Colorado State University

MATH 160 CALCULUS FOR PHYSICAL SCIENTISTS I

INSTRUCTOR INFORMATION

Course Coordinator: Ms. Hilary Freeman, hilary.tanner.freeman@colostate.edu
Assistant Course Coordinator: Ian Jorquera

INSTRUCTORS:

Section	Time	Building	Room	Instructor
1	MTWF 08:00 AM - 08:50 AM	ENGRG	E103	Grace Hofmann
2	MTWF 09:00 AM - 09:50 AM	ENGRG	B2	Chloe Stewart
3/103	MTWF 10:00 AM - 10:50 AM	ENGRG	E103	Hilary Freeman
4	MTWF 11:00 AM - 11:50 AM	ENGRG	E103	Dylan Soller
6/106	MTWF 01:00 PM - 01:50 PM	ENGRG	E103	Sean Willmot
8	MTWF 02:00 PM - 02:50 PM	NATRS109/ENGRG	E204	Ross Flaxman
9	MTWF 03:00 PM - 03:50 PM	WAGAR231/GLOVR130		Hilary Freeman
10	MTWF 04:00 PM - 04:50 PM	ENGRG	B3	Trevor Overton
12/L17	MTWF 03:00 PM - 03:50 PM	ENGRG	E104/E103	Avalon Blaser
15	MTWF 02:00 PM - 02:50 PM	WEBER	223	Steve Benoit

PREREQUISITES FOR COURSE

MATH 124 (Logarithmic and Exponential Functions) with a B or better) AND MATH 126 (Analytic Trigonometry) with a B or better OR MATH 127 Precalculus 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

Active Calculus, https://activecalculus.org/ and specifically
https://activecalculus.org/single/book-1.html

Course Materials & Equipment

For Online homework practice will use WeBWorK. Your account login will be your NetID and your initial password will be your CSU ID NUMBER. Please change your password after logging in.

Course activities/makeup lectures will be through student.desmos.com. It is strongly recommended that you create an account with Desmos if you do not have one already.

Links to Desmos and WeBWorK will be available in Canvas.

Participation/Behavioral Expectations

Doing the online homework and participating in class is preparation for assessments but will not be sufficient alone. Plan time to visit the Calculus Center for additional assistance. Get help early and often! Learning, especially calculus, is an iterative, collaborative struggle! Schedule weekly time to reflect on your learning and mistakes- revising mathematics is a crucial aspect of learning, especially as future content depends on understanding of previous topics. Expect to spend 12-16 hours each week on this class. Use a calendar, either paper or on your smart phone/computer, to schedule time to attend class, do the practice problems (WeBWorK/class-work), prepare for written quizzes and exams, visit the calculus center, and prepare for reassessments. Learning how to manage a busy schedule is a skill that will pay off later in life! Start NOW by putting the exam dates in your calendar:

Thursdays 9/12, 10/10 and 11/7 from 5-6:50pm.

Also consider scheduling at least 3 hours each week when you will go to the Calculus Center!!

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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 to your instructor. 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 Calculus Center, the textbook, online videos, practice problems and homework, etc.

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

Grading Policy

MATH 160 uses Standards Based Grading. This grading system might feel very different from other classes and will take some time to get used to. Some reasons for grading in this way are to shift the emphasis to becoming fluent with content rather than focusing on partial credit and to reduce the stress of missing a question on a quiz or exam. A huge benefit is that assessments can (and should be) revised or reassessed. Drafting and revising is an integral part of doing Mathematics and succeeding in MATH 160.

- To earn a D, complete at least 15 standards and score at least a 60% on WeBWorK and participation.
- To earn a C, complete at least 17 standards and score at least a 70% on WeBWorK and participation.
- To earn a B, complete at least 19 standards and score at least a 70% on WeBWorK WeBWorK and participation.
- To earn an A, complete at least 21 standards and score at least a 70% on WeBWorK WeBWorK and participation.

A standard is "complete" if you have earned "satisfactory" the required number of times for that standard, usually 2 or 3 times. See the Standards Tracking Document for more details. Use Canvas Grades (especially Learning Mastery View as seen on a desktop web-browser) to see your progress on standards. You will need to track your grades using the Standards Tracking Document, which is available on Canvas.

Written homework, quizzes and exams are opportunities to demonstrate competency of specific standards. Each attempt of a standard will be graded as Satisfactory or Not Yet. Students must get "satisfactory" on a standard 1 to 4 times total before the standard is considered complete. Only completed standards count toward your final grade! Standards marked "Not Yet" must be revised or reassessed for another chance to meet expectations. See the Standards Tracking Document for more details and for a template for tracking your progress.

Webwork is an online homework platform. Webwork assignments will be organized by standard. These assignments will give you a place to practice the standards with instantaneous feedback. Use them to prepare for quizzes and exams. If you are going to reassess a standard, you will be required to have a score of approximately 90% on the corresponding Webwork assignment before you can take a new attempt on that standard.

Participation will be assigned in class and will be described by your instructor. It may take the form of participating in class discussions and group work, answering exit surveys, doing Desmos lessons, filling out the standards tracking document, or other activities. Committing to actively engaging in class and attending every day will help you be successful in this class.

Revisions and Reassessments: Any standards marked "Not Yet" on a **written homework** must be revised and resubmitted. Standards missed on **quizzes and exams** will have limited reassessment (new attempt) opportunities. You must take advantage of revisions and reassessments to be successful in this course. We will discuss the details in class and on Canvas. Be sure to learn how this process works during weeks 2 and 3 of the semester. Any standard attempt graded as "Not Yet" will NOT count toward your final standard count until you successfully revise or reassess.

As a student enrolled in this course, one of your responsibilities is to submit course work by the due dates listed in Canvas. With that said, I take my role as your instructor very seriously, and, in fact, I care about how well you do in this course and that you have a satisfying, rewarding experience. To that end, it is my commitment to you to respond individually to the work you submit in this class and to return your work in a timely manner. Written Homework, quizzes and

exams will be graded soon enough to allow time to do the reassessments. Webwork is graded immediately, although scores do not automatically post to Canvas. (If, however, due to unforeseeable circumstances, the grading of your work takes longer than the times listed here, I will keep you informed of my progress and make every effort to return your work with feedback as soon as I can and adjust revision deadlines as needed.)

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

* Because we are using Standards Based Grading, Canvas is not able to automatically compute your grade, so any averages you see in Canvas will not necessarily be an accurate reflection of your final grade.

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

It is my goal that you learn the content in this class. To get the most out of the course, assignments need to be completed on time so that you can take advantage of feedback, correct any mistakes, improve understanding, and reassess to demonstrate your competence. Unfortunately, we do not have an infinite amount of time to complete this course, so deadlines do apply.

– Missing the due date for written homework: When you submit written homework on time you will get feedback and have the opportunity to revise and resubmit any missed standards. Written homework submitted after the due date but before the revision due date may be graded, but if any standards are marked as progressing or not gradable, you will be at a disadvantage for getting the grade you want in the class as you will not be eligible to revise these standards. Written homework assignments will not be accepted after the revision due date.

– Missing a quiz or exam: These assessments are not graded for points, so instead of counting against your grade, you have simply lost an opportunity to demonstrate competency. There are, however, a finite number of assessment opportunities in the semester so we expect that you make every effort to take advantage of scheduled assessments. If you are going to miss a quiz/exam for a University Approved Event or become ill, notify your instructor **prior** to the assessment, or on the day of the assessment. Requests received after the assessment may not be considered. Make-up assessments must be completed within 1.5 weeks of the original due date.

– Webwork: Webwork will be assigned weekly and due on Wednesdays. See Canvas for details. Additionally, to unlock a reassessment quiz you may have to revisit a Webwork assignment and get your average above approximately 90%. Do the Webwork early to avoid any chance of a technical difficulty. **Note: If you have a final Webwork score below 70%, the highest grade you can get in the class is a D. If your final Webwork score is below 60%, you will fail the course.**

University Policies and Resources:

Colorado State University provides consistent policies relevant to academic courses and resources to support students with various challenges they may encounter. Click the short link (https://col.st/2FA2g) or scan the QR code below for up-to-date information: