MAT 301 : Calculus III
Fall 2013
MF 12:30 pm - 1:45 pm, Hubbard 218

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Course Materials

Calculus, by Larson and Edwards, Fifth Edition (required)

Introduction

In this course, mathematics begins. While the first two semesters of Calculus gave you a nice introduction to the limit, the derivative, and the anti-derivative, in this course we will attempt to introduce a higher level of rigor. As you know, the introduction of these concepts enhanced our understanding of the universe and motion. And you have perhaps been exposed to applications of calculus to economics, the social sciences, computer science, or other disciplines. But what exactly is the nature of a limit? Were we careful enough in our treatment of it in Calculus I? We will begin the semester by investigating limits of sequences and series, and learn some cool things along the way.

After that we will begin our study calculus in higher dimensions. The calculus that you have been exposed to so far has dealt with functions of one variable. But for most phenomena in nature there are several variables at work. For instance, can you think of what variables might come into play when you are considering what temperature it is outside? What does the derivative mean now in this case? Can we integrate a function of several variables? We will explore these questions over the next two semesters.

Exams

There will be two in-class exams as well as a final cumulative exam. The exams will test your understanding of concepts, 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 Friday, September 27, the second exam is scheduled for Friday, November 1. The final exam will be held on Thursday, December 12 from 1:00 - 4:00 p.m. All exams 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 assigned problems. Late homework will not be graded, but you may still earn completion points on late 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 301 is extremely important. Although there is no official attendance policy, note that if you are not in class on a particular day, your homework will not be graded for a score. I will also require that you be in class at 12:30 and no later. If you are late to class, you may stay to enjoy the wonderful learning experience. However, your homework assignment for the day will be considered late.

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 −.

Important Dates

Friday, September 27 – Exam I
Monday, October 14 – Fall Break
Friday, November 1 – Exam II
Wednesday, November 27 - Sunday, December 1 – Thanksgiving Break
Monday, December 9 – Last Day of Classes
Wednesday, December 12, 1:00 p.m. - 4:00 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 in class *before* arriving to class
Do not fall behind!
Come to office hours to discuss homework and concepts. I am here to help!

Syllabus
MAT 301 : Calculus III
Fall 2013

Week 1	August 30	Course Policies, Syllabus, Section 9.1
		Section 9.2 – Series and Convergence
Week 2	September 2	Section 9.3 – Integral Test and p-series
	September 6	Section 9.4 – Comparisons of Series
Week 3	September 9	Section 9.5 – Alternating Series
		Section 9.6 – Ratio and Root Test
	September 13	Section 9.7 – Taylor Polynomials and Approximations
Week 4	September 16	Section 9.8 – Power Series
	September 20	Section 9.9 – Representation of Functions by Power Series
Week 5	September 23	Section 9.10 – Taylor and Maclaurin Series
	September 27	**Exam I**
Week 6	September 30	Section 10.1 –Conics and Calculus
	October 4	Section 10.2 – Plane cuves and Parametric Equations
Week 7	October 7	Section 10.3 – Paramatric Equations and Calculus
	October 11	Section 10.4 – Polar Coordinates and Polar Graphs
Week 8	October 14	`NO CLASS`
	October 18	Section 10.5 – Area and Arc Length in Polar Coordinates
Week 9	October 21	Section 10.6 – Polar Equations of Conics and Kepler's Laws
	October 25	Section 11.1 – Vectors in the Plane
Week 10	October 28	Section 11.2 – Space Coordinates and Vectors in Space
	November 1	**Exam II**
Week 11	November 4	Section 11.3 – Dot Product of Two Vectors
	November 8	Section 11.4 –Cross Product of Two Vectors in Space
Week 12	November 11	Section 11.5– Lines and Planes in Space
	November 15	Section 11.6 – Surfaces in Space
Week 13	November 18	Section 11.7 – Cylindrical and Spherical Coordinates
	November 22	Section 12.1 – Vector-Valued Functions
Week 14	November 25	Section 12.2 – Differentiation and Integration of VVF
	November 29	`NO CLASS`
Week 15	December 2	Section 12.3 – Velocity and Acceleration
	December 6	Section 12.4 – Tangent Vectors and Normal Vectors
Week 16	December 10	Section 12.5 – Arc Length and Curvature