
MATH 160 CALCULUS FOR PHYSICAL SCIENTISTS I

INSTRUCTOR INFORMATION

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Section Time Building Room

1 09:30 AM - 11:10 AM ENGRG E 104

PREREQUISITES FOR COURSE

MATH 124 (Logarithmic and Exponential Functions) (GT-MA1) with a B or better); MATH 126 (Analytic Trigonometry) (GT-MA1) with a B or better).

COURSE DESCRIPTION & OBJECTIVES

Limits, continuity, differentiation, and integration of trigonometric and transcendental functions with applications.

The course emphasizes a multi-representational approach to calculus, with concepts, results, and problems being expressed graphically, numerically, analytically, and verbally. Connections among representations are also emphasized.

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

- Evaluate limits using appropriate analytical, numerical, or graphical techniques.
- Analyze the continuity of functions.
- Apply the definition and techniques of differentiation to find derivatives including derivatives of transcendental functions.
- Analyze functions represented by an equation or a graph using derivatives and limits.
- Create graphs of functions using properties of derivatives, limits and integrals.
- Apply techniques of integration to find antiderivatives of a function.
- Evaluate definite integrals using Riemann sums, the Fundamental Theorem of Calculus, geometry, and technology.
- Utilize calculus techniques to solve application problems.
- Apply mathematical definitions and construct logical arguments.



TEXTBOOK / COURSE READINGS

Gilbert Strang, Edwin “Jed” Herman. *Calculus Volume 1*. Published by OpenStax, URL: <https://openstax.org/details/books/calculus-volume-1>

COURSE MATERIALS & EQUIPMENT

- Problems assigned for homework will be taken from the textbook.
- Some form of graphing calculator will be helpful to visualize class material such as a TI-83, TI-84, or Desmos online graphing calculator.
- Links to Desmos and the course textbook will be available in Canvas.

PARTICIPATION/BEHAVIORAL EXPECTATIONS

Doing the homework and participating in class is preparation for midterms/final but will not be sufficient alone. Plan time to visit office hours for additional assistance and clarification. Get help early and often! Learning, especially calculus, is an iterative, collaborative struggle! Schedule weekly time to review your past homework assignments and midterms - revisiting mathematics is a crucial aspect of learning, especially as future content depends on understanding of previous topics.

SUCCESS IN CALCULUS

In this course you should expect to ask (and be asked) lots of questions, explain your thought processes and ideas through discussion and writing, and be stretched to think about problems you may have not seen before. Research shows that people learn mathematics best when they are actively engaged in the material with their peers. In other words, doing and interacting, rather than watching, is a more efficient way to learn. Therefore, our course is not comprised solely of lecture content, but instead provides opportunities for individual and group work in which you will be actively engaged, solving problems, making discoveries, and understanding connections.

Success in this class means that you must be responsible for your learning and work to develop your understanding of calculus. You must be ready to work hard. Frustration and failure are normal, and often a necessary part, of learning. As you progress through the course, you must master the content and then demonstrate that mastery. You are not alone in this journey- you must ask for help and utilize the resources made available. Resources include: your classmates, your instructor, the textbook, practice problems and homework, etc.

I have high expectations, but the class is set up so that you can succeed!



GRADING POLICY

The course grade is made up of homework assignments, midterms, and a final exam which is cumulative. The course grade is broken down into the following categories:

- Homework assignments (35%)
- Midterm 1 (15%)
- Midterm 2 (15%)
- Midterm 3 (15%)
- Final Exam (20%)

Homework assignments will be submitted through Canvas (or in-person if you prefer) and midterms/final will be taken in-person on their scheduled days. The homework you submit will be treated as a reflection of your understanding of the material and should never be the work of another student or resource as this will be treated as being in violation with Academic Integrity. I reserve the right to ask you for verbal clarification as to the work you submit for homework, midterms, and the final exam to better assess your understanding of the material. It is my goal to return homework and/or midterms in a timely manner so that you have time to ask questions.

*Keep a copy of all work created for the course, including work submitted through Canvas course learning management system.

COURSE POLICIES (LATE ASSIGNMENTS, MAKE-UP EXAMS, ETC.)

Homework assignments are assigned due dates but if you need an additional day to complete your work then feel free to reach out and let me know. My goal is for you to learn the material so I don't have a problem with you taking some additional time to complete your work. With that said, please do your best to find a pace that works for you so as to not allow the homework assignments to accumulate.

Calculators are permitted with the exception of any calculators that can access the internet including cellphones, tablets, and laptops while taking midterms and the final exam.

CANVAS INFORMATION & TECHNICAL SUPPORT

Canvas is the location where course content, grades, and communication will reside for this course.

- Login for Canvas
- Canvas Support



- For passwords or any other computer-related technical support, contact the [Central IT Technical Support Help Desk](#).
 - (970) 491-7276
 - help@colostate.edu

If you are new to Canvas quickly review [the Canvas Student Orientation](#) materials.

ACADEMIC INTEGRITY & CSU HONOR PLEDGE

This course will adhere to the CSU [Academic Integrity/Misconduct](#) policy as found in the General Catalog and the [Student Conduct Code](#).

Academic integrity lies at the core of our common goal: to create an intellectually honest and rigorous community. Because academic integrity, and the personal and social integrity of which academic integrity is an integral part, is so central to our mission as students, teachers, scholars, and citizens, I will ask that you affirm the CSU Honor Pledge as part of completing your work in this course.

Further information about Academic Integrity is available at CSU's [Academic Integrity - Student Resources](#).

UNIVERSAL DESIGN FOR LEARNING/ACCOMMODATION OF NEEDS

I am committed to the principle of universal learning. This means that our classroom, our virtual spaces, our practices, and our interactions be as inclusive as possible. Mutual respect, civility, and the ability to listen and observe others carefully are crucial to universal learning.

If you are a student who will need accommodations in this class, please contact me to discuss your individual needs. Any accommodation must be discussed in a timely manner. A verifying memo from [The Student Disability Center](#) may be required before any accommodation is provided.

The Student Disability Center (SDC) has the authority to verify and confirm the eligibility of students with disabilities for the majority of accommodations. While some accommodations may be provided by other departments, a student is not automatically eligible for those accommodations unless their disability can be verified and the need for the accommodation confirmed, either through SDC or through acceptable means defined by the particular department. Faculty and staff may consult with the SDC staff whenever there is doubt as to the appropriateness of an accommodative request by a student with a disability.

The goal of SDC is to normalize disability as part of the culture of diversity at Colorado State University. The characteristic of having a disability simply provides the basis of the support that



is available to students. The goal is to ensure students with disabilities have the opportunity to be as successful as they have the capability to be.

Support and services are offered to student with functional limitations due to visual, hearing, learning, or mobility disabilities as well as to students who have specific physical or mental health conditions due to epilepsy, diabetes, asthma, AIDS, psychiatric diagnoses, etc. Students who are temporarily disabled are also eligible for support and assistance.

Any student who is enrolled at CSU, and who self-identifies with SDC as having a disability, is eligible for support from SDC. Specific accommodations are determined individually for each student and must be supported by appropriate documentation and/or evaluation of needs consistent with a particular type of disability. SDC reserves the right to ask for any appropriate documentation of disability in order to determine a student's eligibility for accommodations as well as in support for specific accommodative requests. The accommodative process begins once a student meets with an accommodations specialist in the SDC.

THIRD-PARTY TOOLS/PRIVACY

Please note that this course may require you to use third-party tools (tools outside of the Canvas learning management system), such as Skype and others. Some of these tools may collect and share information about their users. Because your privacy is important, you are encouraged to consult the privacy policies for any third-party tools in this course so that you are aware of how your personal information is collected, used and shared.

UNDOCUMENTED STUDENT SUPPORT

Any CSU student who faces challenges or hardships due to their legal status in the United States and believes that it may impact their academic performance in this course is encouraged to visit [Student Support Services for Undocumented, DACA & ASSET](#) for resources and support. Additionally, only if you feel comfortable, please notify your professor so they may pass along any additional resources they may possess.

TITLE IX/INTERPERSONAL VIOLENCE

For the full statement regarding role and responsibilities about reporting harassment, sexual harassment, sexual misconduct, domestic violence, dating violence, stalking, and the retaliation policy please go to: [Title IX – Sexual Assault, Sexual Violence, Sexual Harassment](#).



If you feel that your rights have been compromised at CSU, several resources are available to assist:

- Student Resolution Center, 200 Lory Student Center, 491-7165
- Office of Equal Opportunity, 101 Student Services, 491-5836

A note about interpersonal violence: If you or someone you know has experienced sexual assault, relationship violence and/or stalking, know that you are not alone. As instructors, we are required by law to notify university officials about disclosures related to interpersonal violence. Confidential victim advocates are available 24 hours a day, 365 days a year to provide support related to the emotional, physical, physiological and legal aftermath of interpersonal violence. Contact the Victim Assistance Team at: 970-492-4242.

RELIGIOUS OBSERVANCES

CSU does not discriminate on the basis of religion. Reasonable accommodation should be made to allow individuals to observe their established religious holidays. Students seeking an exemption from attending class or completing assigned course work for a religious holiday will need to fill out the [Religious Accommodation Request Form](#) and turn it in to the Division of Student Affairs, located on the second level of the Administration building.

Once turned in, the Division of Student Affairs will review the request and contact the student accordingly. If approved, the student will receive a memo from the Dean of Students to give to their professor or course instructor.

Students are asked to turn in the request forms as soon as the conflict is noticed. Similarly, unanticipated conflicts requiring a religious observance, such as a death in the family, can also be reviewed.

CSU PRINCIPLES OF COMMUNITY

Inclusion: We create and nurture inclusive environments and welcome, value and affirm all members of our community, including their various identities, skills, ideas, talents and contributions.

Integrity: We are accountable for our actions and will act ethically and honestly in all our interactions.



Respect: We honor the inherent dignity of all people within an environment where we are committed to freedom of expression, critical discourse, and the advancement of knowledge.

Service: We are responsible, individually and collectively, to give of our time, talents, and resources to promote the well-being of each other and the development of our local, regional, and global communities.

Social Justice: We have the right to be treated and the responsibility to treat others with fairness and equity, the duty to challenge prejudice, and to uphold the laws, policies and procedures that promote justice in all respects.

DIVERSITY AND INCLUSION

The [Mission, Vision, and Focus](#) webpage of the Vice President for Diversity includes a comprehensive statement of CSU's commitment to diversity and inclusion.