

Math 111 - Calculus I - Fall 2025

Course Introduction: Welcome to Math 111! Calculus is the mathematical field that studies continuous *change*. Since change is everywhere, calculus is everywhere too. If you've ever wondered why the flight of a baseball looks the way it does, or why the middle rows in a movie theater are always full, you've actually been asking yourself calculus questions!

Calculus has two main branches - *Differential* Calculus and *Integral* Calculus. Differential calculus studies rates of change (like the speed of a car), while integral calculus focuses on the accumulation of quantities (like the distance the car traveled). We will do a rigorous study of both branches. Our focus will be towards **applications**. Our problem-solving approach will allow us to apply calculus to model *real-world* scientific problems. These problems will often rely on using many interrelated concepts, or thinking about one concept in several different ways. As such, conceptual understanding will *always* be emphasized over memorizing long lists of formulas.

Course Setup: Math 111 is a coordinated course with a course coordinator (Neha Gupta). This means that all sections use the same materials, and follow the same calendar. We also have common assessments.

Your point of contact is the instructor for your section. If needed, your instructor will reach out to the course coordinator on your behalf. Please do not contact the course coordinator unless she happens to be the instructor for your section.

Instructors & Meeting Times: When signing up for Math 111, you signed up for a specific section. The goal of each section is to learn and discover new material together. Please make sure that you attend the section you signed up for.

Section	Instructor	Email	Location
1	Mitchell Scott	mitchell.scott@emory.edu	MW 8:30 - 9:45 AM MSC N302
2	Nat Milnes	nathaniel.milnes@emory.edu	MW 8:30 - 9:45 AM Rich Building 104
3	Ylli Andoni	ylli.andoni@emory.edu	MW 10 - 11:15 AM MSC N302
4	Joseph Woods	joseph.woods@emory.edu	MW 10 - 11:15 AM MSC W301
5	Ansley Bentley	ansley.bentley@emory.edu	MW 11:30 AM - 12:45 PM 1462 Clifton Rd 100C
6	Daniel Dobak	daniel.dobak@emory.edu	MW 1:00 PM - 2:15 PM Atwood Chemistry Bldg. 316
7	Neha Gupta	neha.gupta@emory.edu	MW 2:30 - 3:45 PM MSC N302
8	Jack Michael Solomon	jack.michael.solomon@emory.edu	MW 2:30 - 3:45 PM MSC W201
9	André Hisatsuga	andre.hisatsuga@emory.edu	MW 4:00 - 5:15 PM White Hall 110
10	Matthew Allen	matthew.allen2@emory.edu	MW 4:00 - 5:15 PM MSC W301

Section	Instructor	Email	Location
11	Eion Mulrenin	eion.mulrenin@emory.edu	MW 11:30 AM - 12:45 PM MSC N302
12	Haley Rosso	haley.rosso@emory.edu	MW 11:30 AM - 12:45 PM MSC W307C

Office Hours: All our office hours will be posted on our Canvas site. You are free to attend *any instructor's* office hours. We do this so that on most days you are able to talk to an instructor about calculus if you wish. Also, sometimes learning something from a different perspective can be very helpful. We would love to see you in our office hours, whether you happen to be in our section, or not!

Axioms: In 2016, the *Notices of the American Mathematical Society*, published an article¹ by Federico Ardila (SFSU) on cultivating diversity in mathematics. There, Prof. Ardila listed a set of “Axioms” in mathematical pedagogy. Like him, we firmly believe in these axioms, and use them as guiding principles in this course’s design. We encourage you to read and think about each:

Axiom 1 Mathematical talent is distributed equally among different groups, irrespective of geographic, demographic, and economic boundaries.

Axiom 2 Everyone can have joyful, meaningful, and empowering mathematical experiences.

Axiom 3 Mathematics is a powerful, malleable tool that can be shaped and used differently by various communities to serve their needs.

Axiom 4 Every student deserves to be treated with dignity and respect.

Course website: <https://canvas.emory.edu/courses/151833>

Accessibility: The Department of Mathematics at Emory supports equal access for students with disabilities. Any students needing special accommodations due to a disability should speak with someone in the Department of Accessibility Services as soon as possible. Please see details here accessibility.emory.edu/index.html. If you are currently registered with DAS and have not received a copy of your accommodation notification letter within the first week of class, please notify DAS immediately. Students who have accommodations in place are encouraged to coordinate with your instructor during the first week of the semester to communicate your specific needs for the course as it relates to your approved accommodations. All discussions with DAS and faculty concerning the nature of your disability remain confidential. Please note that it is your responsibility to provide the letter from the office to your instructor *before* you need the accommodation. Accommodations cannot be granted without a letter from the office. They also cannot be granted retroactively.

Your Obligations: The aim of this course is to offer a meaningful, rigorous, and rewarding experience to every student; you will build that rich experience by devoting your strongest available effort to this class. You will be challenged and supported. Please be prepared to take an active, patient, and generous role in your own learning and that of your classmates.

Content: Limits, continuity, derivatives, antiderivatives, and the definite integral.

Prerequisites: Recent studies² have shown that a solid pre-calculus background, including mastery of algebra, geometry, and trigonometry, are better predictors of college calculus success than prior exposure to

¹Ardila-Mantilla F. Todos Cuentan: Cultivating Diversity in Combinatorics. *Not Am Math Soc.* 2016;63(10):1164-1170.

²Philip Sadler and Gerhard Sonnert. The Path to College Calculus: The Impact of High School Mathematics Coursework. *Journal for Research in Mathematics Education*, 2018; 49(3)

calculus. Thus, it is imperative that you review these subjects before the start of the semester. Our textbook (see Textbook below) provides diagnostic tests at the front, as well as Appendices on these subjects in the back. Please attempt to work through these tests and readings as you see fit, and feel free to reach out to your instructor if you would like more prep materials.

Textbook: There is no required textbook. However, we will use the Pearson *Interactive Calculus* textbook for reference throughout the term, as it is included with and embedded within our required online homework platform.

We will be using an online homework platform called *MyLab*, by *Pearson* which is linked specifically with our book. Access to the *MyLab* platform must be **PURCHASED**.

There are two options for purchase:

- Purchase directly through canvas: Single Term MyLab Math with Pearson eText Instant Access for Interactive Calculus, Early Transcendentals, Single Variable, 1st ed.
- Purchase through our campus bookstore: Single Term MyLab Math Access Code with Pearson eText for Interactive Calculus, Early Transcendentals Single Variable, 1st ed.

A few things to note:

- There is no physical textbook version of this ebook.
- The cheapest option is to purchase through canvas. That is how you get the \$55.89 price we've negotiated with Pearson.
- The bookstore price will have a slight mark-up.
- It is recommended that you purchase your course-ware using one of the above-mentioned options, as this is by far the best price!
- If you are unsure that you will stick with the course, or if you are on financial aid and your funds aren't yet available, you can start off with **Temp Access** which is complimentary, and then upgrade to **full access** when ready.

Technology Requirements: As this course may have online office hours, quizzes, and review sessions, there are some technical requirements to ensure the proper flow of class:

- A computer with speakers, webcam, and microphone headset.
- Reliable high-speed internet access.
- Up-to-date internet browser (Safari, Chrome, or Firefox). **NOTE: Safari has known compatibility issues with Canvas**, and can make taking online assessments difficult or even impossible. Use at your own peril.
- A scanner or smartphone, to take photos and upload online.
- Access to course Canvas site.
- ZOOM.

Technical Issues and Support: If you are experiencing technical difficulties, the first steps to troubleshoot are:

1. Check the above computer and browser requirements and ensure that your system and browsers are up-to-date.
2. Open an alternate browser and perform the same task. Did it work?
3. Once you have attempted the two steps above, feel free to contact your course instructors. If we are unable to assist you, then we will get you in touch with the correct people to get you going in the course.
4. If all else fails, please visit studentdigitallife/support/student-technology-support/ to create a ticket or call 404-727-7777.

Calculator Policy: Some homework problems will require the use of a calculator. However, Google's online calculator will suffice for these purposes. Otherwise **no calculators or calculating devices are allowed** during quizzes, tests, or the final. Use of a calculator during these assessments will constitute a violation of the Honor Code (see Academic Integrity below).

PreCalc Modules: As mentioned earlier, a strong Pre-Calculus background is the best predictor for calculus success at college. We really want to motivate you to review your basic pre-calculus before moving on with our Calculus coursework. As such there are **four PreCalc Modules** in our course. **These are optional, but can be completed for extra credit. If you complete all four you will receive an additional 2% score to your final course grade.** No partial credit will be assigned for the precalculus modules. **To receive this bonus, all PreCalc modules must be completed by 9 pm (Eastern time) on Friday, September 12.**

Homework: Doing your homework with diligence and enthusiasm is the key to success in this class. Homework will be due roughly twice a week. Homework will be submitted through the online homework platform *MyLab*. Homework is due most Mondays and Wednesdays at 8:30 AM (Eastern time). It is your responsibility to visit the website periodically to make sure you are aware of any new homework assignments. You are encouraged to work together and discuss problems with classmates. **Note that the last homework is due at 11:59 PM on Tuesday, Dec 9. At the end of the semester the three (3) lowest homework grades will be dropped.**

Homework Extension Policy: Life sometimes happens, and you may need an extension on a homework. **Late homework will be accepted with a 20% deduction per day.** Note that there are no penalties for the first four homeworks but they are all due latest by September 21st. Things move quickly in this course, so we strongly encourage you to stay on track with your homework as that will also set you up for success on the quizzes.

Quizzes: There will be ten quizzes throughout the term (see Important Dates below). Quizzes will be online, and done through Canvas. Quizzes will open from 8 am to 8 pm on Fridays. You'll have twenty minutes to work through each quiz. Once you start a quiz, the timer cannot be paused, so make sure to allot the appropriate time and headspace for it. **There will not be make-up quizzes. At the end of the semester the two lowest quiz scores will be dropped.** Quiz dates are as follows:

- Quiz 0 (Precalc): August 29 (diagnostic, not for credit)
- Quiz 1: September 5
- Quiz 2: September 12
- Quiz 3: September 19
- Quiz 4: September 26

- Quiz 5: October 3
- Quiz 6: October 17
- Quiz 7: October 24
- Quiz 8: November 7
- Quiz 9: November 14
- Quiz 10: December 5

Participation: Actively and enthusiastically engage in any and all in-class group/active work. Your participation in class will facilitate your learning as well as that of your classmates. Please be respectful of your classmates and your instructor by being punctual and staying on task. **Avoid the use of electronic devices in class unless you have discussed it with your instructor.** If you miss a session of in-class work, you can make up for this by attending (and actively participating in) one of the office hours (see schedule on our canvas homepage).

Tests: There will be three tests throughout the term. Unlike the quizzes, tests will be in-person evening exams. These will take place from 7 pm to 8:15 pm on the days listed below. Your Math 111 section will be cancelled on days you have tests. Notes, textbooks, or any other review materials are not allowed during tests. Students will not be permitted to leave the room once a test has started.

If you must miss a test due to extended illness, emergency, or other compelling reason, you must contact your instructor before the test to excuse your absence. Travel plans, oversleeping, etc. are **not** adequate excuses. An unexcused absence on a test day will result in a score of 0. **There will not be make-up tests.** The tests are scheduled for:

- Test 1: Wednesday October 8th
- Test 2: Wednesday October 29th
- Test 3: Wednesday November 19th

At the end of the semester the lowest grade amongst your three test grades will be dropped.

Final Exam: The final exam is cumulative. There will be no conflict final exam given except for those who meet the official university criteria given in the Student Code, which you can access at

<http://catalog.college.emory.edu/policies/absences.html>. More information about the test taking conditions will be provided closer to the Final Exam date. Failure to take the final exam will result in a failing grade for the semester, regardless of current standing in the class. Our final exam is from 6:30 PM- 9 PM on Wednesday, December 17th. **Please note that this is unfortunately the last time slot for final exams at Emory this Fall. Do not book flights to leave before this date. Having flights booked is not a valid reason to get a makeup.**

Grading: Your final grade in this course will comprise of the following:

	<i>Percentages</i>
Homework	15%
Quizzes	20%
Tests	45%
Final Exam	20%
TOTAL:	100%

Your average will disregard your

- three lowest homework scores.

- two lowest quiz scores.
- lowest test score from three midterms. The final exam cannot be dropped.

Course averages will be converted to letter grades on a standard half-closed/half-open intervals.

A	[93 – 100]	C+	[77 – 80)
A–	[90 – 93)	C	[73 – 77)
B+	[87 – 90)	C–	[70 – 73)
B	[83 – 87)	D+	[67 – 70)
B–	[80 – 83)	D	[60 – 67)

Scores are rounded up to the next tenth of a percentage point. For example, a course grade of 91.56% will be rounded up to a 91.6%, not to a 92%. Similarly, a course grade of 89.95% will be rounded to a 90% (and hence an A–), while a 89.90% will not (and hence will stay a B+). Finally, as another example, a course grade of 86.95% will be rounded to a 87% (and hence a B+), while a 86.92% will not (and hence will stay a B). If you have any questions about the rounding process, do not hesitate to contact us.

The class may be curved in the end at the discretion of the instructional team. However, letter grades will be no worse than the distribution above. That is, we will never “curve down”.

Extra Help: Do not hesitate to come to our office hours to discuss a homework problem or any aspect of the course. Additionally, Emory College offers **free** Math 111 tutoring and support through its Learning Assistants programs. For more information please see <https://oue.college.emory.edu/programs/success/learning-assistants.html>. (Caveat: The Learning Assistants is not a part of the Math 111 course, and tutors are subject to availability. We do not have control over that availability or scheduling).

Academic Integrity: Emory is stressful, and taking your first math class can also add to that stress. We would love to create an environment where you feel empowered, and confident. We really want all of you to take the assessments in class while only relying on yourself and the allowed resources. It’s not okay for us if you are not able to do that. Please do not put yourself in a situation that leads to regrets or guilt. *Nothing is worth that.*

We all have strong feelings about AI and how it shows up in your learning experience. Studies show that for instance, an over-reliance on AI affects your cognitive capabilities including your decision-making, critical thinking, and analytical reasoning³. For this and many other reasons that we are happy to discuss with you if you like ⁴ ⁵, the use of any artificial intelligence program on tests and quizzes constitutes plagiarism and is a violation of the Honor Code.

You are encouraged to collaborate or use outside sources in solving your homework assignments, **but the work you submit must be expressed in your own words**. You are **not authorized to view or use the work of another student during quizzes or exams**. **No collaboration is allowed on quizzes or exams**. **Specifically, it is not okay to email or share your written work with other students**. Again, we really hope that you will all be able to take the assessments with your heads held high. Please reach out if you are struggling. You should familiarize yourself with the Emory College honor code.

³Zhai, C., Wibowo, S. Li, L.D. The effects of over-reliance on AI dialogue systems on students’ cognitive abilities: a systematic review. Smart Learn. Environ. 11, 28 (2024). <https://doi.org/10.1186/s40561-024-00316-7>

⁴<https://news.mit.edu/2025/explained-generative-ai-environmental-impact-0117>

⁵<https://www.theguardian.com/commentisfree/article/2024/may/30/ugly-truth-ai-chatgpt-guzzling-resources-environment>

<https://catalog.college.emory.edu/policies/honor-code.html>

Student Health Resources: Maintaining both a healthy mind and body goes a long way towards academic success. Below are helpful resources provided by Emory free of charge:

- Emory HelpLine: For non-urgent mental health situations, you may contact the Emory HelpLine at 404-727-4357. The HelpLine is an anonymous, peer counseling telephone service that is open from 8:30 pm-1:00 am, seven days a week.
- Mental Health: To seek advice for an emergent mental health issue or concern, call the Student Counseling Center at 404-727-7450.
- Respect Program: The Respect Program serves any Emory student affected by sexual assault, relationship violence, or stalking. It provides services for individual students through confidential individual consultations, crisis intervention, and referral. To reach the Respect Program call 404-727-1514.
- Student Health Services: Emory Student Health provides a variety of services to support student health, including primary outpatient care, physical examinations, nutrition and substance abuse counseling, and more.

Harassment: From the Emory University policies, available at policies.emory.edu/1.3 :

Discriminatory harassment of any kind, whether it is sexual harassment or harassment on the basis of race, color, religion, ethnic or national origin, gender, genetic information, age, disability, sexual orientation, gender identity, gender expression, veteran's status, or any factor that is a prohibited consideration under applicable law, by any member of the faculty, staff, administration, student body, a vendor, a contractor, guest or patron on campus, is prohibited at Emory.

Tentative Course Schedule

Meeting	Topics
08/27	2.1 Rates of Change
09/01	Labor Day- No Class
09/03	2.2, 2.4 Limits
09/08	2.5 Continuity
09/10	2.2 Computing Limits
09/15	2.6 Limits to Infinity
09/17	3.1 Definition & Interpretation of the Derivative
09/22	3.2 Derivative as a Function
09/24	3.3 Derivative Rules 3.11 Linear Approximations
09/29	3.11 Linear Approximations 4.1, 4.3, 4.4 Max & Min of Functions, Derivative Tests
10/01	4.1 Global Extrema 4.6 Optimization
10/06	3.5 Derivatives of Trig Functions 4.6 Optimization
10/08	No Class Test 1 in the evening
10/13	Fall Break - No Class
10/15	3.6 Chain Rule 4.6 More Optimization
10/20	3.7 Implicit Differentiation 3.8 Log Differentiation 3.9 Derivatives of Inverse Trig Functions
10/22	3.10 Related rates
10/27	4.5 Indeterminate Forms and L'Hopital's Rule
10/29	No Class Test 2 in the evening
11/03	4.4 Curve Sketching
11/05	5.1 Net Change
11/10	5.3 The Definite Integral
11/12	5.3 Definition of the Definite Integral
11/17	5.3, 5.4 Properties of the Definite Integral & Area Function
11/19	No Class Test 3 in the evening
11/24	5.4 FTC 1
11/26	Break - No Class
12/01	5.4 FTC 2
12/03	5.5 Evaluating Integrals & Indefinite Integrals
12/08	5.6 Substitution