# Mathematics MAT 201 : Calculus I Spring 2015 TR 2:30 - 3:45 p.m., Hubbard 210

Instructor: Dr. Brad Emmons Office: Faculty Center 203 Telephone: 792-3413 (Don't leave voicemail!) Office Hours: M 2:00 - 4:00, TR 10:00 - 11:30, or by appointment Email: bemmons@utica.edu Homepage: http://www.utica.edu/faculty\_staff/bemmons

## **Course Materials**

Calculus, Early Transcendental Functions, 6th edition, by Larson and Edwards (required)

#### Introduction

You are among a select group of very lucky individuals! Calculus, independently and simultaneously discovered by Leibnitz and Newton, is one of the major crowning achievements in 17th century mathematics. Calculus is a branch of mathematics which studies how things change relative to one another. In particular, how things change with respect to time. Through analyzing some basic concepts in depth, we will develop some rather clever techniques for calculation. These techniques can be brought into fruition by attacking real world problems.

In this course we will start out by reviewing some concepts of Algebra. Then we will cover limits and continuity, differentiation, rates of change, and related rates. We will focus on the theory of the subject, as well as some of the more interesting applications.

## Exams

There will be two in-class exams, as well as a final cumulative exam. The exams will test your ability to work through some of the computations, as well as your ability to apply the techniques to certain applications. The first exam is scheduled for Thursday, February 19, and the second exam is scheduled for Thursday, April 2. The final exam will be held on Saturday, May 6 from 3:00 - 6:00 p.m.. Each exam will count for 25 percent of your final grade. There will be NO make-ups for missed exams. Please look over your schedule as soon as possible. If you see a potential conflict, inform me immediately.

## Homework

The best way to learn Mathematics is to solve problems. At the end of each section, there are a variety of exercises that you can look at to help understand concepts and hone your skills. I will suggest problems for you to attempt from the end of the section, but I will not grade these. Instead, I will assign weekly problem sheets that will be collected and graded. These problems will be more in-depth than the drill-type activities and will require more exposition on your part. You will be graded on content, organization and completion of the assignments. In addition to the graded problems, each assignment will carry 5 completion points. To earn 5 out of 5 of the completion points, the assignment must be written up neatly and thoroughly with complete solutions to all of the assignments. The homework is designed to help you identify where you might have difficulties. If you encounter any trouble with an assignment or a concept, seek help!

# Attendance

Attendance in MAT 201 is extremely important. Although there is no official attendance policy, I strongly suggest that you do not miss any classes unnecessarily. On the occasion that you cannot make it to class, it is your responsibility to get the assignment due that day to me on time and to catch up on any work that you missed. Also, I will ask that you please try to be in class at 2:30 p.m. and ready to start class.

## **Derivatives Proficiency Exams**

In order to pass the course, you must pass the Derivatives Proficiency Exam (DPE). The exam will consist of 20 basic questions, and in order to pass the exam, you must get 18 questions correct. The DPE consists of basic questions such as, find the derivative of  $\sin 3x$ . Don't worry just yet. We will learn how to do these types of problems in due coruse. You will have three attempts on the exam, and the exam will be graded Pass/Fail. You are responsible for scheduling a time to take the exam when you feel you are ready, either during office hours, or at another time.

# Grading

Your grade in this course will be based on two main factors: homework and exams. The homework will be worth 25% of your final grade, and the exams 75%. In addition to these factors, minor ethereal factors such attendance, class participation, attitude, and improvement over the course of the semester can also affect your grade. To determine your final grade, 90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D, 59 and below = F, with the top two percents receiving a + and the bottom two percents receiving a -.

# Calculators

The use of calculators will not be allowed on any quizzes or exams. None of the work will require any sophisticated computations. You may use a calculator when working on your homework to check your work. However, since will not be allowed to use it on the exam, I suggest you do as much work without your calculator as possible.

# Special Needs

If you have a disability for which you are requesting an accommodation, you are encouraged to contact both your instructor and Academic Support Services, 315-792-3032 or khenkel@utica.edu.

Any student who has need of special adaptations or accommodations due to documented learning or physical disabilities should notify me within the first two weeks of class. Instructors, Academic Support Services, and other appropriate counselors will work with you to adapt and accommodate your special needs. Every effort will be made to help you master the course content in an effective and appropriate way.

# Intellectual Honesty

Academic honesty is necessary for the free exchange of ideas and Utica College expects academic honesty from all students.

Academic dishonesty includes both cheating and plagiarism. Plagiarism is the intentional or unintentional use of other peoples ideas, words, and/or factual information without crediting the source. Cheating refers to both the giving and the receiving of unauthorized assistance in the taking of examinations or in the creation of assigned and/or graded class work.

Utica College faculty are authorized to assign a wide range of academic penalties for incidents of academic dishonesty. Depending on the nature of the offense, the penalty may include a reduced grade for the particular assignment or course, a grade of F for the course, or the grade of F for cheating on the course.

Incidents of academic dishonesty are reported to the Vice President for Academic Affairs who will refer any repeat offense, or any particularly egregious first offence, to the Academic Standards Committee which may recommend a more severe penalty than that imposed by the faculty member.

## **Important Dates**

Thursday, February 19 – Exam I Monday, March 16 - Friday, March 20 – Spring Break (no class) Thursday, April<br/> 2 – Exam I Tuesday, May 5 – Last Day of Classes<br/> Saturday, May 6, 3:00 p.m. - 6:00 p.m. – Final Exam

## Suggestions

Come to class with your homework assignment completed every day Study for at least 30 minutes each day in addition to completing your homework assignment Read the section we will be covering *before* we cover it in class Do not fall behind! Come to office hours to discuss homework and concepts. I am here to help!

Syllabus MAT 201 : Calculus I Term : Spring 2015

Week 1	January 22	Course Policies, Syllabus, Section 1.1
Week 2	January 27 January 29	Section 1.2 – Linear Models and Rates of Change Section $1.3$ – Functions and Their Graphs
Week 3	February 3 February 5	Section 1.5 – Inverse Functions Section 1.6 – Exponential and Logarithmic Functions
Week 4	February 10 February 12	Section 2.1 – A Preview of Calculus Section 2.2 – Finding Limits Graphically and Numerically
Week 5	February 17 February 19	Section 2.3 – Evaluating Limits Analytically Exam I
Week 6	February 24 February 26	Section 2.4 – Continuity and One-Sided Limits Section 2.5 – Infinite Limits
Week 7	March 3 March 5	Section 3.1 – The Derivative and the Tangent Line Problem Section $3.2$ – Basic Differentiation Rules and rates of Change
Week 8	March 10 March 12	Section 3.3 – Product and Quotient Rules and Higher-Order Derivatives Section 3.4 – The Chain Rule
Week 9	March 17 March 19	NO CLASS NO CLASS
Week 10	March 24 March 26	Section 3.5 – Implicit Differentiation Section 3.6 –Derivatives of Inverse Functions
Week 11	March 31 April 2	Section 3.7 – Related Rates Exam II
Week 12	April 7 April 9	Section 3.8 – Newton's Method Section 4.1 – Extrema on an Interval
Week 13	April 14 April 16	Section 4.2 – Rolle's Theorem and the Mean Value Theorem Section 4.3 – Increasing and Decreasing Functions and First Derivative Test
Week 14	April 21 April 23	Section 4.4 – Concavity and the Second Derivative Test Section 4.5 – Limits at Infinity
Week 15	April 28 April 30	Section 4.6 – A Summary of Curve Sketching Section 4.7 – Optimization Problems
Week 16	May 5	Section 4.8 – Differentials