

MTH U131 (Calculus for Business and Economics) Spring 2005

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Office: 541 Lake Hall

Office Hours: Monday, Wednesday, Thursday 3:20 – 4:20pm, and by appointment

Required Materials:

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

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

Class packet (for Spring 2005): available at the NU Reprographics (x2766).

Please bring your textbook, class 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. (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 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: It is essential that you attend class regularly. The easiest way for you to learn the material and to know what material has been covered is to come to class each day. Students are responsible for finding out what materials have been covered or what announcements have been made on days that they miss class.

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.

Exams: There will be 7 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 will take the final exam at the scheduled time: Monday, April 18, 3:30 --- 5:30PM.** 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 course grade will be determined as follows:

7 quizzes (drop the lowest one) --- 30%; midterm --- 15%; project --- 15%;
final exam --- 40%.

The last day to drop a course without receiving a 'W' grade is **January 21**. The last day to drop a course with a 'W' is **March 25**. 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.

Tutoring: There is a free math tutoring center at 102 Cahners Hall, 110 The Fenway, extension 2328. Tutoring is done on a first come first served basis. To schedule appointments, students must go there in person. No appointments can be made by phone. Tutoring hours are Monday-Wednesday 9:15 AM-8 PM, Thursday 9:15 AM-4 PM and Friday 9:15 AM-1 PM.. Tutoring will begin on January 13. Keep in mind:

- Students go to Cahners 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 to help you.
- Not all tutors are familiar with the TI-83. If you have problems with the calculator, have someone such as me help you before you go to Cahners.

If you have concerns/problems about the course that cannot be resolved by discussing with me, you may contact the Vice-Chairman of the Mathematics Department, Professor D. 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.

1/5: 3.1: Average rate of change	HW: 3.1: 13ab,17,26a. Read project description in packet
1/6: 3.1 Using the TI-83	HW: 3.1: 12,13d,14; packet Model Review probs 1,2
1/10: 3.2: Inst. Rate of Change 3.3: Derivatives	HW: 3.2: 7a,8,10, 17, 21, 22; 3.3: 2,5,13
1/12: 4.1: Slope graphs; 4.2: Deriv. Rules	HW: Handout; packet Algebra Review Probs.1-5
1/13: QUIZ 1 ; 4.3: More Deriv.Rules	HW: 4.2: 1-6(slope equations only), 7-14
1/17 MLK Birthday Holiday --- No classes	
1/19: 4.2; 4.3	HW: 4.3: 1-6(slope equations only), 7-14
1/20: 4.4: Chain rule PROJECT PART A DUE	HW: 4.4: 9,10,14
(1/21: Last day to drop a course without receiving a "W" grade)	
1/24: QUIZ 2 ; 4.4: Chain rule	HW: 4.4: 17-37
1/26: 4.5: Product rule	HW: 4.5: 10-26
1/27: 4.2: Applications Using nDeriv on TI-83	HW: 4.2: 21(a)(b),24,26
1/31: 4.3: Applications	HW: 4.3: 16(a)(b)(c),22,23(a)(b)(c) packet Compound Interest Review Probs: 1,2
2/2: 4.4: Applications	HW: 4.4: 41,42a,44
2/3: QUIZ 3 ; 4.5: Applications	
2/7: 4.5: Applications PROJECT PART B DUE	HW: 4.5:4,28,30abcde
2/9: 5.1: Approximating change $f(x+h)-f(x) \approx f'(x)h$ Marginal Revenue, Marginal Cost, Marginal Profit	HW: 5.1: 3,5,6, 17abc, 18abc, 19abc, 20ab packet Algebra Review Probs 6-12
2/10: 5.2: Optimization	HW: packet Optimization problems 1-10
2/14: 5.2: Using calculator	HW: 5.2: 17a, 24, 29
2/16: Midterm Review	
2/17: MIDTERM	
2/21: Optimization 5.2 (like project optimization) PROJECT PART C DUE	HW: 5.2: 25

2/23: 5.3: Second derivative, Inflection Points; HW: 5.3: 2,29;
Notes on Optimization (class packet) packet Optimization problems 11-14

2/24: Finding inflection points using (TI-83) HW: 5.3: 7, 9, 14
(class packet)

SPRING BREAK 2/26 --- 3/6

3/7: 6.4: Antiderivatives HW: 5.3: 20ab

3/9: 6.4: Antiderivatives HW: packet Anti-derivative problems 1-5

3/10: **QUIZ 4**; 6.4: The general antiderivative HW: 6.4: 9-14,15,17;
Finding a specific antiderivative packet Antiderivative problems 6-10

3/14: 6.4: Applications HW: 6.4: 27,32,33
PROJECT PART D DUE

3/16: 6.4: Applications HW: 6.4: 19-21

3/17 QUIZ 5

3/21: 6.1: Accumulated change
Area approximation HW: 6.1: 8ac, 13a, 18ab

3/23: 6.2: The definite integral HW: 6.2: 1, 4
6.5: Evaluating definite integrals HW: 6.5: 8c,9c,10c,11c
packet Additional Definite integral problems

3/24: 6.3: Accumulation functions HW: 6.3: 5abcd, 19, 22
6.4: Fundamental Theorem of Calculus HW: 6.4: 1-4
PROJECT PART E DUE

(3/25: Last day to drop a course with a "W" grade.)

3/28: **QUIZ 6**;
6.5: Setting up, interpreting
definite integrals

3/30: 6.5: Setting up, interpreting HW: 6.5: 13,15,21,23
definite integrals

PROJECT PRESENTATION

3/31: PROJECT PRESENTATION

4/4: Using fnInt on the TI-83
6.6: Average value of a function HW: 6.6: 2,5,10

4/6: 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.)

4/7: **QUIZ 7**; Review for Final Exam

4/11: Review for Final Exam

4/13: Review for Final Exam

4/14: Reading Day