

## Calculus I (CRN: 15377)

Spring 2023

MATH 161.01 (4 credits), MTu\_ThF, 08:00A–08:50A, Wickersham 201

**Description:** Introduces concepts and techniques of calculus, beginning with limits. Major emphasis is on the theory and applications of limits, continuity, derivatives, antiderivatives and the definite integral. Includes introductory calculus of trigonometric, inverse trigonometric, exponential and logarithmic functions.

**Prerequisites:** A grade of C- or better in MATH 160 (*Precalculus*) or MATH 161 Placement. Credit will not be granted for more than one course from the list of MATH 151, 161, or 163H.

**Instructor:** Dr. Buchanan

Office: Wickersham 203-1, Phone: 871-7305, FAX: 871-7948

Office Hours: 11:00A–12:00N (MTuWThF), or by appointment

Email: [Robert.Buchanan@millersville.edu](mailto:Robert.Buchanan@millersville.edu) (**preferred**)

**Textbook:** *Calculus Volume 1*, G. Strang, E. Herman, *et al.*, OpenStax, Houston, (2016), ISBN: 978-1-938168-02-4 (print book) 978-1-947172-13-5 (PDF version).

This is an open source textbook available from [OpenStax](https://openstax.org). Students may download a [portable document format](#) (PDF) version of the text, view the text [online](#), or (if a student prefers) order a [print copy](#). The text can be read on portable tablets, smart phones, laptops, and desktop computers.

You will also need a graphing calculator such as the [TI-84 Plus](#).

**Objectives:** MATH 161 introduces the concepts and techniques of calculus, beginning with limits. Major emphasis is on the theory and applications of continuity, derivatives, antiderivatives, and the definite integral. The calculus of the trigonometric, exponential, and logarithmic functions is also included. Upon successful completion of this course a student will have learned to

- find the limits of elementary, rational, and some transcendental functions,
- differentiate elementary, rational, composed, and some transcendental functions,
- apply derivatives to situations involving rates of change, velocity, and acceleration,
- apply derivatives in situations requiring the optimization of a quantity,
- integrate elementary, rational, composed, and some transcendental functions.

Overall students will gain an appreciation for the great intellectual achievement that is the development of the calculus.

**Course Contents:** If time permits other topics may be covered as well.

- Limits and continuity (Chap. 2)
- Differentiation (Chap. 3)
- Applications of the derivative (Chap. 4)
- Integration (Chap. 5)
- First-order differential equations (Sec. 6.8)

Chap. 1 is a review of functions and graphs, which students should read if they feel it is necessary.

**Americans with Disability Act:** If you have a disability that requires accommodations under the Americans with Disabilities Act, please present your letter of accommodations and meet with me as soon as possible so that I can support your success in an informed manner. Accommodations cannot be granted retroactively. If you would like to know more about the Millersville University Office of Learning Services-please contact the office at 717-871-5554).

**Attendance:** Students are expected to attend all class meetings. If you must be absent from class on the day that an assignment is due, you must complete and submit the assignment prior to the absence. If you know you will be absent on the day of a test, you must notify me before the time the test is scheduled in order to schedule a make-up test. Students who miss a test should provide a valid excuse, otherwise you will not be allowed to make up the test. No final exam exemptions.

Merely attending class will not earn you a passing grade. Regular class attendance (see [Class Attendance Policy](#)) includes being on time to class and actively engaging and participating in classroom activities. It does not include texting, listening to music, watching videos, browsing the internet, playing video games, checking email, *etc.* Students engaging in these types of activities may be asked to leave the classroom and/or be counted absent for the class meeting. Do not expect a warning or announcement before these sanctions.

**Homework:** Students are expected to do their homework and participate in class. Students should expect to spend a minimum of three hours outside of class on homework and review for every hour spent in class. Homework exercises help students review and reinforce concepts covered in class. This semester we will use the [xyzhomework.com](#) online learning system for most assignments in the course. A link to [xyzhomework.com](#) has been created under the “Assignments” folder of our D2L course shell. Follow that link to get registered for the online learning system. The cost will be \$45.00 (if renewing \$25.00). All assigned homework exercises must be worked (and, if necessary re-worked) until successfully completed.

**Tests:** There will be four tests and a comprehensive final examination. The tests and final examination will be paper-based and given during regularly scheduled class meetings. The tests and final examination are scheduled as follows.

1. Tuesday, February 7, 2023
2. Friday, March 3, 2023
3. Tuesday, April 4, 2023
4. Friday, April 21, 2023

The final exam is scheduled for Friday, May 5, 2023, 02:45P–04:45P. I will not “curve” test, quiz, or exam grades.

Students who engage in academically dishonest behavior on a test or final examination will receive a grade of 0 for the assessment activity.

**Grades:** Course grade will be calculated as follows.

Tests	15% each
Homework	25%
Final Examination	15%

Tests and the final examination will be graded individually on a 100-point scale. I keep a record of students’ test, homework, and exam scores. Students should also keep a record of graded assignments, tests, and other materials. As an example of the calculation of the numerical course grade, suppose a student’s four test grades were 87, 78, 65, and 70 (out of a maximum of 100 points on each test), the student’s final examination grade was 71 (again, out of a maximum of 100), and the student’s homework grades were 80, 82, 71, 59, 75, 88, 94, 64, 96, and 50 (there will probably be more than 10 graded homework assignments). This student’s test and homework average are 75 and 75.9 respectively. The student’s numerical course grade is then

$$(75)(0.60) + (75.9)(0.25) + (71)(0.15) = 74.625 \approx 75.$$

The course letter grades will be calculated as follows. I will not “curve” course grades.

90-92	A-	93-100	A		
80-82	B-	83-86	B	87-89	B+
70-72	C-	73-76	C	77-79	C+
60-62	D-	63-66	D	67-69	D+
		0-59	F		

**Calculator Policy:** Frequently examples, homework exercises, and tests will make use of a graphing calculator. The Department of Mathematics recommends the TI-83/84/85/86 model calculator for students in elementary calculus. The TI-89/92, TI-Inspire, or any other calculator with symbolic or computer algebra capabilities is not permitted to be used in this course.

**Course Repeat Policy:** An undergraduate student may not take an undergraduate course of record more than [three times](#). A course of record is defined as a course in which a student receives a grade of A, B, C, D, (including + and -) F, U, Z or W. The academic department offering a course may drop a student from a course if the student attempts to take a course more than three times.

The last day to withdraw from a course (and receive the W grade) is March 31, 2023 at 04:30P. Course withdrawals are submitted online.

**Inclement Weather Policy:** If we should miss a class day due to a school [delay](#) or [cancellation](#), any activities planned for that missed day will take place the next time the class meets. For example, if a test is scheduled for a day that class is canceled on account of snow, the test will be given the next time the class meets.

**Cell Phones:** Silence (or better yet, turn off) all cellular telephones upon entering the classroom. Leaving class to initiate or receive a telephone call will not be tolerated and students doing so will not be readmitted to the classroom until the following class meeting. Texting or tweeting during class interferes with the learning process. Students distracted by their cell phones are not engaged in class and will find, over the course of the semester, that learning and course grade will suffer.

**Title IX Reporting Responsibilities:** Millersville University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to comply with the requirements of Title IX of the Education Amendments of 1972 and the University's commitment to offering supportive measures in accordance with the new regulations issued under Title IX, the University requires faculty members to report to the University's Title IX Coordinator incidents of sexual violence shared by students. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report to the person designated in the [University Protection of Minors policy](#) sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred.

Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth at: [www.millersville.edu/titleix](http://www.millersville.edu/titleix).

**Academic Honesty:** Students are required to avoid plagiarism, falsification of their work, cheating (including assisting others in cheating), and other forms of academic misconduct. For more information including definitions and examples of academic dishonesty, please see the [Academic Honesty Policy](#).

**Land Acknowledgement:** Millersville University would like to recognize the Native peoples of the lower Susquehanna River basin, those known and those unknown to us, who have stewarded the land, upon which Millersville University sits, for thousands of years. We acknowledge that the land on which we gather, study, and work is the ancestral land of the Conestogas, Susquehannocks, Shawnee, and others. One group, the Shenks Ferry people, had a village adjacent to the campus. We pay our respects to the traditional occupants and caretakers of this land.

**Other University Policies:** Students may wish to consult the links provided below outlining Millersville University's policies on:

- [Inclusivity](#)
- [Preferred names](#)
- [Student rights under FERPA](#)
- [Student conduct and community standards](#)

**Final Word:** Math is not a spectator sport. What you learn from this course and your final grade depend mainly on the amount of work you put forth. Daily contact with the material through homework assignments and review of notes taken during lectures is extremely important. Organizing and conducting regular study sessions with other students in this class will help you to understand the material better.

No one can guarantee you success in this course. Your responsibilities and the instructor's expectation are outlined above. There will be no second chances, "do-overs", or extra credit assignments.