.2 Online HW 4.1 and 4.2	Oct 25
10	4.3 Part B: Local Max and Min	4.5 Part A: Derivatives and Shape of Graph		Worksheet 10: 4.3 Online HW 4.3	Nov 1
11	4.5 Part B: Second Derivative and Shape of Graph	4.6: Limits at Infinity and Asymptotes	4.7: Optimization	Worksheet 11: 4.5 Online HW 4.5 and 4.6	Nov 8

12	Review	Exam: Derivative Applications (no 4.7) (**Nov 13**)	4.8: Antiderivatives	Worksheet 12: 4.6	Nov 15
13	4.7 and 4.8 Refresher	5.1: Approximating Areas	5.2: The Definite Integral	Worksheet 13: 4.7 and 4.8 Online HW 4.7 and 4.8	Nov 22
—	Thanksgiving Break				
14	5.3: The Fundamental Thm of Calculus	5.5: Substitution		Worksheet 14: 5.1- 5.5 Online HW 5.1 – 5.2 Online HW 5.3 and 5.5	Dec 6