

## MTH U131 (Calculus for Business and Economics) Fall 2006

**Instructor :** Shih-Wei Yang

**Contact Info. :**

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Office Hours: TBA and by appointment.

**Lecture :** Mon., Wed., Thurs. 4:35 PM - 5:40 PM at 130 FR

**Materials :**

1. Text Book : *Calculus Concepts (Brief Third Edition): An Informal Approach to the Mathematics of Change* by LaTorre, Kenelly, Fetta, Harris, Carpenter, Houghton Mifflin, Boston, 2005.

2. Calculator : The TI-83 (or TI-83 Plus) or TI-84 calculator is required. No other calculator may be used on tests or the project without the explicit permission of your instructor.

3. Packet : A class packet (for Fall 2006) must also be purchased from NU Reprographics (x2766).

Please bring your textbook, packet and calculator to each class.

**Course Code (for Eduspace):** YANGZ-1C94BE7F4328C8

### Course Content

This course introduces students to the use of derivatives and integrals in solving problems in business and economics, e.g., maximizing profit, calculating average investment income and consumers' surplus. (A more detailed syllabus is given below.) A project involving optimization is also required. This project is described in the class packet. The graphing calculator is used extensively and prior familiarity with graphing calculators is helpful. Prerequisites: MTH U130 or the equivalent. Note that MTH U131 may be used to satisfy the mathematics proficiency requirement of the College of Arts and Sciences.

### Assignments

A list of homework exercises from the textbook and class packet is attached. (This list is subject to revision.). Homework exercises should be done by the next class after they are assigned. Homework exercises from the textbook will not be collected. Even if they are not collected, you are responsible for knowing the solutions of all homework exercises. The questions on exams and quizzes will be based on homework exercises, quiz and test review exercises in the packet and the material in my lectures. There will also be a set of homework exercises posted on the web site. Due dates for these exercises will be announced in the first week of classes.

### Attendance

You are expected in class each day. If for some reason, you are unable to come to a class, then (if possible) please send an e-mail to let me know. Three or more unexplained absences will lower your final grade.

### Exams

There will be 6 or 7 quizzes (20-30 minutes each), 1 hour test (the midterm), and a 2 hour final exam. (Only the best 5 quiz grades including the web homework grade will be counted.) The final exam will count 40% of your course grade. All students without legitimate conflicts approved by the instructor will take the final exam on 4/25/2006 at 3:30 PM. The final exam is cumulative and is common for all sections of MTH U131. The date of the MTH U131 final exam is Wednesday, December 13, 2006 at 10:30 AM. Do not make travel plans that conflict with the final exam.

## Grading

Your final grade will be determined by the following quantities:

Web Assignments (5%), quiz grades (25%); midterm grade (15%); project grade (15%); and final exam score (40%).

The last day to drop a course without receiving a "W" grade is January 27th. The last date to drop a class with a "W" is March 31st. As a matter of Math Department policy: The I grade (incomplete) will be given only rarely. It is intended to cover real emergency situations in which a student who is doing reasonably well (C- or better) is unable, due to circumstances beyond the student's control, to complete all course requirements (e.g., is unable to take the final exam due to hospitalization). An I may not be used to rescue a failing grade, or to postpone the final.

## Academic Honesty

Cheating will not be tolerated. All incidents of cheating will be reported to the Office of Judicial Affairs. The University's cheating policy and related disciplinary actions are detailed in the Student Handbook.

## Tutoring

There is a free math tutoring center located in the math department on the 5th floor of Nightingale Hall (540B NI). Tutoring will start at Sep. 18. Tutoring hours are

Monday - Wednesday 10:00 AM - 9:00 PM,  
Thursday 10:00 AM - 6:00 PM,  
Friday 10:00 AM - 1:00 PM.

All tutoring is done on a first come first served basis. Students must come in person to schedule appointments. No appointments can be made by phone. Keep in mind: *Students go to the tutoring center for help in a dozen different courses and the tutors are not meant to be experts in all of them. The better prepared you are with a specific question, the better able the tutor will be able to help you. Not all tutors are familiar with the TI-83. If you have problems with the calculator, have someone such as me or another instructor help you before you go to the tutoring center.*

## Resolving disputes and complaints

If you are not satisfied with my responses to your serious concerns (including your final course grade), please consult the vice chairman of the math department, Professor Stanley Eigen, 526 LA, x5647, e-mail: [s.eigen@neu.edu](mailto:s.eigen@neu.edu).

Note that the syllabus is tentative. The instructor reserves the right to make changes if necessary. It is the responsibility of each student to stay abreast of what happens in the classroom, changes in the assigned exercises and changes in the dates of quizzes or exams. All students should consult the Eduspace site for this course regularly.

Table 1: MTHU131 Spring 2006 Schedule

<b>Date</b>	<b>Contact</b>	<b>Homework</b>
9/6	<b>3.1:</b> average rate of change.	13ab, 17, 26a. Read project description in packet.
9/7	<b>3.1.</b> Using the TI-83.	12, 13d, 14. Packet Model Review problems 1, 2.
9/11	<b>3.2:</b> Inst. Rate of change. <b>3.3:</b> Derivatives.	<b>3.2:</b> 7a, 8, 10, 17, 21, 22; <b>3.3:</b> 2, 5, 13.
9/13	<b>4.1:</b> slope graph; <b>4.2:</b> Deriv. Rules.	Packet Algebra Review Problem 1-5.
9/14	<b>QUIZ 1;</b> <b>4.3:</b> More Deriv. Rules.	<b>4.2:</b> 1-6 (Slope equations only), 7-14.
9/18	<b>4.2;</b> <b>4.3.</b>	<b>4.3:</b> 1-6 (Slope equations only), 7-14.
9/20	<b>Project Part A Due;</b> <b>4.4:</b> chain rule.	9, 10, 14.
9/21	<b>QUIZ 2;</b> <b>4.4.</b>	17-26.
(9/22	Last day to drop a course without receiving a "W" grade.)	
9/25	<b>4.4</b>	27-37.
9/27	<b>4.5:</b> Product Rule.	10-26.
9/28	<b>4.2 :</b> Applications, <b>4.3:</b> Applications.; Using nDeriv on the TI-83.	21ab, 24, 26.
10/2	<b>4.4</b>	16abc, 22, 23abc; packet Compound Interest Review Problems: 1, 2.
10/4	<b>QUIZ 3;</b> <b>4.4:</b> Applications.	41 (ignore per cent rate of change), 42a, 44.
10/5	<b>Project Part B Due;</b> <b>4.5:</b> Applications.	4, 28, 30abcde.
10/9	Columbus Day - NO Classes.	
10/11	<b>5.1:</b> Approximating change, Marginal Revenue, Marginal Cost, Marginal Profit.	3, 5, 6, 17abc, 18abc, 19abc, 20ab packet Algebra Review Problems 6-12.
10/12	<b>5.2:</b> Optimization.	packet Optimization problems 1-10.
10/16	<b>5.2</b> (using calculator).	17a, 24, 25 (like project optimization), 29.
10/18	Midterm Review.	
10/19	<b>MIDTERM.</b>	
10/23	<b>Project Part C Due;</b> <b>5.3:</b> Second derivative, Inflection Points, Notes on Optimization (class packet).	2, 29; packet Optimization problems 11-14.
10/25	Finding inf. pts. using the TI-83 (class packet).	<b>5.3:</b> 7, 9, 14, 20.
10/26	<b>6.4:</b> Antiderivatives.	packet Anti-derivative problems 1-5.
10/30	<b>QUIZ 4.</b>	
11/1	<b>Project Part D Due;</b> <b>6.4:</b> Antiderivatives.	
11/2	<b>6.4:</b> Antiderivatives.	<b>6.4:</b> 9-14.
11/6	<b>6.4:</b> The general antiderivatives, Finding a specific antiderivative.	<b>6.4:</b> 15-17; packet Antiderivative problems 6-10.
11/8	<b>QUIZ 5;</b> <b>Project Part E Due.</b>	<b>6.4:</b> 19-21
11/9	<b>6.4:</b> Word Problem; <b>6.1:</b> Accumulated change; Area approximation.	<b>6.4:</b> 26, 27, 33; <b>6.5</b> 8ac, 13a, 18ab.
11/13	PROJECT PRESENTATION.	
11/15	PROJECT PRESENTATION.	
11/16	<b>6.2:</b> The definite integral;	1, 4.
(11/17	Last day to drop a course with a "W" grade.)	
11/20	<b>QUIZ 6;</b> <b>6.4:</b> Fundamental Theorem of Calculus.	1-4.
11/22	<b>6.5:</b> Evaluating definite integrals using FTC.	<b>6.5:</b> 8c, 9c, 10c, 11c; packet Additional Definite integral problems.
11/23	Thanksgiving - NO Classes.	

*Continued on next page*

<b>Date</b>	<b>Contact</b>	<b>Homework</b>
11/27	<b>6.5:</b> Setting up interpreting definite integrals; Using fnInt on the TI-83; <b>6.6:</b> Average value of a function.	<b>6.5:</b> 13, 15, 21, 23; <b>6.6:</b> 2, 5, 10.
11/29	Consumers' Surplus (see packet notes)	<b>7.3:</b> 8cd (use $p_1 = \$555$ ); 9cd (use $p_1 = \$4000$ )
11/30	QUIZ 7, (if required)	
12/4	Review for Final Exam.	
12/7	Reading Day.	