

M w408C: Differential and Integral Calculus

Unique #86425 — Summer 2023

Instructor Information

Name: Aaron Benda
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Office: PMA 12.136
Office hours: TuTh 5 – 6 pm via [Zoom](#)

Class Information

Dates: June 1st – August 11th
Time: Weekdays, 10:00 – 11:30 am
Location: In-person, PMA 4.102
Course Page: [Canvas](#)
Assignments Page: [Quest](#)

TA Information: Jahn timer Valivi Reddy; email: jahn timer@utexas.edu; OHs: MW 4-5 pm via [Zoom](#).

Course Description

M408C is UT's standard first-year calculus course. It is directed at students in the natural and social sciences and at engineering students. The emphasis in this course is on problem-solving, not on the presentation of theoretical considerations. While the course necessarily includes some discussion of theoretical notions, its primary objective is not the production of theorem-provers. The syllabus for M408C includes most of the elementary topics in the theory of real-valued functions of a real variable: limits, continuity, derivatives, maxima and minima, integration, area under a curve, volumes of revolution, trigonometric, logarithmic and exponential functions and techniques of integration.

Prerequisites

An appropriate score on the mathematics placement exam or M 305G with a grade of at least B–.

Course Materials

Textbook (optional): *Calculus, Early Transcendentals*, 8th edition, by James Stewart.
Computer: you will need a computer with access to the internet to complete most assignments.

Expectations you may have of me:

- Hard work
- Respect and empathy as your instructor
- Regular, detailed preparation for lecture
- Clear lectures, with help on request
- Prompt responses to communication
- Fair, consistent grading
- Regular office hours

Expectations I have of you in return:

- Hard work
- Respect for the class and time
- Courtesy for your peers and myself
- Class attendance and participation
- Dedication to learning
- On-time, regular assignment completion
- Attendance in office hours when needed

Grade Scale

Tentative final grade scale:

A	93 - 100	A-	90 - 92	B+	87 - 89
B	83 - 86	B-	80 - 82	C+	77 - 79
C	73 - 76	C-	70 - 72	D+	67 - 69
D	63 - 67	D-	60 - 62	F	0 - 59

Grading Scheme

Course grade components:

Homework	25%
Quizzes	10%
Midterm Exams	45%
Final Exam	20%

For the grade scale, decimals will be rounded to the nearest integer. I reserve the right to adjust the grade cutoffs from the above once final scores are in, but only to do so in your favor (*though you should not bank on this*). In other words, the cutoffs above represent the lowest (and most likely) letter grade you may receive for a given score. The grading scheme will not be adjusted.

Homework

There will be weekly homework, except for weeks when we have a midterm. Usually, the assignments will open at noon on Mondays and be due by 10 am the following Monday. Most homework assignments will have both a Quest component and a written component, to be uploaded via Canvas. In total, there will be 8 homework assignments, your lowest of which will be dropped.

I am a firm believer that to learn mathematics, you must do mathematics! This is where you will get much of your problem-solving practice. You should expect the homework in this course to be relatively lengthy, though only some problems should be very challenging. You are encouraged to work together on the homework assignments, but *please see the section on academic integrity below* for details on what kind of collaboration is permissible.

Quizzes

There will be daily quizzes via Canvas, available from 11 am to noon. These quizzes are primarily there to gauge your understanding of the content from the day's lecture. Collaboration is encouraged, but again, *please see the section on academic integrity below*. At least 5 quizzes will be dropped.

Exams

There will be three midterm exams and a final. Each midterm will comprise 15% of your grade. If you do better on the final exam than your worst midterm, your score for the final will replace your grade on that midterm. In other words, the final will be worth 20% of your grade by default, or it will count for 35% of your grade and drop your lowest midterm (whichever is better for you). *Please note, if you should miss a midterm exam for any reason, the above policy is designed to be a fail-safe. There will not be makeup exams in the absence of extraordinary circumstances.*

The midterm exams will have a variety of problems, including some requiring written work (unlike the homework and quizzes). The final exam will be cumulative and in the same style.

Midterm exam dates: June 23rd, July 14th, and August 4th

Final exam: Saturday, August 12th, 9 am – noon in PMA 4.102

Important Dates

See the [UT summer 2023 calendar](#) and the exam dates listed above (6/23, 7/14, 8/4, and 8/12).

Tips for Success

I have advice listed on my website at <https://www.aaronbenda.com/teaching/advice>. You will find advice regarding preparing for/taking exams, and general academic wisdom there. Feel free to reach out to me for advice on any points not addressed there.

Tentative Schedule

The following is a *tentative* schedule for the course. It may be adjusted as needed, but we will never stray far from the following. The sections refer to sections from the textbook.

Week of. . .	Sections	Keywords
06/01	1.4 – 1.5	Review of functions, trigonometry, exponentials, logarithms
06/05	2.1 – 2.5	Limits, continuity, intermediate value theorem
06/12	2.6 – 3.1	Definition of the derivative, rates of change
06/19	3.2 – 3.3	Differentiation rules, midterm 1
06/26	3.4 – 3.8	Chain rule, implicit differentiation, exponential growth
07/03	3.9 – 4.1	Related rates, linear approximation, extreme value theorem
07/10	4.2 – 4.3	Mean value theorem, curve sketching, midterm 2
07/17	4.4 – 4.9	L'Hôpital's rule, optimization, antiderivatives
07/24	5.1 – 5.4	Integrals, the fundamental theorem of calculus
07/31	5.5 – 6.1	Substitution rule, areas between curves, midterm 3
08/07	6.2 – 6.5	Volumes via integration, average values, final review

Please note we will be skipping sections 4.6, 4.8, and possibly 6.4. Otherwise, we will cover all sections of the text from 1.4 up through the end of chapter 6.

Flag Statement

This course carries the Quantitative Reasoning flag. Quantitative Reasoning courses are designed to equip you with skills that are necessary for understanding the types of quantitative arguments you will regularly encounter in your adult and professional life. Thus, you should expect a substantial portion of your grade to come from your use of quantitative skills to analyze real-world problems.

Course Learning Objectives

For students to develop effective thinking and communication skills in mathematics and in its applications; to develop a conceptual understanding of the major ideas of differential and integral calculus; to develop the ability to solve problems via the techniques and theorems of calculus; to appreciate the beauty and power of mathematics.

Diversity, Equity, and Inclusion

Mathematics is for **everyone**, and I am dedicated to ensuring that **all** students feel welcome in my class. Fostering an inclusive and supportive learning environment is of the utmost importance to me. It is my intent that this course will serve students from all diverse backgrounds and perspectives well, that your learning needs will be addressed, and that the diversity we all bring to the class can be comfortably expressed and viewed as a strength and benefit to all students. I have extended diversity and teaching statements at <https://www.aaronbenda.com/teaching/my-philosophy>, and I encourage you to come to me with any concerns.

Math Help

The first resources for getting help with the course are your classmates, myself, and our TA. I will hold regular office hours throughout the term and will be available briefly after lecture ends every day to chat. Our TA will hold regular office hours as well. Additionally, there are a number of good resources (many specifically for Calculus) listed on my website at <https://www.aaronbenda.com/teaching/resources-for-students>.

Unfortunately, since this is a relatively small summer course, many usual UT resources (e.g. Cal-clab) are not going to be available. Some resources do remain available though: the Sanger Learning Center is open for tutoring during the summer, and there are tutors available for this specific class. Their services are free and you can [schedule a one-on-one tutoring session with them here](#), or contact them via email at ts_sut@utlists.utexas.edu.

Academic Integrity

Students who violate University rules on academic misconduct are subject to the student conduct process and potential disciplinary action. A student found responsible for academic misconduct may be assigned both a status sanction and a grade impact for the course. The grade impact could range from a zero on the assignment in question up to a failing grade in the course. A status sanction can range from probation, deferred suspension and/or dismissal from the University. To learn more about academic integrity standards, tips for avoiding a potential academic misconduct violation, and the overall conduct process, please visit the Student Conduct and Academic Integrity website at: <http://deanofstudents.utexas.edu/conduct>.

Be warned that I am very serious about academic integrity. With that said, *collaboration on homework and quizzes is permitted*. On those assignments, you are welcome to talk with your peers, work out problems together, and help each other when you are stuck. However, your submissions must be generated from your own understanding, not copied. To be clear, copying a solution that you could not independently produce *is cheating*; working with others to obtain a solution that you are then capable of reproducing independently *is not cheating*. ***On exams, it is strictly prohibited to collaborate or receive external help of any kind that is not explicitly permitted.***

Faith/Tradition Observances Policy

Students that need accommodations due to religious holidays must make arrangements with me at least two weeks in advance. I will gladly work with you to ensure nothing important is missed.

Students with Disabilities

The university is committed to creating an accessible and inclusive learning environment consistent with university policy and federal and state law. Please let me know if you experience any barriers to learning so I can work with you to ensure you have equal opportunity to participate fully in this course. If you are a student with a disability, or think you may have a disability, and need accommodations please contact Disability and Access (D&A). Please refer to D&A's website for contact and more information: <http://diversity.utexas.edu/disability/>. If you are already registered with D&A, please deliver your Accommodation Letter to me as early as possible in the term so we can discuss your approved accommodations and needs in this course.

Counseling Services

We all benefit from support during times of struggle. If you are experiencing signs of stress, anxiety, depression, academic concerns, loneliness, difficulty sleeping, or any other concern impacting your well-being — you are not alone. The Counseling and Mental Health Center (CMHC) is located on campus and provides a wide variety of mental health services to all UT students, including crisis services, counseling services with immediate support and well-being resources. You are strongly encouraged to connect with CMHC if you are experiencing any concerns; there is no shame in doing so. Additionally, CARE Counselors are located within each of the academic schools and colleges. These counselors are familiar with the concerns that are unique to their unit's students. For more information on CMHC, visit <https://cmhc.utexas.edu/> or call 512-471-3515.

Health Services

Your physical health and well-being are a priority. University Health Services (UHS) is the on-campus medical facility providing high quality medical care and patient education to UT students. Services offered include general medicine, specialty clinics including the gynecology clinic, sports medicine, nutrition services, allergy, immunization and travel health, physical therapy, urgent care, a 24/7 nurse advice line, and lab and radiology services. For additional information, visit <https://healthyhorns.utexas.edu/> or call 512-471-4955.

Title IX

By law, all employees of Texas universities must report any information to the Title IX Office regarding sexual harassment, sexual assault, dating violence, and stalking that is disclosed to them. Texas law requires that all employees who witness or receive any information of this type must report it to the Title IX Coordinator. Before talking with me about a Title IX related incident, please remember that I will be required to report this information. Title IX is a federal civil rights law that prohibits discrimination on the basis of sex – including pregnancy and parental status – in educational programs and activities. The Title IX Office has developed supportive ways and compiled campus resources to support all impacted by a Title IX matter.

To speak with a Case Manager in the Title IX Office, email: supportandresources@austin.utexas.edu. For more information about reporting options and resources, please visit: <https://titleix.utexas.edu> or contact the Title IX Office via email at: titleix@austin.utexas.edu, or call 512-471-0419.