M 408D Sequences, Series & Multivariable Calculus
Fall 2025
Unique numbers: 58360, 58365

Instructor: Dr. Farhana Sarower
Preferred Name/Pronouns: Dr. Sarower (she/her)
Office Location: PMA, Room 12.134
Office Hours: TBA
e-mail: farhana@math.utexas.edu

Teaching Assistant: Clare F Pruss
e-mail: cfpruss@utexas.edu
Office hours: TBA
Office Location: TBA

Lecture Time/Location: Lecture will be given in person on **Monday, Wednesday and Friday** 11:00am-12:00pm in ETC 2.108. When in a lecture feel free to ask questions. I do not take attendance in my classes, but it is your responsibility to keep up with the course material. I will lecture by using slides and the blank slides will be posted before each class. Annotated slides (class notes) will be posted after the class on Canvas, but the class will **not** be recorded. Class will **not** be recorded, and students are **not** allowed to attend class virtually.

Active, regular attendance is strongly recommended, as a significant portion of class time is dedicated to collaborative work on **worksheets** and **group-based problem solving**. Your **participation** in these activities is essential for your success in the course. Students are encouraged to ask questions during lectures to deepen their understanding of the material.

Discussion Section Time/Location: 58360: TTH 3:30pm – 4:30pm in UTC 4.102
58365: TTH 5:00pm – 6:00pm in UTC 4.102

Discussion sections are your opportunity to practice, grow, and gain confidence! I will provide the worksheets/problem sets and quizzes, while your TA will be there to guide you, answer your questions, and support you as you work through the problems.
These sessions are designed as a low-pressure environment to strengthen your understanding of lecture topics and homework, and to help you feel prepared for upcoming exams.
Every Thursday, you'll have a short quiz in discussion. These quizzes are meant to reinforce what you've already learned focusing on problems similar to the homework and lecture examples from the previous week, so you can check your progress and celebrate your improvement each week.

Ed Discussion: There will be a discussion board monitored by the instructor and teaching assistant. This will be the best location to ask questions about the course.

Prerequisites A grade of C- or better in M 408C, M 308L, M 408L, M 308S or M 408S. Only one of the following may be counted: Mathematics 403L, 408D, 408M (or 308M). Math majors are required to take both M 408C and M 408D (or either the equivalent sequence M 408K, M 408L, M 408M; or the equivalent sequence M 408N, M 408S, M 408M). Mathematics majors are required to get grades of C- or better in each of these courses.

Course Description

This is the standard first-year calculus course. It is directed at students in engineering and the natural and social sciences. The emphasis on this course is on problem solving, not on the presentation of theory. Topics include techniques of integration, differential equations, parametric equations, infinite sequences and series, partial derivatives, and multiple integrals.

Course Objectives

1. Students can apply their consolidated knowledge to explain how the course topics are related.
2. Students can apply a variety of integration techniques and determine which technique is appropriate for a given function.
3. Students can solve first order linear and separable differential equations.
4. Students can make use of parametric equations and polar coordinates to describe curves and determine the rate of change associated with the curve.
5. Students can apply an appropriate technique to determine the convergence of series.
6. Students can represent a function as an infinite series in order to perform calculus techniques such as integration.
7. Students explore the foundations of multivariate calculus by computing partial derivatives and multiple integrals.

Class and Office Hours

All classes and discussions will be held in-person, unless indicated otherwise. As needed, some classes may be conducted through Zoom. If class is held online rather than in-person, it will be announced on Canvas. You are invited to participate through video, audio, or text chat. The instructor and teaching assistants will hold scheduled office hours each week. **No appointments** are necessary to attend office hours. This is time for you to ask any class-related questions you may have. You may want to attend office hours to ask questions about course content, discuss study strategies, work on homework or practice problems, review previous exams or assignments, or discuss grades. Any changes to the schedule of office hours will be announced on Canvas. Some office hours will be held online using Zoom. Office hours will never be recorded.

Drop dates:

- The last day to drop the course without permission is September 10, 2025
- You can find more information here https://registrar.utexas.edu/calendars/25-26

Required Materials/ Class Resources

Textbook
Calculus: Early Transcendentals (9th Edition) by James Stewart

Course Websites: This course will have **two** websites:
Canvas: https://canvas.utexas.edu/
Quest: https://quest.cns.utexas.edu/

Quest
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 $25 charge per student per class for its use, with no student being charged more than $50 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 12thday 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.

Calculator
Only a four-function calculator will be allowed (no scientific calculator, no graphing calculator)

Course Grade Calculation
All scores are recorded on Canvas. Your grade will be based on the average scores on all assignments in this class with the following breakdown:

Event	**Percentage**
Quest Homework	20%
Quizzes	20%
Midterm Exams	45%
Final Exam	15%
Total	100%

The sum of these grades will determine your course letter grade as follows:

Percent	Grade	Percent	Grade
93	A	73	C
90	A-	70	C-
87	B+	67	D+
83	B	63	D
80	B-	60	D-
77	C+		

*I will round to the nearest integer.

Overview of Class Activities and Assignments

- **Quizzes (20% of the final grade)**: Quizzes are short assignments. You are given time to work on quizzes each week during the discussion session. If you miss a quiz with a valid excuse (medical, emergency, etc.), you will be able to make up that quiz. But you must provide documentation to support your absence submitted through the Student Services Office as well as discuss the absence with the professor. This documentation and communication must be submitted within **one** week of the absence.

  At the end of the semester, I will drop your **two lowest quiz scores**. This is to give you flexibility and peace of mind in case you miss a quiz or have an off week.

- **Quest Homework (20% of the final grade):** Quest homework assignments are longer assignments. Quest Homework is assigned and turned in using Quest and due every week (Saturday) by 11:59pm. Late homework will not be accepted. Please submit the assignments as soon as you finish it and do not wait until the last minute to upload it. I will drop **three lowest homework scores** at the end of the semester to account for cases in which you are unable to do the homework.

- **Midterm Exams (45% of the final grade):** There are **three** midterm exams and a **mandatory** final exam. The exams are scheduled as follows:

  Midterm Exam 1: 09/17/2025, ETC 2.108
  Midterm Exam 2: 10/15/2025, ETC 2.108
  Midterm Exam 3: 11/05/2025, ETC 2.108

  Makeup Exams Policy: Makeup exams will be granted **under valid and documented circumstances**. If you have a **known** schedule conflict with any of the above scheduled exam times, you must contact me **at least 5 business days *before* the exam** to request approval and make arrangements for makeup.

  If you miss an exam due to illness or emergency, **you must contact the instructor within 48 hours** of the missed exam to request makeup. The instructor will determine whether conflict, illness, or other extenuating circumstance warrants a makeup exam. **Documentation is required** to support your request. Failure to follow these guidelines may result in a grade of zero for the missed exam.

- **Final Exam (15% of the final grade):** Thursday, December 11, 3:30 pm-5:30 pm (cumulative, cannot be dropped). There is **no** make-up final exam.

The exam dates are fixed, but the lesson plan may change according to our needs. You are responsible for knowing what material will be covered on each exam by attending class and checking Canvas. If your final exam grade is **higher** than your **lowest midterm exam grade**, I will replace that midterm grade with your final exam grade.

Due Dates
Due Dates and specifics of homework, quizzes, and exams in Canvas follow a tentative schedule that can change when needed. Please be sure to check Canvas often for the most up to date information.

Statute of Limitations for Exams
If you have any disputes or questions about the grading of your exam, you must bring them up **no later than two weeks** after the exams are handed back to the class.

Class Communication
Any direct emails to the professor should include the student's name, EID, course name, and class time. The professor will use Canvas Announcements to communicate information to the class when needed. Please consider adjusting your settings in Canvas to send notifications of announcements for all timely information.

Tutoring

- **Sanger Learning Center:** The Sanger Learning Center provides academic support for all UT Austin students. It also offers Math Refreshers and Reviews (MRRs) to support students' content preparation for their courses and exams. They offer several forms of tutoring, please check the website for more information regarding tutoring (www.utexas.edu/ugs/slc). Students may register for the info sessions, math refreshers/reviews, or appointment tutoring by logging in to their MySLC site: https://utdirect.utexas.edu/apps/ugs/my/

- **Calculus Lab**: CalcLab is run by the mathematics department, and is staffed with current calculus teaching assistants, as well as advanced undergraduate learning assistants. We strongly suggest students utilize the math department's calculus lab. Details and schedules can be found at https://www.ma.utexas.edu/academics/undergraduate/calclab.

Sharing of Course Materials is Prohibited: No materials used in this class, including, but not limited to, lecture hand-outs, assessments (quizzes, exams, 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 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.

Honor Code: The core values of the University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.

Academic Integrity

Academic dishonesty and plagiarism will not be tolerated in this course. Please refer to the Honor Code and Chapter 11 of the Institutional Rules on Student Services and Activities, which may be found at https://deanofstudents.utexas.edu/conduct/standardsofconduct.php. Note that course materials are copyrighted and sharing any class materials online or otherwise, including your own work submitted for this class, without approval, is considered academic dishonesty.

Title IX

Title IX is a federal law that protects against sex and gender-based discrimination, sexual harassment, sexual assault, sexual misconduct, dating/domestic violence and stalking at federally funded educational institutions. The University of Texas at Austin is committed to fostering a learning and working environment free from discrimination in all its forms. For more information about reporting options and resources, visit http://www.titleix.utexas.edu.

How We Work Together in This Class

- **Stay on Track:** This class moves quickly, with something due every week. If you miss a class, you can read through the class notes or catch up using the textbook. I am happy to help you find the materials you need during office hours. Please stay in touch if you fall behind, communication is the key.

- **Speak Up:** If you are feeling lost, overwhelmed, or stuck talk to me. I want to help. Whether it is academic, organizational, or just needing help navigating the course, you are not alone.

- **Be Respectful and Supportive:** Let's create a space where everyone can learn. That means:
    - Encouraging classmates when they share ideas,
    - Arriving on time and leaving quietly if needed,
    - Using laptops/tablets for class-related work only,
    - Including others when forming study groups or group chats,
    - Staying home if you're sick (or wearing a mask if symptoms are mild) (Make-up exams are offered for illness).

Thanks for helping build a thoughtful and respectful class community!

Services Available to Students

- **Disability and Access:** 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 we can work with you to ensure you have an 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 accommodation please contact Disability & Access (D&A). Any student with a disability requiring accommodation may make a request with Disability and Access (D&A), at 512-471-6259, https://diversity.utexas.edu/disability/. Please let me know if there is an accommodation you need to make this class and its content accessible.

- **University Health Services:** University Health Services is an 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. https://healthyhorns.utexas.edu

- **Student Emergency Services:** The Student Emergency Services office helps students and their families during difficult or emergency situations. Assistance includes outreach, advocacy, intervention, support, and referrals to relevant campus and community resources. Website: https://deanofstudents.utexas.edu/emergency/

- **Counseling and Mental Health Center:** The Counseling and Mental Health Center (CMHC) provides counseling, psychiatric consultation, and prevention services that facilitate students' academic and life goals and enhance their personal growth and well-being. They are located at Student Services Bldg (SSB), 5th Floor. Hours: 8 am - 5 pm, Phone: 512-471-3515, Website: www.cmhc.utexas.edu. Call the CMHC's 24/7 crisis line at 512-471-2255 (CALL) to speak with a crisis counselor anytime.

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

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 identity 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.

Lecture/Discussion Schedule: Instructors may modify schedule slightly throughout the semester, usually by going somewhat faster, never slower.

Week of	Monday	Tuesday	Wednesday	Thursday	Friday
August 8/25 – 8/29	Syllabus 5.5 Substitution Rule (Review)	No discussion	7.1 Integration by Parts	Discussion	7.2 Trigonometric Integrals 7.3 Trigonometric Substitution
September 9/1 – 9/5	No Class Labor Day	Discussion	7.3 Trigonometric Substitution (continue)	Quiz 01	7.4 Integration of Rational Functions by Partial Fractions
September 9/8 – 9/12	7.5 Strategy for Integration	Discussion	7.8 Improper Integrals	Quiz 02	9.1 Modeling with Differential Equations 9.2 Direction Fields and Euler Method
September 9/15 – 9/19	Review	Discussion	Exam 1		9.3 Separable Equations
September 9/22 – 9/26	9.4 Models for Population Growth	Discussion	9.5 Linear Equations	Quiz 03	11.1 Sequences
Sept./Oct. 9/29 – 10/3	11.2 Series	Discussion	11.3 The Integral Test and Estimates of Sums	Quiz 04	11.4 Comparison Test
October 10/6 – 10/10	11.5 Alternating Series	Discussion	11.6 Absolute Convergence and the Ratio and Root Tests	Quiz 05	11.7 Strategy for Testing Series
October 10/13 – 10/17	Review	Discussion	Exam 2		11.8 Power Series
October 10/20 – 10/24	11.9 Representations of Functions as Power Series	Discussion	11.10 Taylor and Maclaurin Series	Quiz 06	11.11 Applications of Taylor Polynomials and the Binomial Series
October 10/27 – 10/31	10.1 Curves Defined by Parametric Equations	Discussion	10.2 Calculus with Parametric Equations	Quiz 07	10.3 Polar Coordinates
November 11/3 – 11/7	Review	Discussion	Exam 3		10.4 Areas and Lengths in Polar Coordinates
November 11/10 – 11/14	14.1 Functions of Several Variables	Discussion	14.2 Limits and Continuity and Numerically	Quiz 08	14.3 Partial Derivatives
November 11/17 – 11/21	14.5 The Chain Rule	Discussion	15.1 Double Integrals over Rectangles and Iterated Integrals	Quiz 09	15.2 Double Integrals over General Regions
November 11/24 – 11/28	Fall Break	Fall Break	Fall Break	Fall Break	Fall Break
December 12/1 – 12/5	15.2 Double Integrals over General Regions (Continue)	Discussion	15.3 Double Integrals in Polar Coordinates	Quiz 10	15.9 Change of Variable in Multiple Integrals (if time permits)
December 12/8 – 12/12	Last Class Day Review	No discussion	No Class	Final Exam	

Final Exam: Thursday, December 11, 3:30 pm-5:30 pm