

MTH U131 (Calculus for Business and Economics) Summer 2005

Instructor: Anthony Cutler (Math Department)
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Office Hours: Mon. 1:35-2:40 PM, and **by appointment.**

Lectures: **Mon., Tues., Wed., Thurs. 3:20-5:00 PM, 215 SH**

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 without the explicit permission of your instructor. **Please bring your textbook and calculator to each class.** A class packet (for Summer 2005) must also be purchased from NU Reprographics (x2766).

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 income streams 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 are due at the next class after they are assigned. Homework exercises will not be collected or graded. But 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.

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 weekly quizzes (20-30 minutes each), 1 hour test (the midterm), and a final exam. The lowest quiz grade will be dropped. 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 on June 20 or 21. **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%).

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.

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 at 102 Cahners Hall, 110 The Fenway, extension 2328. 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. Tutoring hours are Monday-Wednesday 9:15 AM-8 PM, Thursday 9:15 AM-4 PM.

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 Donald King, 447 LA, x5679, e-mail: donking@neu.edu.

Note that the syllabus that follows is tentative. The instructor reserves the right to make changes to this syllabus 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.

3.1: average rate of change	HW: 11,13a-c,17,18, 26a. Read project description in packet
3.1 Using the TI-83	HW: 12,13d,14; packet Model Review probs 1,2
3.2: Inst. Rate of Change 3.3: Derivatives	HW: 3.2: 7a,8,9b,10, 17, 21, 22; 3.3: 2,4,5,13,15 3.4:1a
4.1: slope graphs; 4.2: Deriv. Rules	HW: 3.4:1-10,21; packet Algebra Review Probs.1-5
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
4.2; 4.3	
4.4: chain rule PROJECT PART A DUE	
QUIZ 2	HW: 4.4: 9,10, 14 17-26
4.4: chain rule	HW: 27-37
4.5: product rule	HW: 10-26
4.2 ,4.3 (word problems) Using nDeriv on TI-83	HW: 4.2: 23-27; 4.3: 16,22,23 packet Compound Interest Review Probs: 1,2
4.4 (word problems)	HW: 4.3:16, 22, 23
QUIZ 3; 4.4 (word problems)	HW: 41,42a,45a,48
4.5 (word problems) PROJECT PART B DUE	HW: 4, 28,30abcde
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
5.2: Optimization	HW: packet Optimization problems 1-10
5.2 (using calculator)	HW: 17a, 24, 29
Midterm Review PROJECT PART C DUE	
MIDTERM	

5.2 (like project optimization)	HW: 25
5.3: Second derivative, Inflection Points; Notes on Optimization (class packet)	HW: 2,29 HW: packet Optimization problems 11-14
Finding inflection points using (TI-83) (class packet)	
PROJECT PART D DUE	HW: 5.3: 7, 9, 14
QUIZ 4 6.4: Antiderivatives	HW: 5.3: 20
6.4: Antiderivatives	HW: packet Anti-derivative problems 1-5
PROJECT PART E DUE 6.4: The general antiderivative Finding a specific antiderivative	HW: 6.4: 9-14 HW: packet Antiderivative problems 6-10 HW:6.4: 15, 17
QUIZ 5	HW:6.4: 19-21
PROJECT PRESENTATION	
6.4: Word problems 6.1: Accumulated change Area approximation	HW: 26,27,33 HW: 8ac, 13a, 18ab
6.2: The definite integral 6.3: Accumulation functions	HW: 1, 4 HW: 5abcd, 19, 22
QUIZ 6 6.4: Fundamental Theorem of Calculus	HW: 1-4
6.5 Evaluating definite integrals using FTC	HW: 8c,9c,10,11c packet Additional Definite integral problems 1-7
6.5: Setting up, interpreting definite integrals Using fnInt on the TI-83 6.6: Average value of a function	HW: 13,15,21,23 HW: 2,5,10
QUIZ 7 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.)
Review for Final Exam	

Final Exam