



Math 2300
Calculus I
Summer 2021
Number of Credit Hours: 4

Instructor: Dr Benjamin Levy
Office: The following Zoom link:
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Office Hours: TBD

OFFICIAL COURSE DESCRIPTION:

This course involves the study of the derivative of a function, methods of differentiation and applications, L'Hopital's Rule, integration of functions, the Fundamental Theorem of Calculus, and the substitution rule. Credit is awarded for only one of MATH 2100, MATH 2200, or MATH 2300 SMT Prerequisite: An 'advanced passing' score on Advanced Algebra and Functions Accuplacer placement exam OR a grade of 1.7 or higher in MATH 1300.

COURSE GOALS AND LEARNING OBJECTIVES:

Course Objectives / Understandings

Students will...

- Understand how to evaluate simple limits and how they are used to create derivatives
- Understand how to evaluate simple and complex derivatives
- Understand the relationship between the derivative and the function
- Understand how to use Calculus to analyze functions
- Consider some of the many applications of derivatives in answering real-world problems
- Improve their ability to convey mathematical material in a clear and concise way

Learning Outcomes:

Students will be able to...

- Evaluate limits using analytical techniques
- Calculate a derivative using the limit definition and the basic rules
- Apply information given by the derivative in numerous instances
- Use Calculus in different ways to solve real-world problems
- Calculate simple antiderivatives, including using the substitution method

INSTRUCTOR'S ATTENDANCE POLICY:

The class will mostly run asynchronously. Please attend office hours, review sessions, and extra help sessions as they are scheduled throughout the semester.

TEXTS:

Our text is APEX Calculus Version 3.0. A digital copy of this text is located on our blackboard site. Hard copies of the text are [available online at this website](#).

ASSESSMENTS/COURSE REQUIREMENTS:

Grades will be determined using the grading scale below. Your letter grade is a measure of your mastery of course material and your fulfillment of course objectives. Letter grades are not assigned on the basis of a curve or the class average. Your final grade will be calculated as follows:

Midterm	25%
Homework	25%
Quizzes	10%
Final Exam	40%
Total possible	100%

FINAL PROJECT/EXAM DESCRIPTION:

There will be a comprehensive final exam that takes place on the final day of class.

COURSE OUTLINE:

The specific schedule that we will follow will be updated closer to the start of the term. Below is a list of topics that we will cover, in the order that they will appear:

- 1) Limits
- 2) Continuity
- 3) The Intermediate Value Theorem
- 4) Infinite Limits
- 5) Rates of Change
- 6) The Limit Definition of Derivatives
- 7) Derivative Rules
- 8) Higher Order Derivatives
- 9) Finding Critical Points
- 10) The 1st and 2nd Derivative Tests
- 11) Concavity
- 12) Optimization
- 13) Implicit Differentiation
- 14) Related Rates and Newton's Method

- 15) L'Hopital's Rule
- 16) Riemann Sums
- 17) Antiderivatives and the Fundamental Theorem of Calculus
- 18) The Substitution Method
- 19) Integration by Parts (if time)

FITCHBURG STATE UNIVERSITY UNDERGRADUATE GRADING POLICY

<u>4.0</u>	<u>A</u>	<u>95 – 100</u>
<u>3.7</u>	<u>A-</u>	<u>92 – 94</u>
<u>3.5</u>	<u>A-/B+</u>	<u>89 - 91</u>
<u>3.3</u>	<u>B+</u>	<u>86 – 88</u>
<u>3.0</u>	<u>B</u>	<u>83 – 85</u>
<u>2.7</u>	<u>B-</u>	<u>80 – 82</u>
<u>2.5</u>	<u>B-/C+</u>	<u>77 – 79</u>
<u>2.3</u>	<u>C+</u>	<u>74 – 76</u>
<u>2.0</u>	<u>C</u>	<u>71 – 73</u>
<u>1.7</u>	<u>C-</u>	<u>69 – 70</u>
<u>1.5</u>	<u>C-/D+</u>	<u>67 – 68</u>
<u>1.3</u>	<u>D+</u>	<u>64 – 66</u>
<u>1.0</u>	<u>D</u>	<u>60 – 63</u>
<u>0.0</u>	<u>F</u>	<u>0 – 59</u>
-	<u>IN</u>	<u>Incomplete</u>
-	<u>IP</u>	<u>In Progress</u>
-	<u>W</u>	<u>Withdrawn</u>

CLASS POLICIES:

To help this feel like an in person course and make it personalized, I recorded my classes during the Spring 2021 semester. During these classes, I filled out class notes together with my students. This includes me explaining the material, writing notes on the pages, asking students to try problems themselves, and answering questions about the material as we go. You can therefore have a similar experience to being in a class by printing out the blank class notes and filling them out along with the videos. Blank course notes as well as those already completed are posted to blackboard.

I have structured the homework due dates in a way that spreads the material over the 5 weeks we have, leaving the final week to finish homework and prepare for the final exam. Following the suggested schedule posted on blackboard will be a rapid pace. Of course, you are welcome to go at a quicker pace. There is homework associated with each section that is due two days after the day I assign the video.

You are welcome to create a daily schedule that works for you. Here is what I suggest:

- Watch the video of the section assigned for the day (schedule and videos are on blackboard)
- Fill out the notes as you watch the video. Write down any questions you have as you go.
- Work on the homework related to the video you just watched. Doing this on the same day has several benefits including
 - The material being fresh in your mind
 - If you get stuck on a problem you can ask me about it before the assignment is due
 - You can spread the work for each assignment over a few days instead of scrambling to finish them the day they are due
- Seek help as needed
 - Extra help with me
 - Create a study group with each other
 - YouTube, khan academy, and other online resources
- Finish any homework related to sections from previous days

POLICY ON DISABILITY

If you need course adaptations or accommodations because of a disability, if you have emergency medication information, or if you need special arrangements in case the building must be evacuated, please make an appointment at the beginning of the course to talk with me. It is important that the issues relating to disabilities be discussed with me as soon as possible.

GRADE APPEAL

If you disagree with the evaluation of your work or believe an improper grade has been assigned, an appeal may be followed. Please discuss the matter with the instructor and refer to the Fitchburg State University Grade Appeal Policy in the university catalog.

ACADEMIC INTEGRITY POLICY

The faculty at Fitchburg State University require that work submitted in fulfillment of course requirements will be solely that of the individual candidate and all other sources will be cited appropriately. University Academic Integrity Policy, as outlined in the University Catalogue, will be strictly adhered to.

DISTANCE LEARNING & EXTENDED CAMPUS LIBRARY SERVICES

The Gallucci-Cirio Library at Fitchburg State University provides a full range of library services including borrowing privileges; document delivery (books and articles mailed to your home); Interlibrary Loan; reference assistance via: phone, email, IM, Blackboard's Collaboration and Elluminate tools, Skype and in-person; library instruction; research help and more. Any questions relating to library services should be directed to the Linda LeBlanc, Access Services Librarian, at 978-665-3062 or dllibrary@fitchburgstate.edu. There is also a special section for Distance Learning and Extended Campus Services at <http://fitchburgstate.libguides.com/dlservices> outlining the wide range of services available to you and how to access them.

NOTE: I reserve the right to adjust any of the information in this syllabus if needed.