

Course Syllabus Details

Topic	Detailed Information
Course Name	Calculus I (Remote)
Course - Section and Term	MAT 2410 R91
GT Pathways Category	GT-MA1
Credits and Delivery Method	5 Credits, Remote
Time Expectation	5 credits times 3 hours per credit = 15 hours per week
Location of Class	Remote
Meeting Dates and Time	MTWR, 8:15 – 9:20 a.m, Mountain Time (-07:00 GMT), via ZOOM: https://us02web.zoom.us/j/88364075953?pwd=DkSmZ0kfaQF2yJQhb0XwCG6xyGb1Uv.1 Passcode: 763996
Instructor	Harry S. (Steve) Mills
E-mail	hmills1@online.aims.edu
Office Location	Remote
Phone Number	970-290-0550
Office Hours	Door is open. Call 970-290-0550 and we can be in ZOOM in 5 minutes. ZOOM Link: https://us02web.zoom.us/j/88364075953?pwd=DkSmZ0kfaQF2yJQhb0XwCG6xyGb1Uv.1 Passcode: 763996
Drop Deadline Date	9/2/24

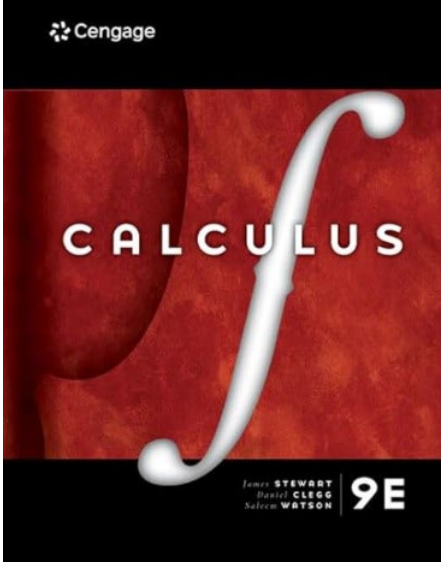


Aims
COMMUNITY COLLEGE
COURSE SYLLABUS

Topic	Detailed Information
Course Withdrawal Date	11/6/24
Other Important Dates	https://www.aims.edu/resource-library/academic-calendars
Student Services	https://www.aims.edu/student-life/student-services
Mental Wellness	<p>If you are experiencing an immediate mental health concern the following resources are available:</p> <ul style="list-style-type: none"> *Call or text 988 or visit 988 LIFELINE *Colorado Crisis Services @ 1-844-493-8255 or Text “Talk” to 38255 <p>Select Academic Policies to access more mental wellness and success resources. (https://www.aims.edu/academic-policies)</p>

Course Requirements

Topic	Detailed Information
Prerequisite(s)	Completion of MAT 1420 with a ‘C’ or better.
Co-requisite(s)	None
Academic Policies – These Standards of Behavior statements apply to every course at Aims Community College and are hereby incorporated into this document.	Closely review these Academic Policies . (https://www.aims.edu/academic-policies)
Materials	<p>Register for WebAssign in D2L Course Shell: Login to https://online.aims.edu/d2l/login Navigate to this course from the available thumbnails. Go to “Content > Course Information > WebAssign Portal” This is where all online homework and testing will take place.</p>
Other Necessary Items	Scientific Calculator required on tests. Graphing calculator or online grapher can be helpful for homework, but may not be used on tests.

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<p>Other Necessary Items (cnt'd)</p> 	<p>If you want a physical textbook for the course, I recommend any edition of Stewart's <u>Calculus</u>. I think the WebAssign assignments are pulled from the 9th Edition, but I think any edition will suffice. Thriftbooks, eBay, Amazon, ... All can beat the price of a new book by a mile. The 9th Edition is pictured on the left. The picture on the cover is pretty much the same, but different colors for different editions.</p> <p>Make Good Scans: For the transmission of your handwritten work (5 writing projects), you will need to make high-quality PDFs of your well-written work.</p> <p>Some students get professional-looking scans using a phone app, like CamScanner. I recommend getting a decent printer-scanner, but you can also use a commercial copy center (like Kinko's) near you, or use the services available at the Learning Commons..</p> <p>Here is a handy link for scanning and other technology resources available at our Learning Commons: https://www.aims.edu/departments/learning-commons/computer-and-technology-assistance</p>

Course Information

Course Description: Introduces single variable calculus and analytic geometry.

Includes limits, continuity, derivatives, and applications of derivatives as well as indefinite and definite integrals. Trigonometric functions are included. Prerequisite: "C" or better in MAT 121 and MAT 122, 80 or above on Accuplacer College Math Test, or 28 on the math portion of the ACT test, or 740 on the math portion of the SAT test. Five credits.

The following boilerplate makes education people happy, but isn't much help to the student while taking the course. It'll be handy if you want some other institution to accept your Aims credit, because we cover what it says we do.

But for *your* purposes, I'd say go to the table of contents in Stewart's Calculus or see the eBook on WebAssign, and see what the table of contents says for Chapters 1-4 and Sections 5.1, 5.2 and 6.1 – 6.4. That's all you need to know.

BEGIN BOILERPLATE. BOILERPLATE ENDS AROUND THE MIDDLE OF PAGE 6. YOU DON'T NEED ANY OF IT.

Course Learning Outcomes – According to the Colorado Community College Common Course Database, upon completion of this course, the student/learner should be able to:

1. Evaluate limits using appropriate analytical, numerical or graphical techniques.
2. Analyze the continuity of functions.
3. Apply the definition and techniques of differentiation to find derivatives, including derivatives of transcendental functions.
4. Analyze functions represented by an equation or a graph using derivatives and limits.
5. Create graphs of functions using properties of derivatives and limits.
6. Apply techniques of integration to find the antiderivative of a function.
7. Evaluate definite integrals using Riemann Sums and the Fundamental Theorem of Calculus.
8. Utilize Calculus techniques to solve application problems.

Topical Outline – These topics will be covered in class, but not necessarily in this order:

- I. Limits using appropriate analytical, numerical or graphical techniques
 - a. Limits computation
 - b. Properties of limits
 - c. Limits at infinity
 - d. Infinite limits
- II. Continuity of functions
 - a. Definition of continuity
 - b. Discontinuities with respect to type (removable or non-removable)
 - c. Intermediate Value Theorem
- III. Definition of derivative and techniques of differentiation
 - a. The limit definition of a derivative
 - b. Basic rules of derivatives
 - c. Product Rule
 - d. Quotient Rule
 - e. Chain Rule
 - f. Higher order derivatives
 - g. Implicit differentiation
 - h. Introduction of differentials
 - i. Derivatives of trigonometric functions
 - j. Derivatives of inverse trigonometric functions
 - k. Derivatives of exponential and logarithmic functions
- IV. Functions represented by an equation or a graph using derivatives and limits
 - a. Critical values
 - b. Absolute extrema on an interval
 - c. Increasing and decreasing intervals
 - d. First and Second Derivative Tests for relative extrema
 - e. Inflection points

- f. Intervals of concavity
- g. Graphical connection between f and f'
- h. Asymptotic behavior with limits
- V. Graphs of functions using properties of derivatives and limits
 - a. Graphing techniques without technology
 - b. Graphing techniques with appropriate technology
- VI. Techniques of integration to find the antiderivative of a function
 - a. Indefinite integrals
 - b. Integration by substitution
 - c. Integration of trigonometric functions
 - d. Integration involving inverse trigonometric functions
 - e. Integration involving exponential and logarithmic functions
- VII. Definite integrals using Riemann Sums and the Fundamental Theorem of Calculus.
 - a. Riemann's Sums
 - b. Definite integrals
 - c. Fundamental Theorem of Calculus
 - d. Integration techniques with appropriate technology
- VIII. Calculus techniques to solve application problems
 - a. Mean Value Theorem
 - b. Equations of tangent lines
 - c. Related rates
 - d. Rates of change
 - e. Optimization
 - f. Net signed area
 - g. Area between two curves

State General Education and Common Learning Outcomes: (for GT Pathways Courses)

Competency: Quantitative Literacy:

Students should be able to:

- 1. Interpret Information**
 - a. Explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).
- 2. Represent Information**
 - a. Convert information into and between various mathematical forms (e.g., equations, graphs, diagrams, tables, words).
- 3. Perform Calculations**
 - a. Solve problems or equations at the appropriate course level.
 - b. Use appropriate mathematical notation.
 - c. Solve a variety of different problem types that involve a multi-step solution and address the validity of the results.
- 4. Apply and Analyze Information**

- a. Make use of graphical objects (such as graphs of equations in two or three variables, histograms, scatterplots of bivariate data, geometrical figures, etc.) to supplement a solution to a typical problem at the appropriate level.
 - b. Formulate, organize, and articulate solutions to theoretical and application problems at the appropriate course level.
 - c. Make judgments based on mathematical analysis appropriate to the course level.
- 5. Communicate Using Mathematical Forms**
- a. Express mathematical analysis symbolically, graphically, and in written language that clarifies/justifies/summarizes reasoning (may also include oral communication).

Aims Common Learning Outcomes – These outcomes define the expectations of an Aims Community College education and provide the benchmarks against which the college holds itself accountable. Find the outcomes at

<https://www.aims.edu/departments/institutional-research/assessment>

Scroll Down to Common Learning Outcomes

END BOILERPLATE

Course Delivery Method

Remote via ZOOM:

<https://us02web.zoom.us/j/88364075953?pwd=DkSmZ0kfaQF2yJQhb0XwCG6xyGb1Uv.1>

Passcode: 763996

Code of Conduct

To keep our college community safe, students are expected to comply with health guidelines as directed by the College, public health officials, and/or ordinance of a municipality, county, Governor of the State of Colorado, or any Executive Order of the President of the United States. Download the complete copy of the [Student Code of Conduct](#).

That’s from the school. What I say is:

“Exercise common sense and common courtesy in your interactions. Don’t cheat.”

Reuse of Instructional Materials

Reuse or distribution of instructional materials (e.g., PowerPoints, videos, class recordings, assessments, etc.) or student created content (e.g., online discussion posts, presentations, etc.) without approval is prohibited.

Communication and Feedback

Good thing about feedback: It's instant.

Bad thing about feedback: It's online.

This course, being designated "remote," will use WebAssign for the greater part of assigned work and tests; however, there will be Writing Projects, where your written work will be scanned to PDF, and graded by hand, by me. There will also be a Written Midterm and Written Final (See [Course Schedule](#)). You will come in to Horizon Hall (or other location, as needed) for a 2-hour test for Midterm and Final.

Use hmills1@online.aims.edu to contact me by e-mail. This may also be accomplished by clicking on "Classlist" tab in the Course Shell and clicking on "Mills, Steve" in the listing. It is best to use your online.aims.edu e-mail when communicating with me in e-mail. Otherwise, I might not have your information at my fingertips.

Call or text me at 970-290-0550 if you have something urgent, or wish for a 1-on-1. I mean for this to be a 24-hour service, for your convenience, so don't be shy!

As I have posted videos and notes on virtually all of the homework, I may not be giving a full-blown formal lecture on any given day. I will always come ready to give a speech, although I'm generally skeptical of teacher speeches after decades of delivering them.

Grading

E-Mail Settings - 5% - E-Mail for the course will be through D2L. This helps me serve students, better, for a number of reasons. The only problem with D2L e-mail is the default settings. All you need to do for this 5% of your grade is to [tweak the settings](#).

WebAssign Tests – 25% - Taken from WebAssign Question Bank.

Written Tests – 30% - These are traditional written tests that must be taken in-person. Your best resource for these are the "old-written-test" videos at the bottom of each chapter in the ["Homework and Test Videos."](#) These will be administered in Horizon Hall, TBA.

WebAssign Homework: 20% - Your best resource for these is all the homework videos in ["Homework and Test Videos."](#)

Writing Projects: 20% - A selection of written exercises to be submitted as PDFs. This semester, there's one project of Trig Review and one project of graphing, from Chapter 3. The other two projects are prep for the written Midterm and Final tests.

Attendance Policy

I don't grade on attendance, *but I do hold you responsible for any material covered in class*. Video of the day's talk and the notes I put on the board will be uploaded, daily, and housed on my private server, harryzaims.com. There may be times when your time is better spent working on exercises or written work than listening to a traditional lecture. It's still wise to be in the ZOOM, but I don't *demand* your attention. I just evaluate you on the quality and quantity of your work. For some, it will suffice to just check out the notes and maybe ask me questions about it the next day or the next week.

Grading Scale

Percentage	Grade	Details
90% - 100%	A	(Superior and excellent)
80% - 89%	B	(Above average)
70% - 79%	C	(Average)
60% - 69%	D	(Below average level of achievement)
Below 60%	F	(Not acceptable)

Course Schedule: https://harryzaims.com/public_html/201/2410-fall-24/2410-schedule-fall-24.pdf