

MAT 267 - CALCULUS III FOR ENGINEERS ONLINE
Spring 2025 (Session A): January 13 – March 4, 2025

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ASU videos: https://mathcast.la.asu.edu:446/course_details/MAT267

ADMIN DROP: A student will be dropped if they have not completed **at least 50% of the homework for each section (10.1,10.2, 10.3 and 10.4) by the first Homework deadline.**

Test Schedule

- **Test 1: Feb 1** **(Sections 10.1 – 10.9)**
- **Test 2: Feb 15** **(Sections 11.1-11.7, 12.1-12.3)**
- **Test 3: Mar 4** **(Sections 12.5-12.7, 13.1 – 13.7)**

Tests open at 6pm MST the day prior to the listed exam date and are open through midnight MST of the listed exam date.

Homework NOTE:

- 1. All HOMEWORK related questions will be answered ONLY in the Ed Discussions forum.**
- 2. Finish each HW for full credit by the indicated deadline, or with the 20% penalty with the 24 hrs delay**

Schedule
(Instructor has rights to adjust the dates)

Week	Topics	Exams
1	10.1: 3D Coordinate System 10.2: Vectors 10.3: The Dot Product 10.4: The Cross Product	ADMIN DROP: a student will be submitted to be dropped if does not competed at least 50% of all HW that is by the first HW deadline: Sections 10.1-2-3-4. Finish HW by Sunday 1/20 for full credit or by 1/21 with the 20% penalty.
2	10.5: Equations of Lines and Planes 10.7: Vector Functions & Space Curves 10.8: Arc Length 10.9: Motion in Space: Velocity & Acceleration	Finish HW by 1/30 for full credit! (skip 10.6)
3	11.1: Functions of Two Variables 11.3: Partial Derivatives	Exam 1 (10.1-10.9): Feb 1 Finish HW by 2/4
	11.4: Tangent Planes and Linear Approximations	

	11.5: The Chain Rule	Finish HW by 2/6
4	11.6: Directional Derivatives and the Gradient 11.7 Maximum and Minimum Values 12.1 Double Integrals over Rectangular Regions	Finish HW by 2/9
5	12.2 Double Integrals over General Regions 12.3: Double Integrals in Polar Coordinates	Finish HW by 2/14 Exam 2(11.1-11.7, 12.1-12.3): Feb 15
6	12.5: Triple Integrals 12.6: Triple Integrals in Cylindrical Coordinates 12.7: Triple Integrals in Spherical Coordinates 13.1: Vector Fields	Finish HW by 2/20
7	13.2: Line Integrals 13.3: Fundamental Theorem of Line Integrals (FTLI) 13.4: Green's Theorem 13.5: Curl and Divergence	Finish HW by 2/27
8	13.6: Parametric Surfaces and Their Area 13.7: Surface Integrals	Finish HW by 3/2 Exam 3 (12.5-12.7, 13.1-13.7): March 4

Important ASU Dates:

Course Withdrawal: 1/31/2025

Complete Session Withdrawal: 3/4/2025

Points Allocation:

HW: 20%; **Exam 1:** 25%; **Exam 2:** 25%; **Exam 3:** 30%

Grades:

[90,100]: A; [80,90): B; [70,80): C; [60,70): D, below 60: E

Edfinity (EdF) (required)

Students can right click the assignment from the Edfinity and Open it in a New Tab from the context menu. Online Homework will be submitted online via the Internet using the homework system Edfinity. Edfinity contains questions pertaining to each topic, the due dates for which are listed on the website and in this syllabus. **No extension of due dates will be given.** The homework will count for 20% of the grade.

To enroll in our Edfinity section, please follow the steps below:

1. **Important:** Upgrade to the latest version of Google Chrome or Firefox on a Windows/Mac computer. Other browsers such as Safari may cause issues when you access Edfinity via Canvas.
2. Log into your Canvas course.
3. Click on the Edfinity link in the Course Navigation Menu (on the left side of Canvas) to launch into Edfinity - you will automatically be signed into Edfinity. You **should not** sign up directly on [com](https://www.edfinity.com)
4. The first time you access Edfinity, you will be prompted to either pay using a debit/credit card (\$35) **OR** enter an access code. If you need to purchase through the Bookstore due to financial aid or scholarship, you can use this direct link

[https://www.bkstr.com_!!IKRxdwAv5BmarQ!e_0mUpZooFprKgCTjkQWaBr6fEEdFczeT6PKw3UmhGa_yZqnlSsBhhEW1FUjE2aO3kTYHiEprDq5GoZZcE4EodehZ6cWmjQ\\$](https://www.bkstr.com_!!IKRxdwAv5BmarQ!e_0mUpZooFprKgCTjkQWaBr6fEEdFczeT6PKw3UmhGa_yZqnlSsBhhEW1FUjE2aO3kTYHiEprDq5GoZZcE4EodehZ6cWmjQ$)

5. Please enroll directly on Edfinity. This guarantees you the best price available (\$35). If (and only if) you are on financial aid, purchase Edfinity access codes through the bookstore. Remember, enrolling on Edfinity is the most cost-effective option. There is a 2-week grace period during which you may drop the course and receive a refund.

Homework will be a very important part of your learning. You cannot expect to solve all assigned problems easily. Some problem will require more time and effort. Even if you are unable to solve the entire problem, any time spent on trying is not wasted. Try to emphasize understanding rather than memorization when you are working on the problems. Although it is an online course you still need to be able to explain all of your steps on your homework solutions. Expect to spend 25-35 hours weekly on homework.

6. **In this course, all assignments must be completed by the student. Artificial Intelligence (AI), including ChatGPT and other related tools used for creating of text, images, computer code, audio, or other media, are not permitted for use in any work in this class. Use of these generative AI tools will be considered a violation of the ASU Academic Integrity Policy, and students may be sanctioned for confirmed, non-allowable use in this course.**

Course Overview

The purpose of this course is to extend the ideas of single variable calculus to higher dimensions. Vectors and their basic operations are introduced and used in physical applications. The idea of vectors is then generalized to vector-valued functions of several variables. Space curves and common surfaces are analyzed. The central part of the course is the study of functions of several variables. The concepts of partial derivative, directional derivative, gradient, divergence and curl are introduced. Students will then learn how to set up and evaluate multiple integrals, line integrals and surface integrals over various domains.

Course Learning Outcomes

At the completion of this course, students will be able to:

- Perform vector operations and use them to solve applied problems.
- Generalized the idea of vectors to vector-valued functions.
- Analyze space curves and common surfaces.
- Evaluate and interpret partial derivatives, directional derivatives, gradient, curl and divergence.
- Set up and evaluate multiple integrals, line integrals and surface integrals.
- Describe the structure of a 3-D coordinate system,
- Perform vector operations including dot product and cross product.,
- Find parametric equations of a line and scalar equation of a plane,
- Identify cylinders and quadric surfaces,
- Find domain, limit, derivative and integral of a vector function, and the tangent line to a space curve,
- Evaluate the arc length of a vector function,
- Solve applied problems involving velocity and acceleration,
- Determine the domain and range of two and three variable functions, and interpret contour plots and level surfaces,
- Find partial derivatives and explain their geometrical meaning,
- Find the tangent plane to a surface at a given point,
- Find linear approximations and differentials,
- Write out and apply the chain rule,
- Evaluate gradients and directional derivatives,
- Determine maximum and minimum values of a two variable function,
- Evaluate double integrals over general regions,

- Convert double integrals from Cartesian to polar coordinates and vice-versa,
- Evaluate triple integrals in Cartesian, cylindrical and spherical coordinates,
- Sketch vector fields,
- Evaluate line integrals of scalar functions and line integrals of vector fields,
- Find a potential function for a conservative vector field,
- State and apply the Fundamental Theorem for Line Integrals,
- State and apply Green's Theorem,
- Find curl and divergence of a vector field,
- Find an equation of the tangent plane to a parametric surface at a given point,
- Evaluate the surface area of a parametric surface on a given domain,
- Evaluate surface integrals of scalar functions and surface integrals of vector fields.

Textbook - NOT REQUIRED: Essential Calculus Early Transcendentals 2e, James Stewart, Brooks/Cole publisher.

Course Access: Your ASU courses can be accessed by both my.asu.edu and asu.instructure.com; bookmark both in the event that one site is down.

Computer Requirements

This is a fully online course; therefore, it requires a computer with internet access and the following technologies:

- Chrome web browser
- [Adobe Acrobat Reader](#)(free)
- Webcam, microphone, speakers
- Reliable broadband internet connection (DSL or cable) to stream videos.

Note: A smartphone, iPad, Chromebook, etc. will NOT be sufficient for completing your work in ASU Online courses. While you will be able to access course content with mobile devices, you must use a computer for all assignments, quizzes, and virtual labs.

Technical Support:

For technical support, use the Help icon in the black global navigation menu in your Canvas course or call the ASU Help Desk at +1-(855) 278-5080. Representatives are available to assist you 24 hours a day, 7 days a week.

Student Success

To be successful:

- check the course daily
- read announcements
- read and respond to course email messages as needed
- complete assignments by the due dates specified
- communicate regularly with your instructor and peers
- create a study and/or assignment schedule to stay on track
- access [ASU Online Student Resources](#) , asu.instructure.com

Testing - IMPORTANT!

Your hands and face MUST be in view of the camera at all times during the exam, or else a zero score will be recorded.

- You may want to use an external webcam instead of an internal one. It is easier to position an external webcam correctly
- Or use a fisheye lens over the webcam
- Or use books to lift the computer and tilt it towards your hands

TESTING RULES:

1. No phones or any internet-capable device, including smart-watches, can be accessed for any reason during an exam. Accessing any such device for any reason will result in a score of 0 for the exam and other academic dishonesty charges.
2. Honorlock records you and your environment during exams and requires that you download a temporary program onto your computer. Your face, hands and working area must be in view while taking the test. Additionally, you will be required to perform a thorough room scan with a webcam prior to starting the exam. If you do not wish to do this, then you should withdraw from the course.
3. Graphing calculators are NOT permitted. Instead, you will be allowed to use Desmos online calculator during the test: [<https://www.desmos.com/calculator> ,<https://urldefense.com/v3/https://www.desmos.com/scientific> ;!!IKRxdwAv5BmarQ!e_0mUpZooFp rKgCTjkQWaBr6fEEEdFczeT6PKw3UmhGa_yZqn!SsBhhEW1FUjE2aO3kTYHiEprDq5GoZZcE4Eodeh2ZPt aes\$] During a test, students can open Desmos in a new tab by clicking on "Assessment details" while taking the test. DO NOT OPEN DESMOS BEFORE THE TEST. Having text input in Desmos before you begin your test constitutes academic dishonesty.
4. Earplugs and/or headphones: NOT permitted
5. If you are testing on a laptop, make sure it is plugged in. Do not test on battery power.
6. This is a closed book test and you cannot use books, notes, or reference material of any kind as this is against the honors policy and is grounds for academic dishonesty charges.
7. Your hands and face must be in view of the camera at all times during the exam.
8. After your second and final submission on all the questions, close the Honorlock browser, take pictures of your work and upload them in canvas as a single pdf file in the Assignment "Upload Exam# Work".

There will be 3 exams throughout the semester:

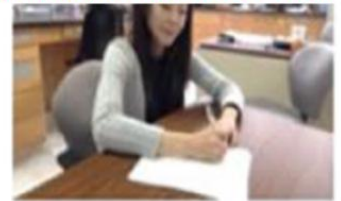
- The tests will be in Edfinity but must be accessed via Honorlock proctoring in Canvas.
- Chrome is the recommended browser.
- The test will be available from 6:00 PM MST the day before the test to 11:59 PM MST on the day of the test. You can access the test any time during this 30-hour period, however, once you open the test, you will have 2 hours to complete it, provided you access the test before 09:59PM MST. It is your responsibility to be aware of the time difference if you are located in a different time zone.
- You will have two submissions available. This does not mean you take the exam twice. It means you submit your exam for grading once. The system will indicate which problems you missed, and you will

Position your web camera so that you and your work are in view



note the **RAISED** web camera!

This is Good!



your face, your exam and your desk are in full view



your exam and table **not in view**

BAD! move your camera up and farther away!



you are **not in view**, too little of your exam and table are in view

then have a chance to correct those before submitting a second time. All of this must be done within the two-hour time limit.

- **You must clearly write out your full solutions to the test problems on scratch paper and submit them as a PDF file in Canvas immediately after finishing the test.**

I will review these to make sure you actually did the work, and if I find any inconsistencies, you will be contacted about it.

IMPORTANT:

All tests are password protected. You will NOT be given the password. Instead, access the test through the Honorlock proctoring software, which will fill in the password for you.

STEPS:

- I. Work out the problem on paper, then enter your answers in Edfinity
- II. Once you're sure the answer is correct, click on the "Next item" button to go to the next problem.
- III. At the end of the test, click the "Submit exam" button.
- IV. **After your first submission, you will be shown your score and given the option to retake the test.**
- V. On the retake, you will be able to see which answers were incorrect and will have the chance to fix those mistakes.
- VI. Once you've entered all of the corrected answers, submit the exam again, and this time the submission will be final.

Do not log out or click on the Back button while taking the test.

While taking the test, do not leave the test website and open Edfinity in another tab. **Be sure you have logged out of any previous Edfinity sessions from another computer or device before starting the test.** If you do have Edfinity open in another window, you will be logged out from the test and all the answers you entered will disappear.

Any instance of attempting to access a test in Edfinity using multiple devices will be considered an attempt to cheat and the student will automatically receive a zero on the test.

Desmos pages with pre-existing input cannot be used, and doing so constitutes academic dishonesty

Camera Placement Policy: To ensure that students understand and follow the camera placement policy, an **"Exam 0"** is provided in addition to the three tests above. Students who fail to comply during this exam will receive a zero and a warning.

Failure to comply in subsequent exams will also result in a zero, with no opportunity for grade reinstatement.

Calculators: A graphing calculator is recommended but NOT required. Calculators will NOT be allowed during tests, we will use the application DESMOS instead. You can find information about it in Module 0.

Submitting Assignments

All assignments, unless otherwise announced, **MUST** be submitted to the designated area. Do not submit an assignment via email.

Assignment due dates follow Mountain Standard time. Note: Arizona does not observe daylight savings time.

Grading Procedure

Grades reflect your performance on assignments and adherence to deadlines. Grades on assignments will be available within 72 hours of the due date in the Gradebook.

Late or Missed Assignments

Notify the instructor at least 24 hours **BEFORE** an assignment is due if an urgent situation arises and you are unable to submit the assignment on time. Any request for an extension on an assignment after its due date will be categorically denied.

Follow the appropriate University policies to request an accommodation for religious practices or to accommodate a missed assignment due to University-sanctioned activities

Communicating With the Instructor

Ed Discussions - REQUIRED

Ed Discussions is the online forum we will use to facilitate interaction among students and instructors in an efficient and intuitive manner. Students can post questions and get answers from their classmates and professors. All homework and class-related questions should be posted there; do not email homework questions to the instructor. Prior to posting a question, please check the syllabus, announcements, and existing posts. If you do not find an answer, post your question. Everyone is encouraged to respond to your classmates. Questions of a personal nature should be emailed to the instructor and not posted on the discussion board.

Email

ASU email is an official means of communication. among students, faculty, and staff. Students are expected to read and act upon email in a timely fashion. Students bear the responsibility of missed messages and should check their ASU-assigned email regularly. When emailing an instructor, always use your ASU email account; do not use a personal account.

All instructor correspondence will be sent to your ASU email account.

Discussion Board Code of Conduct

Ed Discussions is an online discussion forum that has a friendly interface for math and science courses. The threads are sortable and searchable, and it has the ability to enter symbolic mathematics. It is a collaborative site in which students are encouraged to post questions and other students are encouraged to offer assistance. The instructor and teaching assistants monitor the discussion board regularly, offering feedback whenever necessary.

- All questions related to classwork should be posted to the discussion board. Any homework or classwork questions emailed directly to the instructor will not be answered.
- Please include the section number and question number in the header (e.g. Section 11.2, #7).
- Please include a couple lines of your work. You may also photograph your written work and insert the image within the post. Please trim the image size if possible.
- Please be courteous at all times. No vulgar, demeaning, or aggressive language will be tolerated.
- Do not use the discussion board to air grievances or to campaign.
- Do not use the discussion board for personal messages. Those should be sent by email to the instructor directly.

- Stay on topic. Do not use the discussion board for topics unrelated to the class.
- You can post anonymously to fellow students, but the instructor can always see your name.
- Keep a civil and friendly atmosphere. Discussions work best when there are a lot of students willing to engage the forum.
- Please do not expect immediate replies. Instructors usually check the forum daily. In the meantime, other students are encouraged to add feedback and commentary. Instructors may also deliberately stay in the background so as to promote student-led discussions.

Failure to adhere to these requirements may result in your posting privileges being revoked.

ASU Online Course Policies

View the [ASU Online Course Policies](#).

Accessibility Statements

View the [ASU Online Student Accessibility](#) page to review accessibility statements for common tools and resources used in ASU Online courses.

If any other tools are used in this course, links to the accessibility statements will be listed below this sentence.

TUTORING : <https://tutoring.asu.edu/student-services/tutoring>

The following sites provide free tutoring to all ASU students:

- The Math Tutoring Center(<https://math.asu.edu/resources/math-tutoring-center>)
- Engineering Tutoring Center (<https://tutoring.engineering.asu.edu/courses-tutored-times>)
- The Math Community Center(<https://math.asu.edu/resources/math-community-center>)
- University Academic Success Program(<https://tutoring.asu.edu/student-services/tutoring>)

Students can also visit <https://tutoring.asu.edu> and utilize Tutor Search to select their course and the times they are available to find a specific tutor that can assist them.

Admin DROP:

A student will be dropped if they have not completed **at least 50% of the homework for each section (10.1,10.2,10.3 and 10.4) by the first Homework deadline.**

Any student who has not attend (participated in, or satisfy the requirement mentioned above) class during the first week of classes may be administratively dropped from the course. However, students should be aware that non-attendance would NOT automatically result in being dropped from the course. Thus, a student should not assume they are no longer registered for a course simply because they did not attend class during the first week. It is the student's responsibility to be aware of their registration status.

NOTE 1: you might NOT be automatically dropped, please check with your advisor

NOTE 2: you will NOT receive a W after the admin drop.

Failing grades (The E, EN and EU grades)

The E grade is for students who participated in the class but did not earn enough credit to pass or attain the D grade.

The EN grade is for student who never once participated in the class. At the instructor's discretion, any student who has not attended class during the first week of classes may be administratively dropped from the course. However, students should be aware that non-attendance would NOT automatically result in being dropped from

the course. Thus, a student should not assume they are no longer registered for a course simply because they did not attend class during the first week. It is the student's responsibility to be aware of their registration status

The EU grade is for students who participated, but then stopped after a certain point and never resumed. This grade might hurt your scholarship.

Withdrawal: A student may withdraw from a course with a grade of W during the course withdrawal period. The instructor's signature is not required.

The grade of Incomplete: A grade of incomplete will be awarded only in the event that a documented emergency or illness prevents the student who is doing acceptable work from completing a small percentage of the course requirements. The guidelines in the current general ASU catalog regarding a grade of incomplete will be strictly followed.

DISABILITY ACCOMODATIONS

Qualified students with disabilities who require accommodations are encouraged to make their requests to me at the beginning of the semester either during office hours or by appointment. Note: Prior to receiving disability accommodations, verification of eligibility from the Students

Accessibility and Inclusive Learning Services: (SAILs) office is required. Disability information is confidential. Students who feel they will need disability accommodations in this class but have not registered with SAILs should contact them immediately. Their office is located on the first floor of the Matthews Center Building. SAILs staff can also be reached at: 480-965-1234 (V), 480-965-9000 (TTY). For additional information, visit: www.asu.edu/studentaffairs/ed/drc. Their hours are 8:00 AM to 5:00 PM, Monday through Friday.

POLICY ON THREATENING BEHAVIOR

All incidents and allegations of violent or threatening conduct by an ASU student (whether on-or off campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students. If either office determines that the behavior poses or has posed a serious threat to personal safety or to the welfare of the campus, the student will not be permitted to return to campus or reside in any ASU residence hall until an appropriate threat assessment has been completed and, if necessary, conditions for return are imposed. ASU PD, the Office of the Dean of Students, and other appropriate offices will coordinate the assessment in light of the relevant circumstances.

Absences related to religious observances/practices: If you will be absent from class due to a religious observance or practice, it is your responsibility to inform the instructor during the first week of class. Your instructor will work with you on alternative and reasonable arrangements for any time missed.

Absences related to university sanctioned events and activities: If you will be absent from class due to participation in a university sanctioned event/activity, it is your responsibility to inform the instructor during the first week of class. Your instructor will work with you on alternative and reasonable arrangements for any time missed.

INCLUSION

The School of Mathematical and Statistical Sciences encourages faculty to address and refer to students by their preferred name and gender pronoun. If your preferred name is different than what appears on the class roster, or you would like to be addressed using a specific pronoun, please let your instructor know.

TITLE IX

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at <https://sexualviolenceprevention.asu.edu/faqs>.

As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence.

ASU Counseling Services,

<https://eoss.asu.edu/> counseling, is available if you wish discuss any concerns confidentially and privately.

Copyrighted materials: All the content in this course, including lectures, are copyrighted materials. Students may not share outside the class, upload, sell or distribute course content or notes taken during the conduct of the course (see ACD 304-06). Students may not upload to any course shell, discussion board or website used by the course instructor or other course forum, material that is not the student's original work, unless the student first complies with all applicable copyright laws. The instructor reserves the right to delete materials on the grounds of suspected copyright infringement (see ACD 304-10).

Prohibition of distributing or selling class notes:

Students may not share outside the class, upload, sell, or distribute course content or notes taken during the course. In accordance with [ACD 304-06 Commercial Note Taking Services](#), written permission must be secured from the official instructor of the class in order to sell the instructor's oral communication in the form of notes. Notes must have the notetaker's name as well as the instructor's name, the course number, and the date.

Syllabus Disclaimer

The syllabus is a statement of intent and serves as an implicit agreement between the instructor and the student. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. Remember to check your ASU email and the course site often.