M 408C - Differential and Integral Calculus, Fall 2023

Instructor
Dr. Eric Staron (he/him/his)
Office: PMA 13.158
Email: estaron@math.utexas.edu
Office Hours: TTh, 2-3:30, via zoom only.

Contacting the Professor
You can contact me via email or canvas message. Be sure to include your name, the course name, and the time of your lecture.

Class Information
Lecture: TTh, 12:30p-1:45p, PMA 4.102
Discussion Section: (54945) MW, 12-12:50p, ECJ 1.204; (54950) MW, 4-4:50, CPE 2.212
Teaching Assistant
Name: Kris Wolesensky
Office: PMA 13.162
Email: kwolesensky@math.utexas.edu
Office Hours: Friday 10am - 11:30am, Monday-Wensday 2pm - 3pm

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OR

Class Information
Lecture: TTh, 5:00p-6:15p, CPE 2.214
Discussion Section: (55003) MW, 11-11:50a, BUR 134; (55004) MW, 3-3:50, CPE 2.220
Teaching Assistant
Name: Kris Wolesensky
Office:
Email: kwolesensky@math.utexas.edu
Office Hours:

Course Websites
Quest: https://quest.cns.utexas.edu/
Canvas: http://canvas.utexas.edu//

Course Materials
Calculus, Early Transcendentals, 9th edition, by James Stewart.

Course Overview
M408C is the standard first-semester calculus course. It is directed at students in the natural sciences and engineering. The emphasis in this course is on problem-solving, not the theory of analysis. There should be some understanding of analysis, but the majority of the proofs in the

text should not be covered in class. The syllabus for M408C includes most of the basic topics in the theory of functions of a real variable: algebraic, trigonometric, logarithmic and exponential functions and their limits, continuity, derivatives, maxima and minima, integration, area under a curve, and volumes of revolution.

Course Structure
Each week short lecture videos will be posted to Canvas. Students are expected to watch these videos **before** class. Students will be able to watch these videos as many times as they want, and will remain posted all semester.

It is **normal** and **expected** that you will still have questions after watching the videos. Also, the videos do **not** contain all of the information that will be on the HW and exams. During class I will be answering questions about the videos and introducing new material. We will also be working many, Many, MANY practice problems.

Class will normally **not** be recorded. You are expected to attend class every day. I will post the notes from class to Canvas.

Class notes and recordings are reserved only for students in this class for educational purposes and are protected under FERPA. The notes and recordings should not be shared outside the class in any form. Violation of this restriction by a student could lead to Student Misconduct proceedings.

Prerequisites
An appropriate score on the mathematics placement exam or Mathematics 305G with a grade of at least B-.

Rules for the Classroom
I expect you to be courteous to each other. Academic Dishonesty will result in an F for the course.

Learning Objectives for the Course
(1) Students will develop effective thinking and communication skills applicable in mathematics and well beyond mathematics. (2) Students will develop mathematical independence and experience mathematical inquiry. (3) Students will be able to solve mathematical problems using tools and concepts from core mathematical areas including Algebra and Calculus. (4) Students will have an appreciation of the beauty and power of mathematics.

Grading
Your grade is a reflection of your mastery of the learning objectives and will be determined by online homework, 4 during-class exams, and a final exam. Grades will be determined using the following scale:

100-93, A 92-90, A- 89-87, B+ 86-83, B 82-80, B- 79-77, C+
76-73, C 72-70, C- 69-65, D+ 64-60, D 59-0, F

I will round to the nearest integer.

Quest Homework (7.5%): Homework assignments are typically due on Monday night at 11:30p. Homework will be assigned regularly via the Web using the UT Homework Service, QUEST; all answers and grades will be returned via the Web also using Quest. The lowest 3 scores will be dropped.

This course makes use of the web-based Quest content delivery and homework server system maintained by the College of Natural Sciences. This homework service will require a $30 charge per student per class for its use, with no student being charged more than $60 a semester. This goes toward the maintenance and operation of the resource. Please go to `http://quest.cns.utexas.edu` *to log in to the Quest system for this class. After the 12th day of class, when you log into Quest you will be asked to pay via credit card on a secure payment site. Quest provides mandatory instructional material for this course, just as is your textbook, etc. For payment questions, email quest.billing@cns.utexas.edu.*

Textbook Homework (7.5%): These assignments are due on Wednesday night at 11:30. Students will upload their work to Gradescope. Students must assign page numbers and write legibly. Failure to do so will result in a 0 on the assignment. The lowest 3 scores will be dropped

If you think your HW was graded incorrectly then you can use the "Regrade Request" feature on Gradescope and we will look at it again. Requests must be made within one week of the HW grades being posted.

It is your responsibility to correctly upload your assignments before they are due. I do not accept homework that is emailed to me.

During-Class Exams (75%): The exam dates are 09/19, 10/17, and 11/28 and will take place in-class. Calculators are not allowed during the exams. I replace your lowest exam grade with your final if that will help your course grade. Because of this policy **there will be absolutely positively no unexcused make-up exams**. This includes absences due to COVID, illnesses, emergencies, and other unforeseen circumstances. If you miss an exam you will earn a 0 and the final exam can replace this grade.
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Students who are guilty of academic dishonestly might lose the ability to replace an exam grade with their final exam grade.

Exam corrections must be made within one week of the day the exams are handed back to the class.

Final Exam (10%): The final exam is cumulative. It is scheduled by the registrar and takes place in our classroom. If you are not excused from the final and do not show up to the final exam, you will earn a 0 on the final. You **must** take the exam on the date and time assigned by the registrar. The only reason you can take the exam at a different time is for an approved university reason (sports, SSD accommodations, etc.). You must provide me an official University letter at least 3 weeks before the final exam.

If a student scores 93 or above on each of the three exams and has at least an 85 Quest homework average and at least an 85 textbook homework average, then the student is excused from the final

exam and earns an 'A' in the course. For example, a student who scores 100, 100, and 90 on the 3 exams is not excused from the final exam, but a student who scores 95, 93, and 93 is excused from the final and has earned an 'A'.

Additional places to get help
Sanger Learning Canter: `https://ugs.utexas.edu/slc`
UT CalcLab: `https://www.ma.utexas.edu/academics/undergraduate/calclab`

COVID and other illnesses
Students with symptoms or who test positive for COVID-19 or other illnesses should not come to class. Student who are asked to quarantine should do so.

Student 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 semester so we can discuss your approved accommodations and needs in this course.
Students with disabilities must make arrangements with the instructor or the UT Testing center 2 weeks before each exam. Failure to do so will result in a student forfeiting their accommodations.

Counseling and Mental Health Center
Student Services Bldg (SSB), 5th Floor Hours: M–F 8am–5pm

512 471 3515 (appointments)
512 471 CALL (crisis line)

Religious Holidays
Students who need accomodations due to a religious holiday must make arrangements with me at least two weeks in advance.

Dean of Students
The Office of the Dean of Students is committed to helping all students at the University of Texas at Austin reach their fullest potential. If there are circumstances or emergencies which are making it impossible for you to be successful, you should consider contacting the Dean of Students and the Student Emergency Services:

`https://deanofstudents.utexas.edu/`
`https://deanofstudents.utexas.edu/emergency/`
512-471-5017
`studentemergency@austin.utexas.edu`

Diversity and Inclusion Statement
This class is for everyone, regardless of race, ethnicity, religion, gender, age, socioeconomic status, national origin, language, sexual orientation, and disability. I will make every effort to create an environment where you feel comfortable. Please share with me anything about yourself and your identify you think I need to know, especially if it will improve your experience in this course. If this statement can be improved, please let me know how. If you do not feel fully embraced as a member of the class, please reach out so we can work together on creating a better environment for you and the rest of the class.

Seeking Help
Seeking help is NOT an indication of inferior mathematical ability; it is an affirmation of your academic wisdom. This course moves quickly and the material can be quite difficult. I am here to help during class, office hours, email, or canvas messaging.

UT Honor Code
As a student of The University of Texas at Austin, you shall abide by the core values of the University and uphold academic integrity. You are expected to abide by the honor code. You are also expected to notify the instructor when someone is not abiding by the honor code.

Sharing of Course Materials is Prohibited
No materials used in this class, including, but not limited to, lecture hand-outs, videos, assessments (quizzes, exams, papers, projects, homework assignments), in-class materials, review sheets, and additional problem sets, may be shared online or with anyone outside of the class unless you have my explicit, written permission. Unauthorized sharing of materials promotes cheating. It is a violation of the University's Student Honor Code and an act of academic dishonesty. I am well aware of the sites used for sharing materials, and any materials found online that are associated with you, or any suspected unauthorized sharing of materials, will be reported to Student Conduct and Academic Integrity in the Office of the Dean of Students. These reports can result in sanctions, including failure in the course.

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. You should expect a substantial portion of your grade to come from your use of quantitative skills to analyze real-world problems. This course may be used to fulfill the math component of the university core curriculum and addresses the following three core objectives established by the Texas Higher Education Coordinating Board: communication skills, critical thinking skills, and empirical and quantitative skills.

Core Curriculum Student Competencies

This course is designed to:
• accurately manipulate and analyze numerical data using mathematical strategies.
• apply appropriate mathematical strategies to solve a given problem and assess the reasonableness

of the results.
• effectively express and communicate the results of problem-solving using appropriate mathematical language and symbolism.

Fall 2023 Disclaimer
This syllabus is subject to change. All changes will be communicated in class as well as via Canvas. Students who miss class are responsible for learning about the changes to the syllabus.

M 408C - Differential and Integral Calculus
Fall 2023

Date	Class	Sections*	Topic.
08/22	01	§1.4	Brief Introductions, Exponents, Exponential Function
	02	§1.5	Inverse Functions, Logarithms, and Trig. Review
08/29	03	§2.1	**Syllabus Day**, From Average Velocity to Tangent Lines
	04	§2.2-§2.4	Limits: Visualizing and Evaluating
09/05	05	§2.4-§2.6	Continuity, Intermediate Value Theorem, Limits at $\pm\infty$
	06	§2.7	Derivative as a Rate of Change
09/12	07	§2.8	Derivative as a Function
	08	§3.1	Derivatives of Polynomials and Exponential Functions
09/19	09		**Exam 1**
	10	§3.2-§3.3	Product Rule, Quotient Rule, Trig Derivatives
09/26	11	§3.3-§3.4	Derivative of Trig Functions, The Chain Rule
	12	§3.5-§3.6	Implicit Differentiation, Derivatives on Inverse Functions
10/03	13	§3.6, §3.8	Logarithmic Derivatives, Exponential Growth and Decay
	14	§3.9-§3.10	Related Rates, Linear Approximations and Differentials
10/10	15	§3.11, §4.1	Hyperbolic Trig (maybe), Critical Points
	16	§4.1-§4.2	Min. and Max. Values on $[a, b]$, Mean Value Theorem
10/17	17		**Exam 2**
	18	§4.3	1st and 2nd Derivative Tests, Min and Max on (a, b)
10/23			Last Day to Q-Drop the Course
10/24	19	§4.4-§4.5	L'Hospital's Rule, Curve Sketching
	20	§4.7, §4.9	Optimization, Anti-Derivatives
10/31	21	§4.9, §5.1	Anti-Derivatives, Area and Distance
	22	§5.1-§5.2	Riemann Sums, The Definite Integral
11/07	23	§5.2-§5.3	Integral Properties, FTC parts I and II
	24	§5.4	Indefinite Integrals, Net Change Theorem,
11/14	25	§5.5	u-substitution
	26	§6.1-§6.2	Area Between Curves, Volume
11/20-11/25			Thanksgiving Break - No Class
11/28	27		**Exam 3**
	28	§6.2	Area between curves, Review, Flex Day**
12/08	12:30p		**Final Exam, Friday December 8th, 8-10am**
12/07	5p		**Final Exam, Thursday December 7th, 7-9pm**

*The sections refer to the textbook, *Calculus, Early Transcedentals*, 9th Edition, by James Stewart

*This day will either be a day to prepare for the final exam or it will be used to change the schedule incase a day of class is cancelled.