

# University of Vermont

Math 19 Foundations of Calculus I Fall 2020

**Instructor Name:** Jesse Franklin

**Email:** jesse.franklin@uvm.edu

**Office Hours:** MWF during class, by appointment

**Office Location:** Innovation 324, but we will be having virtual office hours via Microsoft Teams

**Course Location and times:** MWF 14:20-15:10 L/L Commons 216

## Required Text(s)

Calculus for Business, Economics, Life Sciences and Social Sciences by Barnett, et al, 14<sup>th</sup> edition (Please note that you will want the MyMathLab access code that comes packaged with the textbook. You may wish to ONLY purchase the MyMathLab access code which includes an e-book or electronic version of the textbook)

## Course Description and Prerequisites

Fundamentals of Calculus I is the first course in a two course sequence. The underlying applications of differential calculus will be investigated (Chapters 2-5). This will include an understanding of functions, limits, continuity, rates of change, derivatives (including implicit), and derivative applications. The material will be discovered and shown via mathematical modeling of real world situations. An emphasis will be made to understand these new concepts graphically, numerically, verbally, and algebraically. The course work will involve some fairly intense computations and mathematical modeling, and it is required that students purchase or obtain an appropriate calculator. A TI-83/84 Graphing calculator is highly recommended, but a basic scientific calculator capable of performing exponential, logarithmic and trigonometric operations is adequate. Any calculators capable of performing symbolic algebra or calculus computations such as TI-89 are prohibited. Students will be allowed to use a calculator on all assignments, quizzes and tests, but please be aware that the instructor may ask for all work to be shown in order to receive credit.

## Course Goals

- Determine the appropriate mathematical approach for a given information need and use it correctly and accurately.
- Demonstrate an understanding of the fundamental aspect of differential calculus including functions, limits, derivatives and integrals.
- Recognize and apply the ideas of calculus in economics, business, physics, natural resources and other area of study.

## Course Structure/Modality

There are three parts to the course structure:

1. **Podcasts:** You are required to watch the podcasts for each section prior to attending the recitation for that section. The podcasts are where new content gets introduced and a couple of short examples are shown. You should watch it, take notes and formulate questions you might have to have ready for the recitation time. The schedule of which podcast to watch when will be listed at the end of the syllabus and also in the calendar on blackboard. There will be reminders as to which one you should be watching before class, but it is also your responsibility to keep up to date using the calendar. Should there be any changes to the schedule, a message will be sent out via the announcements section on Blackboard. The corresponding notes from these podcasts will also be posted on Blackboard.
2. **Recitations:** Our recitations will be taking place online via Microsoft Teams. During recitations we will be going through many practice problems and will have time to ask questions. If you need more time for questions you should contact me to set up a time or ask them during office hours. The recitations will be recorded and posted along with notes on Blackboard.
3. **MyMathLab:** This is where your homework and quizzes will be taking place. The assignments on here are supposed to correspond to and extend on the problems and concepts covered in recitations. If you have questions regarding the homework problems you can ask about them during recitations or office hours or set up a time to meet with me to discuss.

## Method of Evaluation

Homework - 15%

Quizzes - 15%

Exam1 – 17.5%

Exam 2- 17.5%

Exam 3- 17.5%

Exam 4 – 17.5%

### Homework (15%):

There will be a MyMathLab homework assignment that corresponds to each section covered through podcasts and recitations. Students must log on to the MyMathLab system through blackboard and complete the homework. There will be an approximate schedule of assignments on Blackboard, if you should miss a recitation class please check Blackboard for content covered and class notes then complete the assignment on MyMathLab. In MyMathLab you will be given 3 attempts to answer each question and you are able to use the book and the aids which MyMathLab provides to help solve the problems. The lowest 2 MyMathLab assignments will be dropped at the end of the semester.

### **Quizzes (15%):**

There will be a quiz every week unless there is an exam that week. Quizzes will be given in MyMathLab. You will be given 2 tries on each quiz. The quiz will cover the materials from previous lectures and homework's, so please be sure to keep up with all materials. After the last quiz has been given I will drop the lowest 2 quiz grades.

### **Exams (17.5% Each):**

There will be four exams, one after each chapter. Each exam will be posted on blackboard and you will have a specified time limit to complete it on paper, and upload it in PDF form on Blackboard.

**\*NOTE\*If you miss a quiz or test, you will automatically be given a zero.**

**There will be NO make-up exams or quizzes except for unforeseen exceptional circumstances.**

### **The exams will cover material as follows:**

Exam 1: Chapter 2

Exam 2: Chapter 3

Exam 3: Chapter 4

Exam 4: Chapter 5

### **Policies**

Students are required to abide the Code of Academic Integrity. Any violation of the code will be handled according to UVM's current policies. The students have rights and responsibilities as defined in the Code of Student Rights and Responsibilities.

#### **Academic Assistance:**

Any student with documented learning disabilities who is eligible for accommodations must notify me if they wish to receive individual accommodations. Please contact the office of Academic Support for assistance with these accommodations.

#### **Attendance:**

In accordance with University Policy, I will allow for students to miss classes due to religious observances, varsity sporting matches or any other UVM Sanctioned Activity. All requests for missed classes should be submitted in writing to the instructor within the first two weeks of class.

#### **Late Work/Absences:**

If you miss a Quiz due to illness or a non-sanctioned UVM activity, it will count as one of your dropped quizzes. Remember that I will drop your two lowest grades for this very reason. If you miss a quiz for a UVM sanctioned event you must arrange the make-up date ahead of time and it must take place within

two class days of the missed quiz or exam. MyMathLab assignments submitted late will incur a penalty. The penalty for late MyMathLab assignments is stated on the specific assignment. Make-up tests will be given if an emergency arises.

**Final Grade Breakdown:**

Letter	Numerical	Letter	Numerical
<b>A+</b>	<b>98</b>	<b>C</b>	<b>74</b>
<b>A</b>	<b>94</b>	<b>C-</b>	<b>70</b>
<b>A-</b>	<b>90</b>	<b>D+</b>	<b>68</b>
<b>B+</b>	<b>88</b>	<b>D</b>	<b>64</b>
<b>B</b>	<b>84</b>	<b>D-</b>	<b>60</b>
<b>B-</b>	<b>80</b>	<b>F</b>	<b>Less than 60</b>
<b>C+</b>	<b>78</b>		

# Math 19 Fall 2020 Course Calendar

Week	Monday	Wednesday	Friday	Assignments Due Sunday at 11:59pm
1: August 31-September 4	Aug. 31 <sup>st</sup> Introduction and 2.1: Limits	Sept. 2 <sup>nd</sup> 2.1 and 2.2: Infinite limits, limits at infinity	Sept 4 <sup>th</sup> 2.2 Infinite limits and limits at infinity	Homeworks 1, 2 and Quiz 1: 2.1 and 2.2 Due: Sunday, September 6
2: September 7-September 11	Sept. 7 <sup>th</sup> NO CLASS	Sept. 9 <sup>th</sup> 2.3: Continuity	Sept. 11 <sup>th</sup> 2.4: The Derivative Quiz 2: 2.3 and 2.4	Homework 3 and 4 and quiz 2: 2.3 and 2.4 Due: Sunday September 13
3: September 14 <sup>th</sup> – September 18 <sup>th</sup>	Sept. 14 <sup>th</sup> 2.5: Basic Differentiation Properties	Sept. 16 <sup>th</sup> 2.6: Differentials	Sept. 18 <sup>th</sup> Exam 1 Review	Homeworks 5 and 6 and Exam 1 Due: Sunday, September 20 <sup>th</sup>
4: September 21 <sup>st</sup> -September 25 <sup>th</sup> .	Sept. 21 <sup>st</sup> 3.1: The constant e and Continuous Compound Interest	Sept. 23 <sup>rd</sup> 3.1 cont and 3.2: Derivatives of Exponential and Logarithmic Functions.	Sept. 25 <sup>th</sup> 3.2 Derivatives of Exponential and Logarithmic Functions	Homeworks 7 and 8 and Quiz 3: 3.1 and 3.2 Due: Sunday, September 27 <sup>th</sup>

5: September 28 <sup>th</sup> –October 2 <sup>nd</sup> .	Sept. 28 <sup>th</sup> 3.3: Product Rule	Sept. 30 <sup>th</sup> 3.3 Product and Quotient Rules	Oct. 2 <sup>nd</sup> 3.3 Quotient Rule	Homeworks 9 and 10 and Quiz 4: 3.3 Due: Sunday Oct. 4 <sup>th</sup> .
6: October 5 <sup>th</sup> –9 <sup>th</sup> .	Oct. 5 <sup>th</sup> 3.4: The Chain Rule	Oct. 7 <sup>th</sup> 3.4: The Chain Rule 3.5: Implicit Differentiation	Oct. 9 <sup>th</sup> . 3.5: Implicit Differentiation	Homeworks 11 and 12 and Quiz 5 3.4 and 3.5 Due: Sunday Oct. 11 <sup>th</sup> .
7: October 12 <sup>th</sup> – 16 <sup>th</sup>	Oct. 12 <sup>th</sup> 3.6: Related Rates	Oct. 14 <sup>th</sup> 3.6: Related Rates	Oct. 16 <sup>th</sup> Exam 2 Review	Homeworks 13 and Exam 2 Due: Sunday Oct. 18 <sup>th</sup> .
8: October 19 <sup>th</sup> – 23 <sup>rd</sup>	Oct. 19 <sup>th</sup> 4.1: First Derivative and Graphs	Oct. 21 <sup>st</sup> 4.1: First Derivative and Graphs and 4.2: Second Derivative and Graphs	Oct. 23 <sup>rd</sup> 4.2: Second Derivative and Graphs	Homeworks 14 and 15 and Quiz 6: 4.1 and 4.2 Due: Sunday Oct. 25 <sup>th</sup> .
9: October 26 <sup>th</sup> –30 <sup>th</sup>	Oct. 26 <sup>th</sup> 4.3: L'Hopital's Rule	Oct. 28 <sup>th</sup> 4.3: L'Hopital's Rule and 4.4: Curve Sketching Techniques	Oct. 30 <sup>th</sup> 4.4: Curve Sketching Techniques	Homeworks 16 and 17 and Quiz 7: 4.3 and 4.4 Due: Sunday Nov. 1 <sup>st</sup> .
10: November 2 <sup>nd</sup> –6 <sup>th</sup>	Nov. 2 <sup>nd</sup> 4.5: Absolute Maxima and Minima	Nov. 4 <sup>th</sup> 4.6: Optimization	Nov. 6 <sup>th</sup> Exam 3 Review	Homeworks 18 and 19 and Exam 3 Due: Sunday Nov 8 <sup>th</sup> .
11: November 9 <sup>th</sup> –13 <sup>th</sup>	Nov. 9 <sup>th</sup> 5.1: Antiderivatives and Indefinite Integrals	Nov. 11 <sup>th</sup> 5.1: Antiderivatives and Indefinite Integrals 5.2: Integration by Substitution	Nov. 13 <sup>th</sup> 5.2: Integration by Substitution	Homeworks 20 and 21 and Quiz 8: 5.1 and 5.2 Due: Sunday, Nov 15 <sup>th</sup> .
12: November 16 <sup>th</sup> –20 <sup>th</sup>	Nov. 16 <sup>th</sup> 5.2: Integration by Substitution	Nov. 18 <sup>th</sup> 5.3: Differential Equations; Growth and Decay	Nov. 20 <sup>th</sup> 5.3: Differential Equations; Growth and Decay	Homeworks 22 and 23 and Quiz 9: 5.2 and 5.3 Due: Sunday, Nov. 22 <sup>nd</sup> .

13: November 23 <sup>rd</sup> -27 <sup>th</sup>	Nov. 23 <sup>rd</sup> 5.4: The Definite Integral	Thanksgiving Break NO CLASS	Thanksgiving Break NO CLASS	Homework 24 Due Sunday, Nov. 29 <sup>th</sup>
14: November 30 <sup>th</sup> – December 4 <sup>th</sup>	Nov. 30 <sup>th</sup> 5.5: The Fundamental Theorem of Calculus	Dec. 2 <sup>nd</sup> 5.5: The Fundamental Theorem of Calculus	Dec. 4 <sup>th</sup> Exam 4 Review(Final Exam Review)	Homework 25 Due Sunday, Dec. 6 <sup>th</sup> .
15: December 7 <sup>th</sup> - 11 <sup>th</sup>	Exam 4 Due Friday December 11 <sup>th</sup> 3pm.			

Before Class:	During Class:	After Class:
<ul style="list-style-type: none"> <li>• Watch lecture video</li> <li>• Go through posted notes.</li> <li>• Make a list of questions to ask during class.</li> </ul>	<ul style="list-style-type: none"> <li>• Ask any questions you might have.</li> <li>• Be an active participant in doing practice problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Complete the assigned homework on MyMathLab before the next class.</li> <li>• Complete the quiz for the week on MyMathLab</li> </ul>

**Other important dates:**

- **September 4<sup>th</sup>, Last day to add courses**
- **September 14<sup>th</sup> Last day to add/drop, Audit deadline**
- **October 29<sup>th</sup> Last day to withdraw**