Math 127 Syllabus

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Part 1: Course Information

Instructor's Information

Instructor: Adena Calden (Check out my bio on Moodle)
Office Hours: Tuesday & Thurs 9-1030AM and 12-130PM (No appointment needed just drop in- zoom link is in Moodle).
E-mail: calden@math.umass.edu (this is my preferred method of contact)

Instructor: Andrew Havens (Check out my bio on Moodle)
Office Hours: (No appointment needed just drop in-zoom link is in Moodle).
E-mail: havens@math.umass.edu

If these times do not work for your schedule, please email me a copy of your course schedule and we will find a common time to meet.

Course Description

MATH 127 is a 3-credit General Education course. Learning the concepts of calculus in this course involves critical thinking -logic and mathematical precision inform the teaching and learning of calculus throughout Math 127. At the heart of calculus is the notion that motion, and change can be subdivided into smaller and smaller intervals and then analyzed piece by piece. This idea of de-construction/re-construction goes back in ancient times to Archimedes. But it was only in the hands of Newton and Leibniz that the mathematical notation, language, and sophistication of this idea could be sufficiently well-developed to serve as a tool for the wider community of mathematicians and scientists. The ideas continue to be subtle and elusive until experience and repeated practice renders them less abstract: grasping them requires a fine analysis and an active imagination, in addition to technical mastery of basic algebraic formalisms. Learning to apply the abstract concepts of limit (the technical device for synthesizing quantities after breaking them into infinitesimal components), continuity, and differentiation to the act of modeling real-world problems, is a separate and further overall theme for the course. Students learn in this course to incorporate and relate two kinds of knowledge in this course: the abstract notions of how the derivative can help to locate the "turning points" of a curve, for example, relate immediately to solving problems involving how to maximize profit or minimize loss of heat through a porous membrane.

Prerequisite

- **Proficiency in high school algebra, including word problems.**

COVID Statement

It's ok to not be ok while living and studying through a global pandemic.

*Communicate early and often. Even if we are physically distancing, we can remain connected. Always reach out if you need anything necessary to support your learning and own well-being.

*Take care of yourself. Get enough rest, food, exercise, and anything you need to keep you in a positive mood and good health. If you don't feel well, do not force yourself through the course work. Let me know so we can work out a plan together.

*Celebrate accomplishments. Any achievements, major or minor, during this time is a testament to your dedication and perseverance.

*I am fully committed to making sure that you learn everything you were hoping to learn from this class.

*If you or a family member becomes ill or struggles because of the pandemic, I will work with you as much as possible to help you to make it through the semester, and we will discuss other options, such as withdrawing or finishing with an incomplete, as appropriate. (Thanks to Keri Withington, Jason Tham, and Andrew Heiss for some of these tenants)

Textbook & Course Materials

Required Text

- This course requires the use of wileyplus. With your purchase of wileyplus you will receive a copy of the e-book associated with this course. Instructions on obtaining wileyplus and the ebook at the Umass discounted rate is available on Moodle.

Course Technical Requirements

- Internet connection (DSL, LAN, or cable connection desirable)
- Access to Moodle
- A calculator that can compute natural logarithms and exponential functions.
- Lots and lots of paper.

Part 2: Course Objectives

<u>Upon successful completion of this course, you should be able to:</u>

1. Think critically about rates of change
2. Analyze mathematical word problems
3. Problem solve applied calculus problems
4. Feel confident to solve rate of change problems in your area of study
5. See small failures as a positive step towards learning and understanding
6. Learning the language used to describe calculus phenomena
7. Take first and second derivatives of polynomials, exponential functions, and logarithmic functions.
8. Be able to draw first and second derivative graphs of polynomials, exponential functions, and logarithmic functions.
9. Find maxima, minima, and inflection points of polynomials, exponential functions, and logarithmic functions.
10. Estimate area under a curve.
11. Calculate exact area under a curve
12. Use the Fundamental Theorems of Calculus

<u>You will meet the objectives listed above through a combination of the following activities in this course:</u>

- Watching lecture videos and taking detailed notes.

- Trying related examples and watching videos on how to solve these

- Completing homework on related material

- Participating in discussion forums with your classmates.

- Demonstrating knowledge on quizzes and the final

- Reflecting on your work and progress through reflection sheets

- Building good habits through meeting deadlines

- Develop an understanding of evaluating your answers through initial guesses

- Work on determining what you know and what you don't know about a topic through reflection work

- Mastering the language used to describe the work we are doing through meaningful discussions in office hours or on discussion forums

Time Management

Part of being successful in this course is making sure you are managing your time.

You can move faster than the suggested timeline of the course, but you cannot move slower. The deadlines are there to ensure that you are building good habits and so that you can finish the course. Please make sure you schedule time during each week to work on the material.

Academic Alert

If you begin to fall behind in the course, please reach out to me if you are able. After the second chapter quiz, I will begin looking at grades to determine which students are at risk for failing this course. If you are at risk, you will receive a referral to academic alert. This referral is to help you get back on track. By sending an alert you will be able to access more resources to help you get back on track and be successful in this course. This initiative is part of the student success office and is meant to help you do the best you can!

Accommodations, Accessibility, and Inclusive Learning

As all people learn differently, I will make every effort to provide ample resources to support all learners. If any aspect of this course is proving to be difficult for you to access, please let me know so we can work together to find strategies that support your learning. If there is something that you have done in a past course that has been particularly helpful for your learning, please let me know!

The University of Massachusetts Amherst is committed to providing an equal educational opportunity for all students. If you have a documented physical, psychological, or learning disability on file with Disability Services (DS), you may be eligible for reasonable academic accommodations to help you succeed in this course. If you have a documented disability that requires an accommodation, please notify me within the first two weeks of the semester so that we may make appropriate arrangements. This can be done by having your letter send from disability services directly to me.

DS is located in Whitmore 161 and can be contacted by phone at Phone (V/TTY): 413.545.0892

Important Note: This syllabus, along with course assignments and due dates, are subject to change. It is the student's responsibility to check Moodle for corrections or updates to the syllabus. Any changes will be clearly noted in course announcement or through Moodle email.

Part 3: Topic Outline/Schedule

	Topic 1	Quiz Due	Topic 2	Quiz Due
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02/01/21	What is a function?	02/03/21	Rates of Change	02/05/21
02/08/21	Exponentials and Logarithms Applications of Economics	02/10/21	New Functions from Old	02/12/21
02/15/21	Periodic Functions	02/17/21	Quiz Chapter 1	02/19/21
02/22/21	Limits and Continuity	02/24/21	Inst. Rate of Change Derivative Function	02/26/21
03/01/21	Interpretations of Derivative	03/03/21	Marginal Cost and Revenue Second Derivative	03/05/21
03/08/21	Quiz Chapter 2	03/10/21	Derivatives of Powers. Polynomials, Exponentials, and Logs	03/12/21
03/15/21	Chain Rule	03/17/21	Chain Rule	03/19/21
03/22/21	Product & Quotient Rule	03/24/21	Quiz Chapter 3	03/26/21
03/29/21	Local Max/ Mins	03/31/21	Inflection Points	04/02/21
04/05/21	Global Max/Mins	04/07/21	Marginal Cost & Revenue	04/09/21
04/12/21	Logistic Growth Models & Surge Functions	04/14/21	Quiz Chapter 4	04/16/21
04/19/21	Distance, accumulated change	04/21/21	Definite Integral as Area	04/23/21
04/26/21	Definite Integral Interpret of Definite Integral	04/28/21	Fundamental Theorem	04/30/21
05/03	Chapter 5 Quiz		xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	

Part 4: Grading Policy

Graded Course Activities

Percent	Description
25%	Mini quizzes (2 per week)
40%	Chapter Quizzes (10 pts each)
25%	Homework
10%	Course participation
100%	Total Points Possible

Mini Quizzes (Tuesdays and Fridays)

- Each week there will be 2 mini quizzes (multiple choice) that students will take based on the lectures for the week.
- Quiz one will open Sunday evening and be due Tuesday evening each week. Quiz 2 will open Wednesday evening and be due Friday evening.

Chapter Quizzes

- At the end of each chapter there will be a 10 question, multiple choice, chapter quiz in Moodle, which covers all sections in that chapter.
- Students will take this quiz in lieu of a mini quiz as scheduled on the syllabus.
- Students will take this quiz during their SCHEDULED LECTURE TIME.
- Students will have 50 minutes to complete the quiz.

	Dates of Chapter Quizzes Tu/Th sections	MWF Sections
Chapter 1	Thursday February 18th	Friday February 19th
Chapter 2	Tuesday March 9th	Monday March 8th
Chapter 3	Thursday March 25th	Friday March 24th
Chapter 4	Thursday April 15th	Friday April 16th
Chapter 5	Tuesday May 4th	Monday May 3rd

Homework (Due on Sundays)

- Homework given on wileyplus (click through the moodle link)

Participation: (Evaluations due on Sunday)

- 3 semester surveys (5 points each)
- 12 weekly evaluations (5 points each week)

Weekly Evaluations

- Study group: signing up for and attending a weekly study group.
- Answering questions that are posted on the class discussion board.
- Attending drop-in help hours or instructor office hours
- Attending Supplemental Instruction.

Letter Grade Assignment

Course grades will be assigned based on the following scheme. There is no rounding when calculating final course grades (departmental policy).

Letter Grade	Percentage
A	90-100%
A-	87-89.99%
B+	83-86.99%
B	79-82.99%
B-	75-78.99%
C+	71-74.99%
C	67-70.99%
C-	63-66.99%
D+	59-62.99%
D	55-58.99%
F	0-54.99%

Part 5: Course Policies

Build Rapport

If you find that you have any trouble keeping up with assignments or other aspects of the course, make sure you let me know as early as possible. Building rapport and effective relationships are key to becoming an effective professional. Make sure that you are proactive in informing me when difficulties arise during the term so that I can help you find a solution.

Complete Assignments

All assignments for this course will be submitted electronically through wileyplus and Moodle unless otherwise instructed. Assignments must be submitted by the given deadline or special permission must be requested from instructor *before the due* date to receive full credit unless there are special circumstances.

Understand When You May Drop This Course

It is the student's responsibility to understand when they need to consider un-enrolling from a course. Refer to the UMass Academic Calendar for dates and deadlines. If you would like to discuss dropping the course, taking a different level course, or other related options (pass/fail for example) please send me an email to set up an appointment.

Incomplete Policy

Under emergency/special circumstances, students may petition for an incomplete grade. An incomplete will only be assigned if the instructor approves the request. All incomplete course assignments must be completed within a timeframe agreed upon by the instructor and student.

Commit to Integrity

As a student in this course (and at this university) you are expected to maintain high degrees of professionalism, commitment to active learning and participation in this class and also integrity in your behavior in and out of the classroom.

Umass's Honesty Policy & Procedures

"Since the integrity of the academic enterprise of any institution of higher education requires honesty in scholarship and research, academic honesty is required of all students at the University of Massachusetts Amherst.
Read more about the Umass [Academic Honesty Policy & Procedures](#)

Definitions

- **Cheating** - intentional use or attempted use of trickery or deception in one's academic work
- **Fabrication** - intentional falsification and/or invention of any information or citation
- **Plagiarism** - knowingly representing the words or ideas of another as one's own work
- **Facilitating dishonesty** - knowingly helping or attempting to help another commit an act of academic dishonesty

Important Note: Any form of academic dishonesty, including cheating and plagiarism, may be reported to the office of student affairs.