# MATH 19 A: Fundamentals of Calculus 1

## Fall 2022

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| **Instructor:** | Jesse Franklin | **Time:** | MWF 8:30 am – 9:20 am |
| **Email:** | jesse.franklin@uvm.edu | **Place:** | Morrill Hall 10 |

**Office hours:** MWF $2:15 - 3:15$pm in <u>Innovation E324</u> or by appointment.

**Land Ackowledgement:** This course is prepared and takes place on lands traditionally home to the Abenaki.

**Description and objectives:**

(1) Determine the appropriate mathematical approach for a given informational need and use it correctly and accurately.
(2) Demonstrate an understanding of the fundamental aspects of differential calculus including functions, limits, derivatives and integrals.
(3) Recognize and apply the ideas of calculus in economics, business, physics, natural resources and other areas of study.

**Textbook:** *Calculus for Buisness, Economics, Life Sciences, and Social Sciences, fourteenth edition, by Barnett, Ziegler, Byleen and Stocker, packaged with a MyMathLab Access Code. You must have access to MyMathLab to complete the homework, and MyMathLab access comes withan e-text. You do not need a paper copy of the book if you do not want it. The class will followthe text closely.*

**MyMathLab Course Code:** Use the Pearson class key **franklin14305** to register for this course specifically. Please let me know if you need help.

**Technology:**

- *BlackBoard*, a website used by UVM for course management. Here you will find announcements, a link to this syllabus and the course schedule, and you can also check your grades here.
- You will need the capacity to *scan documents*, such as quizzes and exams, to PDF files. Note that most smart phones have a scan function, and this is perfectly acceptable.
- A calculator CAN be used to do almost everything in this class, and is allowed for homework, but will NOT be allowed for quizzes or exams and **nothing in this class will require a calculator**
- All homework and the textbook for the course will be online

**Grading:**

- *Homework assignments* will make up 40% of the grade.
- *Quizzes* will be 10% of the final grade and will be held on Fridays in the form of a collaborative in class activity.
- *Exams* will make up exactly 30% total of your final grade, each is worth 15%, and they will be based on the homework assignments and quizzes.
- *Final exam* there will be a cummulative final exam worth 20% of the total grade

**Late work:** Late homework and missed quizzes are accepted until the last day of class before the date of final exam. If you miss an exam that you want points for you need to discuss when or if you can make it up with me by the end of class the following Monday or it will be considered a

zero, except in extraordinary circumstances. Note that in order to complete a late exam, you must have finished all of the homework for the corresponding material prior to taking the test.

This policy is to return exams as soon as possible, to record progress in the course consistently and is strictly not intended to induce stress. It is more important to learn math by doing it than to do it when the instructor says so. On the other hand please consider that I do not have unlimited time to re-proctor exams so you must make them up during my normal office hours.

**Important dates:**

Add/drop deadline ................................ 9/12
Midterm 1 ........................................10/12
Last day to withdraw .............................10/31
Midterm 2 ........................................11/18
Last day of class ..................................12/9
Final .......................... 12/12 7:30am-10:15am.

**Expectations:** Students are welcome to regularly attend class, expected to complete any assigned work, and must comply with UVM's *Code of Student Conduct.*

**Academic integrity:** As one might expect, the student may not plagiarize or fabricate any work, nor may the student collude or cheat. See UVM's *Code of Academic Integrity.*

**Student learning accomodations:** In keeping with University policy, any student with a documented disability interested in utilizing ADA accommodations should contact Student Accessibility Services (SAS), the office of Disability Services on campus for students. SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter. All students are strongly recommended to discuss with their faculty the accommodations they plan to use in each course. Faculty who receive Letters of Accommodation with Disability Related Flexible accommodations will need to fill out the Disability Related Flexibility Agreement. Any questions from faculty or students on the agreement should be directed to the SAS specialist who is indicated on the letter.

*Contact SAS:*
A170 Living/Learning Center;
802-656-7753
access@uvm.edu
www.uvm.edu/access

**Religious holidays** Students have the right to practice the religion of their choice. If you need to miss class to observe a religious holiday, please submit the dates of your absence to me in writing by the end of the second full week of classes. You will be permitted to make up work within a mutually agreed-upon time. See www.uvm.edu/registrar/religious-holidays.

**FERPA rights disclosure:** The purpose of this policy is to communicate the rights of students regarding access to, and privacy of their student educational records as provided for in the Family Educational Rights and Privacy Act (FERPA) of 1974. See here for the disclosure.

**Promoting health and safety:**
*Center for Health and Wellbeing:* https://www.uvm.edu/health

*Counseling & Psychiatry Services* (CAPS): Phone: (802) 656-3340

*C.A.R.E.*: If you are concerned about a UVM community member or are concerned about a specific event, we encourage you to contact the Dean of Students Office (802-656-3380). If you would like to remain anonymous, you can report your concerns online by visiting the Dean of Students website at https://www.uvm.edu/studentaffairs

**Mandatory reporting:**

As a UVM instructor I am a required to report to UVM's student services if I feel that your mental or physical health is at risk, especially with regards to self harm, intent to harm another person or abuse.

**Course evaluation:** All students are welcome to complete an evaluation of the course at its conclusion. The evaluations will be anonymous and confidential, and the information gained, including constructive criticisms, will be used to improve the course.

**Tentative schedule:** The plan will be to cover chapters 2 through 5 of the textbook in 15 weeks. The topics are limits, derivatives, graphing and optimization, and finally basic integration, spanning the corresponding chapters respectively. A course calendar for each day is available in another document on Blackboard.

**Random Thoughts Regards Math and Mathematical Pedagogy:** As a mathematician and not a trained math teacher as such, my sensibility regarding math pedagogy is somewhat different from what you might be used to. I want to share some ideas by means of explaining the age old question to math teachers everywhere "why are we doing this?"

Beginning with the most concrete ideas, math is language. It is a very specific kind of language in which only the truth can be said (e.g. "$2 + 2 = 4$" is math whereas "$2 + 2 = 5$" is not) but in practice the language of math is just shorthand since it is easier to write equations rather than explaining in ordinary parlance what you mean by something like $ax^2 + bx + c = 0$ every single time you mention it. Math is very precise but also very limited.

In this way math is a skill, and like any skill the only way to learn is to practice. It is very easy to watch someone do math, even sleep inducing, but with just a blank piece of paper and a math problem things can get tricky very fast. Please use this idea as a barometer for your understanding of math: if you can write down a problem and solve it without any kind of external help, then you have really learned something.

This all means it is imporant to practice regularly. While the typical mode of math teaching is for the teacher to write down facts and students to copy them, the real essence of the math experience is not these facts. In the words of the immortal warrior poet Don Quixote, "facts are the enemy of the truth." That said, lectures can still be alright since the energy exchance between speaker and audience is also good for building intuition (getting the vibe) of the math. This is enhanced even more by the familiar interaction of asking questions. Please always ask whatever questions you have whether in class or during office hours.

Math can be very satisfying. Learning anything feels good, but getting a 100% accurate, totally unambiguous and impossible to argue with answer to a question, especially one you have thought a lot about feels especially great. You are welcome to memorize your way through math class, that

is a totally valid and useful skill in its own right, but I hope we will also share some moments of common understanding of the beautiful ideas one can only express in math.