

MATH 227-001-Calculus III

Spring 2025

Credit Hours: 4

Lecture



Contact Information

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Course Description

This is the third of three courses in the basic calculus sequence. Topics include: vector functions and motion in space; functions of two or more variables and their partial derivatives; and applications of partial derivatives (including Lagrange multipliers), quadric surfaces, multiple integration (including Jacobian), line integrals, Green's Theorem, vector analysis, surface integrals and Stokes' Theorem.

Core Attributes: Mathematical Science

Prerequisite(s): C- or higher in MATH 146 or C- or higher in MATH 126

Required Texts

**ACCESS GRANTED CODELESS / MATH 125/126/145/146/227/247 AGP
(STEWART/WEBASSIGN ACCESS ESSENTIAL CALCULUS)**

Subtitle: ACCESS GRANTED CODELESS / MATH 125/126/145/146/227/247 AGP
(STEWART/WEBASSIGN ACCESS ESSENTIAL CALCULUS)

ISBN: 978-0-01-358085-8

Required or Recommended: Required

CALCULATOR CASIO FX-260 SOLAR II

Subtitle: CALCULATOR CASIO FX-260 SOLAR II

Required or Recommended: Required

Other Course Materials

CALCULATOR

The only handheld calculator you will be allowed to use on the tests and final exam is the **Casio fx-SOLAR SCHOOL or the Casio fx-260 SOLAR II**. Using a different hand-held calculator on tests/final exams is considered academic misconduct. Practice with it! You cannot get calculator help during the exam.

WEBASSIGN

All homework and tests will be done in WebAssign. An access code is required, which should already be included with your UA billing through the Access Granted Program. The access code allows students access to the publisher's website, where all assignments and tests must be completed. Also, the entire textbook may be viewed online and any part of it may be printed (up to 10 pages at a time).

A hard copy of the textbook may be purchased **but is not required**.

NOTE: Students must always access WebAssign by first opening the Blackboard Learn Course Home Page and then clicking the Access WebAssign link.

Student Learning Outcomes

- Students will carry out calculations and graph functions of several variables to demonstrate the multi-dimensional aspects of calculus and its applications.
- Students will develop parametric representations of curves and surfaces and carry out standard calculations using them.
- Students will execute routine calculations of partial derivatives.
- Students will apply partial derivatives to various applied problems such as working with Lagrange multipliers.
- Students will solve multiple integration problems and their applications.
- Students will carry out calculations using basic vector analysis and be able to apply Greens, Stokes, and the divergence theorems.

Outline of Topics

I - Vectors and the Geometry of Space

Vector Operations

Equations of Lines and Planes

Vector Functions

Quadric surfaces

Space curves

Functions of Several Variables

Limits and Continuity

II - Partial Derivatives

Partial Derivatives

Gradient

Directional Derivatives

Tangent planes

Chain Rule

Optimization

Lagrange Multipliers

III - Multiple Integrals

Double Integrals over Rectangular Coordinates

Double Integrals over General Regions
General Transformations (Change of Variables).
Integration in Polar, Cylindrical and Spherical Coordinates

IV- Vector Calculus

Vector Fields
Line and Surface Integrals
Curl and Divergence
Green's Theorem
Stokes' Theorem
Divergence Theorem

Exams and Assignments

COURSEWORK

Coursework can be done on any computer with internet access.

- Log in to ulearn.blackboard.com using your myBama information, click on your course and use the Access WebAssign link to get to WebAssign.
- All homework assignments and tests will be completed through WebAssign, which is linked in your Blackboard course. Always use the link provided in Blackboard. If you have trouble, make sure you are allowing pop-ups and allowing cookies always. If that doesn't help, try using a different internet browser.
 - If Blackboard is down, go access WebAssign directly through their website..

NON-GRADED (OPTIONAL) PRACTICE/REVIEW

- A non-graded practice/review assignment will be scheduled in WebAssign for your benefit.
 - Review of Calculus 1 and 2
- This optional assignment will be available for the whole semester.
 - You do not need to work on all the problems - just attempt the problems you need practice with, as many times as needed.

HOMEWORK

Homework will be through WebAssign.

- You will be able to submit your answers up to 100 times. After the homework deadline, you can practice another version of the problems, if it is available (this feature is not available on all questions).
- Homework will be assigned frequently and will be due a few days after the topic is covered in class.
- Homework assignments must be completed before the deadline for full credit.
 - See the **Policy on Missed Exams and Coursework** for details about missed homework.
- Homework grade will be computed according to the following table:

Average (%)	Homework Grade
(100%, 110%]	(Average) x (0.1)
[93%, 100%]	10/10
[86%, 93%)	9.3/10
[81%, 86%)	8.6/10
[74%, 81%)	8.1/10
[67%, 74%)	7.4/10
[60%, 67%)	6.7/10
[53%, 60%)	6/10
[46%, 53%)	5.3/10
[40%, 46%)	4.6/10
[34%, 40%)	4/10
[28%, 34%)	3.4/10
[22%, 28%)	2.8/10
[16%, 22%)	2.2/10
[10%, 16%)	1.6/10
[5%, 10%)	1/10
[0%, 5%)	0/10

QUIZZES

There will be **thirteen (13)** weekly quizzes administered in class.

- These quizzes will contain 1-2 questions and will be done at the last 10 minutes of class.
- Quiz dates and coverage will be announced at least one class period in advance.
- See the **Policy on Missed Exams and Coursework** for details about missed quizzes.

TESTS AND COMPREHENSIVE FINAL EXAM

There will be **4** tests and a mandatory comprehensive final exam.

- All tests will be given during class time at the Mathematics Technology Learning Center (MTLC) located in the Math and Science Education Building.
 - The room/lab will be announced in class.
- Tests will be taken through WebAssign
 - All tests will be computer-based.
- You will ONLY be allowed to use the **Casio fx-260-SOLAR or Casio fx-260-SOLAR II**(available at University bookstores) on tests.
 - There will NOT be a computer calculator available during a test.
 - Practice with it! You cannot get calculator help during testing.
 - Using a different hand-held calculator on a test is considered academic misconduct.
- There will be NO early testing nor make-up tests for any reason.
 - See the **Policy on Missed Exams and Coursework** for more details about missed exams.
- Test dates are listed below.

Test	Date	Time	Time Limit
Test 1	Thursday, January 30, 2025	Class Time	50 minutes
Test 2	Thursday, February 20, 2025	Class Time	50 minutes
Test 3	Thursday, March 27, 2025	Class Time	50 minutes

Test	Date	Time	Time Limit
Test 4	Thursday, April 17, 2025	Class Time	50 minutes
Final Exam	Friday, May 2nd, 2025	10:30 am - 12:30 pm	120 minutes

Grading Policy

COURSE GRADE

Grades will be determined from **attendance, homework, quizzes, 4 regular tests and a mandatory comprehensive final exam**. The course grade will be determined by points earned as follows:

GRADED ITEMS

Your course grade will be determined by points earned as follows:

Item	Percentage
Homework	10%
Quizzes	15%
Tests	50%
Final Exam	25%
Total	100%

EXTRA CREDIT: CLASS ATTENDANCE

You will receive up to 1.5 extra credit points toward your **final grade** in the course. Class attendance will be randomly recorded at least **once** per week (not on test days). Attendance points will be awarded as follows:

- You will receive **1 point** each time attendance is recorded and you follow the **Attendance Policy** (read that section carefully).
 - If you do not follow the **Attendance Policy**, points will be deducted accordingly.
- You will receive **0 points** if attendance is recorded and you are absent.

- If you will miss class, you must contact your instructor (via email) prior to the class start time to be marked excused.
- Attendance Extra Credit Computation:

$$[\text{Attendance Extra Credit}] = (\text{Attendance Percentage}) \times (0.015)$$

- Attendance will be recorded starting on the third week of classes.

LETTER GRADES

Letter grades for this course will be assigned according to the following ranges:

Final Grade Range	Letter Grade
[97,∞)	A+
[93,97)	A
[90,93)	A-
[87,90)	B+
[83,87)	B
[80,83)	B-
[77,80)	C+
[73,77)	C
[70,73)	C-
[67,70)	D+
[63,67)	D
[60,63)	D-
[0,60)	F

Policy on Missed Exams and Coursework

HOMEWORK

- No homework score will be dropped.
- If homework assignments are missed or not completed for any reason, you may request an automatic extension in WebAssign within **7 days of the deadline** and complete the assignment by the new deadline for up to **50% partial credit**. Only

the work submitted after the original deadline will get partial credit; all work submitted before the original deadline gets full credit. Any assignments not attempted will be scored **0**.

- Even though WebAssign may extend an assignment past the end of the semester, all extended work must be submitted by **Friday, May 2nd at 11:59 p.m.** to count towards your final grade.

Do not wait until the last minute to complete your homework assignments!

QUIZZES

- No make-up quiz will be given.
- The **lowest three (3)** quiz scores will be dropped.

TESTS AND COMPREHENSIVE FINAL EXAM

- The **lowest of your 4 regular test scores** will be dropped.
 - Only one test score may be dropped.
 - The final exam **cannot** be dropped. You must take the final exam!
 - There are NO make-up tests.
- If you have special circumstances that cause you to miss more than the allotted drops, you may submit an official explanation and any supporting documents to **mtlc.ua.edu/petition/**. Do not submit a petition unless drops have been exhausted.

It is important to take every assignment and test seriously and to complete all assigned work on time. Do your best on every assignment!

Students who will miss any assignment deadlines due to official University or military business must submit official documents to mtlc.ua.edu/petition/ at least 3 business days before the absence.

Attendance Policy

Students are expected to attend all lectures. “Attending” means:

- Arriving promptly at the beginning of class
- Remaining for the duration of the class period
- Being engaged and participating in classroom discussions
- Showing respect for the instructor and classmates

It is highly recommended that you attend class; grades are almost always significantly lower for those who do not attend class regularly. Lectures will not be recorded and there are no pre-recorded lecture videos available for this course.

****Students who miss class are responsible for all announcements and material discussed in class meetings.****

Online Proctoring and Room Scan

This course may include online proctored exams that may require a room scan of your testing environment using your webcam. The room scan is required to ensure academic integrity. It is your responsibility to identify a testing location that allows you to comfortably complete the room scan without compromising your personal privacy.

Students who are unable to identify an appropriate testing location for the room scan or who otherwise do not wish to take the exam online, should contact the course's instructor to discuss alternative testing options, including taking the exam in-person at an approved location. If you choose an in-person testing option, it is your responsibility to coordinate with the instructor to reserve your space in the testing location prior to the date of the exam. Additionally, you will be responsible for all fees associated with in-person proctoring and for presenting an approved form of identification at the testing location. Further, if the course uses any online exams developed by third party textbook publishers, you will also be subject to the publisher's terms and conditions related to online exams.

Generative AI Tools

AI use is not allowed

All submitted work must be produced by the students themselves, whether individually or collaboratively. Use of a generative AI tools such as ChatGPT to complete an assignment constitutes academic misconduct.

Notification of Changes

The instructor will make every effort to follow the guidelines of this syllabus as listed; however, the instructor reserves the right to amend this document as the need arises. In such instances, the instructor will notify students in class and/or via email and will endeavor to provide reasonable time for students to adjust to any changes.

Department of Mathematics Academic Misconduct Policy

1. During tests you may only use a calculator that has been specifically approved by the instructor. Using or being in possession of an unauthorized calculator will be considered academic misconduct.
2. Taking a test for another student will be treated as academic misconduct by both parties. In particular, showing an instructor a fake ID or another student's ACT card will be treated as academic misconduct.
3. Receiving or providing assistance of any kind during an exam will be treated as academic misconduct by both parties.
4. Cellphones must be turned completely off and placed with other belongings on the floor. All watches must be taken off and put away. DO NOT put your phone or watch in your lap or on your chair or desk. Physically holding or concealing on your person a phone, watch or other unauthorized technological device (including but not limited to headsets, earphones, earbuds, microphones, cameras, or scanning pens) will be treated as academic misconduct.
5. If you are seen using an unauthorized device, the instructor may request that you turn it over. It will be returned at the end of the exam. However, the instructor does not have to request your device in order to charge you with academic misconduct.
6. If for any reason you must have access to your phone while taking a test, you must inform an instructor prior to accessing your phone. The instructor must be present while you use the phone. Failure to do so will be treated as academic misconduct.

7. If necessary, scratch paper will be provided. No other paper is allowed; being in possession of any unauthorized papers will be treated as academic misconduct.
8. You may review your test before leaving the exam. You may not photograph your exam or write down or copy any information pertaining to the test, nor may you share any information about the test with anyone by any means. This includes sharing information by word of mouth, written correspondence, electronic device or any type of social media. Providing information about the test to other students will be treated as academic misconduct. Also, having in your possession information about any test prior to the test that was not given to you by the instructor will be treated as academic misconduct.
9. You may not leave your place during a test for any reason. This includes getting water or going to the restroom. You must take care of these things before the start of the test. If you leave your test without permission, your test will be collected and you will not be allowed to continue working on it.
10. Interrupting the exam or creating a disturbance to cause a distraction during the exam will be treated as academic misconduct.

In order to enforce these rules, an instructor may require you to do any of the following. Failure to comply will be treated as academic misconduct.

1. Sit in assigned seats prior to the start of the exam.
2. Require you to move to a new seat during the exam.

If you experience a disability requiring adaptive technology that could be mistaken for an unauthorized electronic device, please notify your instructor prior to the test.

MTLC Specific Policies

1. In the MTLC, you may only use either the **Casio fx-SOLAR SCHOOL** or the **Casio fx-260 SOLAR II**.
2. In the MTLC, swiping another student's ACT card will be treated as academic misconduct.
3. In the MTLC having any other website other than the test open during a test will be treated as academic misconduct.

4. In the MTLC, if you leave your computer during a test without permission, your exam will be closed and you will forfeit any remaining exam time.

Statement on Academic Misconduct

Students are expected to be familiar with and adhere to the official [Academic Misconduct Policy](#).

Statement On Disability Accommodations

The University of Alabama is committed to ensuring the full participation of all students in its programs. If you have a documented disability (or think you may have a disability) and need reasonable accommodation(s) to participate in this class, contact the Office of Disability Services (or ODS; 205-348-4285, ods@ua.edu, Houser Hall 1000, www.ods.ua.edu) as soon as possible. If you have been approved to receive accommodations through ODS, please meet with your instructor or College designee during office hours or by appointment to review your accommodation letter and discuss how accommodations can be implemented in this course.

Severe Weather Protocol

Please refer to the Severe Weather Guidelines located on the [Office of Emergency Management website](#).

Pregnant Student Accommodations

Title IX protects against discrimination related to pregnancy or parental status. If you are pregnant and will need accommodations for this class, please review the University's FAQs on the [UAct website](#).

Religious Observances

Under the Guidelines for Religious Holiday Observances, students should notify the instructor in writing or via email during the first two weeks of the semester of their

intention to be absent from class for religious observance. The instructor will work to provide reasonable opportunity to complete academic responsibilities as long as that does not interfere with the academic integrity of the course. See full guidelines at [Religious Holiday Observances Guidelines](#).

UAct Statement

The University of Alabama is committed to an ethical, inclusive community defined by respect and civility. The [UAct website](#) provides extensive information on how to report or obtain assistance with a variety of issues, including issues related to dating violence, domestic violence, stalking, sexual assault, sexual violence or other Title IX violations, illegal discrimination, harassment, hate or bias incidents, child abuse or neglect, hazing, threat assessment, retaliation, and ethical violations or fraud.

Student Resources

The University of Alabama provides resources and support for the benefit of all students. An up-to-date list of these resources is located on the [Division of Student Life website](#), which includes information regarding counseling, health and wellness, career planning, and accessibility services.