College of Arts and Sciences

Mathematics

MATH 251 Syllabus

Section 520 (23606)
Engineering Mathematics III
Fall 2025 - College Station

Course Information

Meeting Times: Meeting Type: LEC
Meeting Days: TR
Start Time: 3:55PM
End Time: 5:10PM
Start Date: 08/25/2025
End Date: 12/16/2025
Meeting Location: HELD 111

Credit Hours: 3

Instructor Details

Xiaochuan Tang
Email: brookstang@tamu.edu
Office: BLOCKER 320
Phone: (979) 845-7554

Office Hours
MW 8:30-11:30 AM at BLOCKER 602
Preferred Contact Method
Email
Biography
Please see my CV on howdy

Course Description

Vector algebra, calculus of functions of several variables, partial derivatives, directional derivatives, gradient, multiple integration, line and surface integrals, Green's and Stokes' theorems.

Course Prerequisites

Prerequisite/Corequisite(s): MATH 148, MATH 152, or MATH 172; also taught at Galveston and Qatar campuses.

Special Course Designation

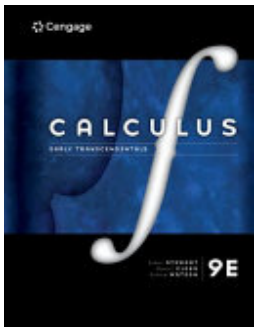
ACST|LMT4|NTFO|OPEN

Course Learning Outcomes

We will cover Chapter 12 to Chapter 16 of the book. We will generalize notations already seen in two-dimensional calculus to three-dimensional space as vectors and we will cover different concepts used in physics, engineering, and electronics. At the end of this course, students should be able to manipulate these concepts correctly in order to apply techniques seen in this course to engineering applications. In particular, students should be able to:

- Perform Calculus operations on vector-valued functions, including derivatives, integrals, curvature, displacement, velocity, acceleration, and torsion.
- Perform calculus operations on functions of several variables, including partial derivatives, directional derivatives, and multiple integrals.
- Find extrema and tangent planes.
- Solve problems using the Fundamental Theorem of Line Integrals, Green's Theorem, The Divergence Theorem, and Stokes'
- Apply the computational and conceptual principles of calculus to the solutions of real-world problems.

Textbook and/or Resource Materials



This material Is: Recommended
Calculus: Early Transcendentals
ISBN: 9781337613927
Authors: James Stewart, Daniel K. Clegg, Saleem Watson
Publisher: Cengage Learning
Publication Date: 2020-01-23
Edition: 9th
Notes:
You will be required to purchase access to the online homework system, WebAssign, but doing so will automatically give you access to the eBook version of the text. The textbook is available in different formats, and there are a variety of purchasing options available (course specific access or Cengage Unlimited). Purchase can be made through the local bookstores or directly in WebAssign. Starting on the first day of classes, you will be granted access for a trial period while you determine the appropriate purchasing option for you.

This material Is: Required

WebAssign Access

Notes:

WebAssign will be used for homework in this class. A link to the assignments will be available in Canvas Modules. The first time you access the homework MUST be done through Canvas. Future access may be possible through your Cengage account. In order to use WebAssign, you must purchase access. For access purchasing information and options, please visit the Mathematics Department Homework Page.

Additional Instructional Materials

This Material is: Required

Computer Resources

Notes:

You need the appropriate technology so that you can access Canvas, Webassign, Gradescope, and various resources found on webpages. This can include:

- a computer that meets TAMU's Bring Your Own Device Policy,
- an up-to-date internet browser (Chrome or Firefox is recommended).

This Material is: Required

Gradescope Access

Notes:

Gradescope is a web-based application that may be used to grade lab assignments, quizzes, as well as the workout portions of the exams. Gradescope may be accessed through Canvas.

Grading Policy

The course grading will be based on the tables below. At the end of the semester, you will receive the grade you *earned*, according to the scale given. Due to FERPA privacy issues, I cannot discuss grades over email or phone. If you have a question about your grade, please schedule a one-on-one meeting with me.

Grade Breakdown

Activity	Date	Percentage
Homework	Weekly	10%
Quizzes	Weekly	10%
Exam I	Sep. 18	20%
Exam II	Oct. 16	20%
Exam III	Nov. 13	20%
Final Exam	See Below	20%
Total		**100%**

Grading Scale

Range	Grade
90 ≤ Average ≤ 100	A
80 ≤ Average < 90	B
70 ≤ Average < 80	C
60 ≤ Average < 70	D
Average < 60	F

Online Homework

Homework assignments will be completed online in WebAssign. Please note that this homework may NOT be a comprehensive set of problems in terms of preparing for exams and quizzes. Some additional practice problems can be found linked in Canvas.

A link to each assignment can be found in a Canvas Module. The first time you access the homework, you must log into WebAssign through Canvas. Do not wait until the last minute to complete your online homework as last-minute technical difficulties will not be an excuse for missing a deadline.

- Homework for each section will be due **2–3 days after the lecture covering that material**.
- Please check Canvas regularly for specific due dates and updates to avoid missing assignments.
- Late submissions are accepted on WebAssign for **up to 2 additional days after the deadline**, but they will incur a **50% penalty**.
- WebAssign also will contain practice assignments that are NOT for a grade.
- If a student transfers from one section of Math 251 to another, it is the student's responsibility to inform the new instructor that they have transferred from another section AND fill out the Student Help Request Form.

The department has a Student Help Page, at the link given below, that has various information as well as a Student Help Request Form. This form is for technical issues, not help with solving the mathematical problem.

Quizzes

- Weekly quizzes will be given **regularly throughout the semester**
- They will usually take place during the last 10 minutes of the lecture
- No quizzes will be given during exam weeks

Exams (Midterms)

There will be three exams during the semester. Bring your Texas A&M student ID and a pencil to all exams. A scantron (or bubble sheet) will be provided for all

exams. Additional requirements and information about exams will be given closer to exam time. The tentative exam schedule is as follows:

Exam I: Thursday, Sep. 18

Exam II: Thursday, Oct. 16

Exam III: Thursday, Nov. 13

Final Exam

The final exam is required for all students and will cover the problems found in Chapter 16 and Sections 14.7-14.8. The final is comprehensive in the sense that the problems in Chapter 16 require skills from the other chapters. If your final exam grade is higher than your lowest test grade, the grade on your final will replace that test grade in the final grade calculation. The final exam schedule is in the table below.

Final Exam Schedule

Sections	Lecture Time	Final Exam Date & Time
520	TR 3:55 - 5:10 PM	Monday, Dec 15, 1:00 PM - 3:00 PM in HELD 111

Appeal Policy

If you believe an error has been made in grading of an exam or quiz, you have one week from the return of the exam to let me know. After that one-week period, no change to the grade will be made. The only exceptions to this is if the points on the exam were totaled incorrectly or you can convince me that circumstances beyond your control prevented you from submitting a regrade request. If a grade has been recorded incorrectly, you may talk to me anytime during the semester about fixing the grade. I will need to see the actual assignment before the grade will be changed.

Late Work Policy

Work submitted by a student as makeup work for an excused absence is not considered late work and is exempt from the late work policy (Student Rule 7).

WebAssign Automatic Extensions: you may request an extension that will extend the *original due date* of an assignment by two days. When looking at an assignment whose original due date has passed, you'll see a "Request Extension" button. You'll need to click on "Automatic" to see the option to start the extension. There is a 50% penalty on any points earned after the due date and an extension will not be granted if it is requested more than two days after the original due date.

Otherwise, late work will NOT be accepted unless you have a university approved reason and contact me or your recitation instructor within two working days of the missed assignment.

Course Schedule

Tentative Course Schedule

Week	Sections and Topics
Week 1: Aug 25 - 29	12.1: Three-Dimensional Coordinate Systems 12.2: Vectors 12.3: The Dot Product
Week 2: Sept 1 - 5	**Labor Day (no classes): Sept 1** 12.4: The Cross Product 12.5: Equations of Lines and Planes 12.6: Cylinders and Quadric Surfaces (briefly)
Week 3: Sept 8 - 12	13.1: Vector Functions and Space Curves 13.2: Derivatives and Integrals of Vector Functions 13.3: Arc Length and Curvature
Week 4: Sept 15 - 19	13.4: Motion in Space: Velocity and Acceleration 14.1: Functions of Several Variables **Exam I (Chapters 12-13)**
Week 5: Sept 22 - 26	14.3: Partial Derivatives 14.4: Tangent Planes and Linear Approximations 14.5: The Chain Rule
Week 6: Sept 29 - Oct 3	14.6: Directional Derivatives and the Gradient Vector 14.7: Maximum and Minimum Values
Week 7: Oct 6 - 10	14.8: Lagrange Multipliers 15.1: Double Integrals over Rectangles

Week	Sections and Topics
Week 8: Oct 13 - 17	**Fall Break (no classes): Oct 13 - 14** 15.2: Double Integrals over General Regions **Exam II (Chapter 14)**
Week 9: Oct 20 - 24	15.3: Double Integrals in Polar Coordinates 15.4: Applications of Double Integrals (optional) 15.5: Surface Area (can be omitted and combined with Section 16.6)
Week 10: Oct 27 - 31	15.6: Triple Integrals 15.7: Triple Integrals in Cylindrical Coordinates 15.8: Triple Integrals in Spherical Coordinates
Week 11: Nov 3 - 7	15.9: Change of Variables in Multiple Integrals 16.1: Vector Fields
Week 12: Nov 10 - 14	16.2: Line Integrals 16.3: The Fundamental Theorem of Line Integrals **Exam III (Chapter 15)**
Week 13: Nov 17 - 21	16.4: Green's Theorem 16.5: Curl and Divergence **Q-drop Deadline: 5pm on Nov 19**
Week 14: Nov 24 - 28	16.6: Parametric Surfaces and Their Areas 16.7: Surface Integrals **Reading Day (no classes): Nov 26** **Thanksgiving Break (no classes): Nov 27 - 28**
Week 15: Dec 1 - 5	16.8: Stokes' Theorem 16.9: The Divergence Theorem **Last Day for TR Lectures: Thursday, Dec 4**
Week 16: Dec 8 - 12	**Reading Days (no classes): Dec 9 - 10**
Week 17: Dec 15 - 16	**Final Exam (cumulative): Monday, Dec 15, 1:00-3:00 PM**

Additional Course Information

Calculator Policy

Calculators are not allowed on quizzes or exams but may be needed on homework.

Class Announcements, E-Mail Policy, and Communications

Class announcements will be made in Canvas. If you send me an e-mail, please include your name and course information (class and section) as well as any additional information that I might need to help respond to your e-mail.

Electronic Devices Policy

Electronic devices can only be used for educational purposes that relate to activities done in class. See me if you have other circumstances where a device is needed daily for non-class related items (i.e., medical, first responder, etc.).

Academic Integrity

You will read more about the Academic Integrity Statement and Policy in the University Policies section. If you have any questions about whether something would be considered academic dishonesty, ask me before you do it. However, here is some general guidance:

- In this course, I encourage you to discuss homework assignments and their solutions with your classmates. Study groups are a great way to learn. However, copying solutions from another student is considered academic dishonesty. To maintain academic integrity, it is important that you understand and could rework anything that you submit for a grade.
- Communication about any aspect of any quiz or exam completed prior to ALL students completing the quiz or exam can be viewed as academic dishonesty.
- You may not use external sources (i.e., websites, apps, etc.) to complete any in-class quizzes or exams in this course.

Copyright

Technology Support

Technology Services (IT) - Main Campus

Hours: 24/7
Phone: (979) 845-8300
Email: helpdesk@tamu.edu
Call/Chat/Email/visit: https://it.tamu.edu/help

Canvas LMS Technical Support

Hours: 24/7/365
Phone: (877) 354-4821
Email: support@instructure.com

Support is available by clicking the Help button at the far left in the Canvas global navigation menu.
Canvas Resources are also linked on the home page of every Canvas course.

WebAssign Access Support

If you have any issues accessing WebAssign, please join the live Cengage support hours.

Learning Resources

Week-in-Review (WIR)

Week-in-Review (WIR) sessions are weekly problem-solving meetings led by faculty. Each session provides a brief review of the material covered in the course during the previous week, while faculty guide students through solutions to a selected set of problems. The schedule can be found on the WIR Home Page.

Help Sessions

Help Sessions provide an opportunity to ask questions and receive support from knowledgeable tutors. You are welcome to come and go as your schedule permits.For homework questions or general help with course material, visit the Math Learning Center's Help Sessions during their posted hours.

Virtual Math Learning Center

The Virtual Math Learning Center (VMLC) is an online resource to help students succeed in their Math and Stats courses at Texas A&M University. The VMLC has videos and practice problems that you can access at any time.

Course Webpage

You can find more information about the course on the Math 251 course webpage.

University Policies

This section outlines the university-level policies that must be included in each course syllabus. The TAMU Faculty Senate established the wording of these policies.

Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to Student Rule 7 in its entirety for information about excused absences, including definitions, and related documentation and timelines.

Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to Student Rule 7 in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up

work should be agreed upon by the student and instructor" (Student Rule 7, Section 7.4.1).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" (Student Rule 7, Section 7.4.2).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See Student Rule 24.)

Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" (Section 20.1.2.3, Student Rule 20).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

Notice of Nondiscrimination

Texas A&M University is committed to providing safe and non-discriminatory learning, living, and work environments for all members of the University community. The University provides equal opportunity to all employees, students, applicants for employment or admission, and the public, regardless of race, color, sex (including pregnancy and related conditions), religion, national origin, age, disability, genetic information, or veteran status.

Texas A&M University will promptly, thoroughly, and fairly investigate and resolve all complaints of discrimination, harassment (including sexual harassment), complicity, and related retaliation based on a protected class in accordance with

System Regulation 08.01.01, University Rule 08.01.01.M1, Standard Administrative Procedure (SAP) 08.01.01.M1.01, and applicable federal and state laws. In accordance with Title IX and its implementing regulations, Texas A&M does not discriminate on the basis of sex in any educational program or activity, including admissions and employment.

The following person has been designated to handle inquiries and complaints regarding the non-discrimination policies: Jennifer M. Smith, TAMU Associate VP & Title IX Coordinator at YMCA Ste 108, College Station, TX 77843, 979-458-8407, or email civilrights@tamu.edu. For other reporting options, visit the U.S. Department of Education Office for Civil Rights Complaint Assessment System to locate the address and phone number of the office that serves your area, or call 1-800-421-3481.

Civil Rights, Free Speech, and Title IX Policies

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit discrimination and harassment based on an individual's race, color, sex, (including pregnancy and related conditions), religion, national origin, age, disability, genetic information, veteran status, or any other legally protected characteristic. This includes forms of sex-based violence, such as sexual assault, sexual harassment, sexual exploitation, dating/domestic violence, and stalking.

Students can report discrimination/harassment, access supportive resources, or learn more about their options for resolving complaints on the University's Civil Rights & Title IX webpage.

Students should be aware that all university employees (except medical or mental health providers) are mandatory reporters, which means that if they observe, experience or become aware of an incident that they reasonably believe to be discrimination/harassment alleged to have been committed by or against a person who was a student or employee at the time of the incident, the employee must report the incident to the university.

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact the Disability Resources office on your campus (resources listed below). Disabilities may include, but are not limited to, attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Resources and their instructors as soon as possible.

To request academic accommodations, contact the designated ADA office based on your location:

- Texas A&M University, College of Nursing, College of Dentistry, Irma Lerma Rangel College of Pharmacy College Station, College of Medicine, School of Public Health, Institute of Biosciences and Technology, EnMed Program, Bush School in Washington DC, Mays Business School – CityCentre, TAMU Engineering Academies, Texas A&M University Higher Education Center at McAllen and Texas A&M University at Galveston should contact Disability Resources at (979) 845-1637 or disability@tamu.edu.
- Texas A&M University School of Law should contact the Office of Student Affairs at (817) 212-4111 or law-disability@law.tamu.edu to request accommodations.
- Irma Lerma Rangel College of Pharmacy in Kingsville should contact the Disability Resource Center at Texas A&M University-Kingsville at (361) 593-3024 or drc.center@tamuk.edu to request accommodations.
- Texas A&M University College of Veterinary Medicine & Biomedical Sciences in Canyon should contact the Office of Student Accessibility at West Texas A&M University – Canyon at (806) 651-2335 or osa@wtamu.edu.

If you are experiencing difficulties with your approved accommodations, contact the office responsible for approving your accommodations or the Texas A&M ADA Coordinator Julie Kuder at ADA.Coordinator@tamu.edu or (979) 458-8407.

Pregnancy Accommodations

Texas A&M provides reasonable accommodations to students due to pregnancy and/or related conditions, such as childbirth, recovery, and lactation. Students should contact the University's Pregnancy Coordinator as soon as they become aware of the need for accommodation. Depending on the circumstances, accommodations could include extended time to complete assignments or exams, changes in course sequence, or modifications to the physical classroom environment.

Texas A&M will also allow a voluntary leave of absence, ensure the availability of lactation space, and maintain grievance procedures to provide for the prompt and equitable resolution of complaints of sex discrimination. For information regarding pregnancy accommodations, email TIX.Pregnancy@tamu.edu.

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors influencing a student's academic success and overall wellbeing. Students are encouraged to engage in healthy self-care practices by utilizing the resources and services available through University Health Services. The TELUS Health Student Support app provides access to professional counseling in multiple languages anytime, anywhere by phone or chat, and the 988 Suicide & Crisis Lifeline offers 24-hour emergency support at 988 or 988lifeline.org.

Texas A&M College Station

Students needing a listening ear can contact University Health Services at 979.458.4584. Call 911 or visit your nearest emergency room if you are currently experiencing a life-threatening situation or if your safety is at risk. 24-hour emergency help is also available through the 988 Suicide & Crisis Lifeline (988) or at 988lifeline.org.

Statement on the Family Educational Rights and Privacy Act (FERPA)

FERPA is a federal law designed to protect the privacy of educational records by limiting access to these records, to establish the right of students to inspect and review their educational records, and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings.

Currently enrolled students wishing to withhold any or all directory information items can do so within howdy.tamu.edu using the Directory Information Witholding Form. The complete FERPA Notice to Students and the student records policy is available on the Office of the Registrar webpage.

Items that can never be identified as public information are a student's social security number, citizenship, gender, grades, GPR, or class schedule. All efforts will be made in this class to protect your privacy and to ensure confidential treatment of information associated with or generated by your participation in the class.

Directory items include name, UIN, local address, permanent address, email address, local telephone number, permanent telephone number, dates of attendance, program of study (college, major, campus), classification, previous institutions attended, degrees, honors and awards received, participation in officially recognized activities and sports, medical residence location, and medical residence specialization.

Free Speech and Civil Discourse

Texas A&M recognizes that the pursuit of truth through open and robust discourse is critical to academic inquiry. However, as a community of scholars, the university has an aspirational expectation that such discourse will be conducted in accordance with Aggie Core Values. In this "marketplace of ideas," we encourage civil dialogue creating an environment that allows individuals to express their ideas and to have their ideas challenged in respectful and responsible ways. Students can learn more about Freedom of Expression and Free Speech on the University's website about the First Amendment.