

## MTH U131 (Calculus for Business and Economics) Summer1 2005

**Instructor:** Arshak Grigoryan  
Room: 542 Nightingale Hall, x5655  
E-mail: grigoryan.a@neu.edu  
Office Hours: Tue 10 – 11.30, Thu 10-11.30 and **by appointment**.

**Lectures:** **Mon., Tue., Wed., Thu. 8:00-9:40 AM 205 Shilman.**

**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 Summer 2006) 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 will may 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.

### 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 5 quizzes (25-35 minutes each), 1 hour test (the midterm), and a 2 hour final exam. (Only the best 4 quiz grades). 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 06/27/2006 at 8:00 AM at TBA.** 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 (20%); project grade (10%); and final exam score (40%).

The last day to drop a course without receiving a 'W' grade is May 19<sup>th</sup>. The last date to drop a class with a 'W' is June 9<sup>th</sup>. 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<sup>-</sup> 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:** There is a free math tutoring center located in the math department on the 5<sup>th</sup> floor of Nightingale Hall (540B NI). Hours of operation for the summer will be announced. 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 Cahners.

**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.

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.

5/9: 3.1: average rate of change Percentage change	HW: 13ab,17, 26a. Read project description in packet
5/10: Using the TI-83 3.2: Inst. Rate of change	HW: 12,13d,14; packet Model Review 1,2 HW: 3.2: 7a,8,10, 17, 21, 22;
5/11: 3.3: Derivatives 4.1: slope graphs; 4.2, 4.3: Derivative Rules	HW. 3.3: 2,5,13  HW: Handout; packet Algebra Review Pr.1-5 4.2: 1-6(slope equations only), 7-14
5/15: Chapter 4.2; 4.3, <b>QUIZ 1</b> ;	HW: 4.3: 1-6(slope equations only), 7-14
5/16: 4.4: chain rule,	HW: 4.4: 9,10,14, 17-37
5/17: 4.5: Product Rule <b>PROJECT PARTS A and B DUE</b>	HW:4.5: 10-26
5/18: 4.2, 4.3 : Applications Using nDeriv on the TI-83	HW: 4.2: 21(a)(b), 24, 26 4.3: 16(a)(b)(c), 22, 23(a)(b)(c) Packet Compound Interest Review: 1,2
(5/19: Last day to drop a Summer 1 class without a "W" grade)	
5/22: 4.4 and 4.5: Applications, <b>QUIZ 2</b> ;	HW: 41(ignore per cent rate of change),42a,44 HW: 4.5: 4, 28,30abcde
5/23: 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
5/24: 5.2 (using calculator)	HW: 5.2: 17a, 24, 29
5/25: 5.2: Optimization 5.3: Second derivative, Inflection Points;	packet Optimization problems 1-10 HW: 5.3: 2, 25, 29
5/29: Memorial Day, no classes	
5/30: Midterm Review <b>PROJECT PART C DUE</b>	
5/31: <b>MIDTERM</b>	
6/1: Notes on Optimization (class packet) Finding inf. pts using the TI-83 (class packet)	HW: packet Optimization problems 11-14 HW: 5.3: 7, 9, 14

6/5: 6.4 Antiderivative	HW:5.3: 20a,b, packet Anti-derivative problems 1-5
6/6: 6.4: Antiderivatives (continued) The general antiderivative Finding a specific antiderivative	HW: 6.4: 9-14, 15, 17 packet Antiderivative problems 6-10
6/7: 6.4: Applications, <b>QUIZ 3</b>	HW: 6.4: 27, 32, 33, 19-21
6/8: 6.1: Accumulated change Area approximation	HW: 6.1: 8ac, 13a, 18ab
(6/9: Last day to drop a Summer 1 class with a "W" grade)	
6/12: 6.2: The definite integral <b>PROJECT PARTS D and E DUE</b>	HW: 6.2: 1, 4
6/13: 6.4: Fundamental Theorem of Calculus 6.5: Evaluating definite integrals using FTC	HW: 6.4: 1 –4 6.5: 8c,9c,10c,11c packet Additional Definite integral problems
6/14: 6.5: Setting up interpreting definite integrals, <b>QUIZ 4</b>	HW: 6.5: 13,15,21,23
6/15: Applications, using fnInt on the TI-83	packet Additional Definite integral problems
<b>6/19: PROJECT PRESENTATION</b>	
6/20: Applications. 6.6: Average value of a function	HW: 6.6: 2,5,10
6/21: <b>Quiz 5</b> , Review for Final Exam	
6/22: Review for Final Exam	