

MTH U131 (Calculus for Business and Economics) Fall 2005

Instructor: Anthony Cutler (Math Department)
Room: 541 Nightingale Hall, x5534
E-mail: amcutler@msn.com
Office Hours: Thurs. 2:50-3:55 PM, and **by appointment**.

Lectures: **Mon., Wed., Thurs. 4:35-5:40 PM, 151 FR**

Materials: *Calculus Concepts (Brief Third Edition): An Informal Approach to the Mathematics of Change* by LaTorre, Kenelly, Fetta, Harris, Carpenter, Houghton Mifflin, Boston, 2005;
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.** A class packet (for Fall 2005) must also be purchased from NU Reprographics (x2766).
Please bring your textbook, packet and calculator to each class.

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 **may** occasionally be collected and graded. 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. The entire set of web homework exercises will count as one quiz. The web homework will use the 'eduspace' booklet that comes with the textbook.

Attendance

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

Exams

There will be 5 quizzes (20-30 minutes each), the midterm exam (1 hour), the final exam (2 hours), all of which will be taken in class, and the web homework. Only the best 5 quiz grades including the web homework grade will be counted. Near the end of the semester (on December 1 or 5) there will be an opportunity to make up the midterm, provided you don't have too many unexplained absences. Details will be given later. The final exam will count 40% of your course grade. **All students without legitimate conflicts approved by the instructor will take the final exam at the scheduled time:** TBA, between 12/12 and 12/16. The final exam is cumulative and is common for all sections of MTH U131. **Do not make travel plans that conflict with the final exam**

Grading

Your final grade will be determined by the following quantities: quiz grades (30%); midterm grade (15%); project grade (15%); and final exam score (40%).

The last day to drop a course without receiving a 'W' grade is September 23. The last date to drop a class with a 'W' is November 18. 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.

If you want to see me, but cannot do so during my office hours, then please see me before or after any class to set up a convenient time. Also, please take advantage of the office hours of the other instructors in the course when they are more convenient.

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: The Mathematics Department has a free tutoring center on a walk-in basis in 540B Nightingale Hall. The tentative schedule is 10am-8pm Mon, Tues, Wed; 10-6 on Thurs; and 10-2 on Fri. Dr. Arshak Grigoryan will be tutoring there specifically for U131 on Tues and Thurs 12-5.

Additionally, the Media Center in Snell Library has a list tutors available for free one-on-one tutoring. Tutoring is also often available in Room 222, Snell Engineering, on a walk-in basis, M-F 8:30 to 4:30.

Resolving disputes and complaints: If you are not satisfied with my responses to your serious concerns (including your final course grade), please consult the coordinator of the MTH U131 course, Dr. Rekha Bai, 541 LA, x5640, e-mail: r.bai@neu.edu.

Note that the syllabus below 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 Blackboard site for this course regularly.

MTH U131	Schedule	Fall 2005
9/7: 3.1: average rate of change		HW: 11,13a-c,17,18, 26a. Read project description in packet
9/8: 3.1 Using the TI-83		HW: 12,13d,14; packet Model Review probs 1,2
9/12: 3.2; 3.3: derivatives		HW: 3.2: 7a,8,9b,10, 17, 21, 22; 3.3: 2,4,5,13,15 3.4:1a
9/14: 4.1: slope graphs; 4.2: Deriv. Rules		HW: 4.1:1-10 (discussion only, no graphs needed),21abd; packet Algebra Review Probs.1-5
9/15: QUIZ 1 ; 4.3: More Deriv.Rules		HW: 4.2: 1-6(slope equations only), 7-14 4.3: 1-6(slope equations only), 7-14
9/19: 4.2; 4.3		
9/21: 4.4: chain rule PROJECT PART A DUE		
9/22: QUIZ 2		HW: 4.4: 9,10,14, 17-26
(9/23: Last day to drop a course without receiving a "W" grade)		
9/26: 4.4: chain rule		HW: 27-37
9/28: 4.5: product rule		HW: 10-26
9/29: 4.2 ,4.3 (word problems) Using nDeriv on the TI-83		HW: 4.2: 23-27; packet Compound Interest Review Probs: 1,2
10/3: 4.4 (word problems)		HW: 4.3:16, 22, 23abc
10/5: QUIZ 3 ; 4.4 (word problems)		HW: 41(ignore per cent rate of change),42a,45a,48
10/6 4.5 (word problems) PROJECT PART B DUE		HW: 4, 28,30abcde
10/10: Columbus Day – No Classes		
10/12: 5.1: Approximating change $f(x+h)-f(x) \approx f'(x)h$ Marginal Revenue, Marginal Cost, Marginal Profit		HW: 3,5,6, 17abc, 18abc, 19abc, 20ab packet Algebra Review Probs 6-12
10/13: 5.2: Optimization		HW: packet Optimization problems 1-10

10/17: 5.2 (using calculator) HW: 17a, 24

10/19: Midterm Review

10/20: **MIDTERM**

10/24: 5.2 HW: 25 (like project optimization); 29
 5.3: Second derivative, Inflection Points; HW: 2, 29
 Point of diminishing returns
 Notes on Optimization (class packet) HW: packet Optimization problems 11-14

MTH U131 Schedule **Spring 2005**

PROJECT PART C DUE on 10/24

10/26: Finding inf. pts using the TI-83 (class packet) HW: 5.3: 7, 9, 14 (ignore per cent rate of change), 20

10/27: Antiderivatives
 Project group meetings on parts C and D
(Bring projects to class)

10/31: **QUIZ 4**

11/2: 6.4: Antiderivatives HW: packet Anti-derivative problems 1-5
PROJECT PART D DUE

11/3: 6.4: Antiderivatives HW: 6.4: 9-14

11/7: 6.4: The general antiderivative HW: packet Antiderivative problems 6-10
 Finding a specific antiderivative HW: 6.4: 15, 17

11/9: **QUIZ 5** HW: 6.4: 19-21
PROJECT PART E DUE

11/10: 6.4: Word problems HW: 26, 27, 33
 6.1: Accumulated change HW: 8a, 13a, 18ab
 Area approximation

11/14: **PROJECT PRESENTATION**

11/16: **PROJECT PRESENTATION**

11/17: 6.2: The definite integral HW: 1, 4

(11/18: Last day to drop a course with a "W" grade.)

11/21: **QUIZ 6**
 6.4: Fundamental Theorem of Calculus HW: 1-4

11/23: 6.5 HW: 8c, 9c, 10, 11c
 Evaluating definite integrals using FTC packet Additional Definite integral problems 1-7

11/24: Thanksgiving – No classes

- 11/28: 6.5: Setting up, interpreting definite integrals
Using fnInt on the TI-83
6.6: Average value of a function
Sign up for Makeup Midterm
- HW: 13,15,21,23
- HW: 2,5,10
- 11/30: Consumers' Surplus (see packet notes)
HW: 7.3: 8cd(use $p_1=\$555$); 9cd(use $p_1=\$4000$)
(For meaning of p_1 see packet notes on Consumers' Surplus)
- 12/1 **MakeUp Midterm (check date with instructor)**
- 12/5 Review for Final Exam
- 12/7 Review for Final Exam