MATH 111 - Calculus I
Section 3 Spring 2021
Syllabus[1][2]

Instructor: Christopher Keyes

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Synchronous Meeting Times: TTh 9:40 – 10:55 am (ET). (see website for Zoom link)

Office Hours: Mondays 4:00 – 5:30 pm (ET) and Thursdays 12:30 – 2:00 pm (ET) or by appointment. (also over Zoom)

Course website: https://canvas.emory.edu/courses/84606

Course description: 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). Both of these branches rely on the crucial notion of "limit", and that's where Math 111 (after a short review of functions) will begin. After we've developed sound intuition for limits, we will proceed with defining the derivative (the "rate of change"). From there, we will tackle how to apply the derivative to a variety of settings. Finally, we will introduce the definite integral (the "accumulation") and explore its relationship with the derivative, the Fundamental Theorem of Calculus! (Math 112, Calculus II, continues the study of the integral as well as the notion of infinite series).

Though the theoretical underpinnings of calculus can be studied in their own right (see Math 250 and Math 411), 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.

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

Agreement: 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.

Prerequisites: Recent studies[3] 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 calculus. It is important to review these subjects prior to taking this course, especially if it has been a long time since you last saw this material.

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[1] The information in this document is subject to change at any point in the semester. Any changes will be communicated both in class and via email in a timely fashion. For the latest version of this document, please check the Canvas page.

[2] This syllabus incorporates language used in syllabi by many colleagues at Emory, including Bree Ettinger, Juan Villeta-Garcia, Dwight Duffus, Lars Ruthotto, Shaunna Donaher, Le Chen, Jeffrey Yelton, and Maryam Malik.

[3] Philip 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)

Textbook and WebAssign: Our required course textbook will be *Single Variable Calculus: Early Transcendentals, 8th edition*, by James Stewart (ISBN 978-1-305-27033-6). There are several versions of Stewart's Calculus, so please pay careful attention to the ISBN above. **We will be using the online platform WebAssign** for homework assignments, which is linked specifically with our book. **You must purchase a WebAssign subscription to complete the homework for the course.**

There are several ways to purchase the required textbook and WebAssign access, which can get confusing. At minimum, you can purchase a standalone WebAssign subscription, available at the Emory bookstore or at the publisher's website (select "digital platform"). The subscription is required and it **already brings a copy of the e-book**, so you do not need to purchase a physical copy of the book. A standard WebAssign subscription is for one semester, but longer subscriptions are available if you intend to take Calculus II immediately following. A free trial is available, but **be careful not to sign on to the free trial and then forget to make the purchase before the trial is over, as this may result in being unable to complete a homework assignment before it is due.**

Physical textbooks are also available at the Emory bookstore and other retailers. **Please be aware that physical copies — especially used ones — may not come with valid WebAssign access codes**. If you prefer a physical textbook, be sure your physical copy comes with an access code, or purchase WebAssign separately.

If you have questions regarding the many textbook options, feel free to reach out to me by email.

Technology Requirements: This course will be taught online primarily through synchronous meetings, but with asynchronous assessments. You will need access to:

- A computer with speakers, webcam, and a microphone.
- A reliable workspace with high-speed internet access.
- Up-to-date internet browser (Safari, Chrome, or Firefox).
- A method of scanning and uploading work, such as a scanner or smartphone.
- Software access, including Zoom (download here: `https://zoom.us/download`) and Canvas.

Communication: Canvas is the primary method of communicating relevant course announcements. Students should **turn on Canvas notifications** to ensure they are received in a timely manner. Students are encouraged to pose general questions on the Ask the Professor and other discussion boards on Canvas. These discussion boards work best when students are active both posing and *answering* questions!

Personal or private questions (e.g. about your grade) should be communicated to me via email. Please allow 24 hours for me to respond, though I usually will reply much more quickly. If you do not receive a response from me within 24 hours, please send a follow up in case I missed your first message.

Zoom will be used for synchronous communication such as class time and office hours. See Canvas for the relevant links and passwords.

Technical Issues and Support: If you are experiencing technical difficulties, try:

1. Check the computer and browser requirements and ensure that everything is 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, contact your instructor and explain the issue.
4. If all else fails, contact IT to create a ticket or call 404-727-7777.

Course structure: This course will (tentatively) follow the routine outlined below. All times below are ET (Atlanta time). See below for more details about each component.

Monday	Tuesday	Wednesday	Thursday	Friday
OH TBD HW due @5pm	Class 9:40 - 10:55am Quiz released @5pm	Quiz due @5pm New HW released @5pm	Class 9:40 - 10:55am	OH TBD

Class meetings: We will meet twice a week on Zoom for 75 minutes. In class I will introduce new ideas, definitions, and examples which we will practice and discuss. There will be a worksheet for each class for you to fill in as you follow along.

I expect active participation in this class. This includes turning on your webcam if possible, raising your hand to ask/answer questions, and having a pencil/paper or tablet available to work on the worksheet problems. We may also use Zoom's breakout rooms for small group discussions.

Each class will be recorded and posted to Canvas along with a pdf version of the "board" that I write on. This is useful for your studying and as a backup for when you miss class, but should not be viewed as a substitute for ever attending class.

Office Hours: This is time I set aside each week specifically to answer your questions about the course! It's easier to work out problems together over Zoom than to discuss them over email. You do not have to email me in advance to attend — feel free to drop in! If you are unable to attend at the available times but would like to meet, email me to make an appointment and include at least three times that you are available.

Homework: Doing your homework with diligence and enthusiasm is the key to success in this class. Homework will be assigned through WebAssign on Wednesday and due the following Monday at 5pm. The homework will cover material from the previous Tuesday and Thursday class meetings. **At the end of the semester the two (2) lowest homework grades will be dropped.**

Quizzes There will be weekly quizzes throughout the term. Quizzes will be timed and you will have a 24 hour window to complete them, beginning Tuesday at 5pm and ending Wednesday at 5pm. Each quiz will cover the material from the *previous* week's classes, which is the same material as the homework that was due on Monday. **At the end of the semester the two (2) lowest quiz grades will be dropped. There will not be make-up quizzes**.

Tests: There will be three (3) tests throughout the term (see Important Dates below). The format will be similar to quizzes in that they are timed, but tests will be given over the 48 hour window starting Monday at 5pm and ending Wednesday at 5pm (there will not be a quiz on test weeks). Once you start a test, the timer cannot be paused, so make sure to allot the appropriate time and headspace for it.

If you must miss a test due to extended illness, emergency, or other compelling reason, you must contact a dean in the Office for Undergraduate Education and ask them for a letter excusing 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**.

Final Exam: The final exam is cumulative. The due dates and times for the final are TBD. However, the final will *not be due before* the time listed on the block schedule of May 6, 3 – 5:30pm. Expect a similar format as the previous tests, but somewhat longer due to the cumulative nature.

There will be no conflict final exam given except for those who meet the official university criteria given in the Student Code. Failure to take the final exam will result in a failing grade for the semester, regardless of current standing in the class.

Gradescope: Throughout the term, quizzes, tests, and the final will be handled through an online assessment platform called *Gradescope*. It allows us to provide fast and accurate feedback on your work. As soon as grades are posted, you will be notified immediately so that you can log in and see your grades and feedback. Your Gradescope login is your university email, and your password can be changed there. At the beginning of term, you will receive an link and course Entry Code to self-enroll in our Gradescope course. If you have any questions regarding Gradescope, please send your message to: help@gradescope.com.

Grading Scheme:

- Homework: 10%
- Quizzes: 10%
- Tests: 60% (20% each)
- Final exam: 20%

Course Grade: Maximum cut-offs for letter grades are at the standard half-closed/half-open intervals:

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

The class may be curved in the end at the discretion of the instructor. However, letter grades will be *no worse* than the distribution above.

Netiquette and Attendance: Not all forms of communication found online are appropriate for an academic community or respectful of others. In this course (and in your professional life that follows), you should practice appropriate etiquette online ("netiquette"). Here are some guidelines:

- You should read and follow the Emory College Netiquette Guide.
- You are encouraged to login to Zoom one or two minutes early, and to stay until the end.
- During the zoom class session, please:
  - Silence all cell phones and other electronic devices.
  - Do not read email or look at websites, social media, etc.
- Actively participate in the zoom class meeting. Though this can take many forms, it will include:
  - Asking (and answering!) questions.
  - Being randomly chosen to help the instructor solve exercises and/or answer specific questions.
  - Participating in Zoom polls and breakout rooms.

Academic Integrity: Students must avoid both the fact and the appearance of academic dishonesty. Cheating on homework, quizzes, or tests is strictly prohibited and will result in serious consequences. Notes, textbooks, or any other review materials are not allowed during tests or quizzes. The use of the internet for anything other than the assessment platform is strictly forbidden. Potential violations will be referred to the Emory Honor Council. Students should be familiar with the Emory College honor code.

Calculator usage: Calculators are permitted for use on WebAssign homework. A four-function only $(+, -, \times, \div)$ calculator is permitted for use on quizzes and exams. **Note:** calculators should be thought of as a last resort or a tool to check your work — all quiz or exam questions will be designed to be answered without a calculator.

Accommodation: You have a right to receive accommodations for a disability (e.g. mental health, attention, learning, vision, hearing, physical or systemic). If you have a disability and anticipate barriers related to the format or requirements of this course, we encourage you to contact the Department of Accessibility Services (DAS) to learn more about the registration process and steps for requesting accommodations. DAS can be found at: https://accessibility.emory.edu

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.

EPASS: If you are looking for additional or one-on-one support, Emory College offers **free** Math 111 tutoring and support through its EPASS Peer Tutoring and Learning Assistants programs. See their website for more information on how to register for EPASS Learning Assistant sessions or to schedule an individual EPASS Tutor

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.

Important Dates: (The test dates are subject to change, with at least a week's notice.)

First Day of Class	Monday, January 25
Add/Drop/Swap	Monday, February 1
Test 1 window	Monday, February 22 — Wednesday, February 24
No Assignment Week	Monday, March 15 — Friday, March 19
Rest Day (no class)	Tuesday, March 16
Partial Withdrawal Deadline	Friday, March 19
Test 2 window	Monday, March 22 — Wednesday, March 24
Test 3 window	Monday, April 20 — Wednesday, April 21
Last Day of Class	Monday, May 3
Final Exam (block schedule)	Thursday, May 6