

MTH U131 (Calculus for Business and Economics) Fall 2007

Instructor: Steven Olson
Office Hrs: Thursday – 11:00-1:00 543 NI
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Materials: Calculus Concepts (Brief Third Edition): An Informal Approach to the Mathematics of Change by LaTorre, Kenelly, Fetta, Harris, Carpenter, Houghton Mifflin, Boston, 2007;

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 from me.

Class packet: (for Fall 2007) must also be purchased from NU Reprographics (x2766).

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

Course

Code: TBA

Content: This course introduces students to the use of derivatives and integrals to solve problems in business and economics, e.g., maximizing profit, calculating average investment income and consumers' surplus. 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 dates correspond to the date of assignment, exercises should be done by the next class. Homework exercises from the textbook may occasionally be collected and graded. Even if an assignment is not collected, you are responsible for knowing the solutions of all homework exercises. The questions on exams and quizzes will be based on the material in my lectures, homework exercises from the text book as well as from the Eduspace problems, and the quiz and test review exercises that are in the packet. There will also be a set of homework exercises posted on the Eduspace web site. The **entire** set of web homework exercises will count as one quiz.

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 & Quizzes:** There will be 8 quizzes (20-30 minutes each), 1 hour test (the midterm), and a 2 hour final exam. (Only the best 6 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 12/13/07 at 10:30. 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: Quizzes 30%, Midterm 15%, Project 15%, and Final Exam 40%. The last day to drop a course without receiving a 'W' grade is September 21st and the last date to drop a class with a 'W' is November 16th. As a matter of Math Department policy: An incomplete (**I**) 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 incomplete may not be used to rescue a failing grade, or to postpone the final examination.
- 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.
- Help:** Ask questions in class, come to my office hours or if you cannot make it to my office hours take advantage of the office hours of other instructors of this course.
- Tutoring:** There is a free math tutoring center located in the math department on the 5th floor of Nightingale Hall (540B NI). Hours of operation for the Fall will be announced. All tutoring is done on a first come first served basis. Students must come in person to schedule appointments. Appointments cannot be made by phone. Keep in mind that 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.
- Complaints:** If you are not satisfied with my responses to your serious concerns (including your final course grade), please consult Prof. D. King, the course coordinator, 447 LA, x5679, e-mail d.king@neu.edu
- Changes:** Note that the syllabus is a plan and may change. I reserve the right to make changes as necessary. It is your responsibility to stay abreast of what happens in the classroom, changes in the assigned exercises and changes in the dates of quizzes or exams. You should regularly go to my website (www.math.neu.edu/~olson) .

9/5: 3.1: average rate of change	HW:13a-c,17, 26a. Read project description in packet
9/6: 3.1 QUIZ 1 Using the TI-83/84	HW: 12, 13d,14; packet Model Review probs 1,2 Read packet pages 33-34
9/10: 3.2; 3.3: derivatives 2,5,13	HW: 3.2: 7a,8, 9a,10, 17, 21, 22; 3.3: 3.4:1a
9/12: 4.1: slope graphs; 4.2: Deriv. Rules	HW: packet Algebra Review Probs.1-5
9/13: QUIZ 2 ; 4.3: More Deriv.Rules	HW: 4.2: 1-6(slope equations only), 7-14 4.3: 1-6(slope equations only), 7-14
9/17: 4.2; 4.3	
9/19: 4.4: chain rule PROJECT PART A DUE	HW 4.4: 9, 10, 14
9/20: QUIZ 3	HW: 4.4: 17-26
(9/21: Last day to drop a course without receiving a "W" grade)	
9/24: 4.4: chain rule	HW: 27-37
9/26: 4.5: product rule	HW: 10-26
9/27: 4.2 ,4.3 (word problems) Using nDeriv on the TI-83	HW: 4.2: 21ab, 24, 25abcd, 26; packet Compound Interest Review Probs: 1,2
10/1: 4.4 (word problems)	HW: 4.3:16abc, 22, 23abc
10/3: QUIZ 4 ; 4.4 (word problems) change),42ab,44, 45a	HW: 41(ignore per cent rate of
10/4: 4.5 (word problems) PROJECT PART B DUE	HW: 4, 28,30abcde
10/8: Columbus Day – No Classes	
10/10: 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,25acde packet Algebra Review probs 6-12
10/11: 5.2: Optimization Notes on Optimization (class packet) Second derivative and concavity	HW: packet Optimization problems 1-10
10/15: 5.2: Optimization using the calculator	HW: 17a, 24, 29 HW: 25 (like project optimization)
10/17: Midterm Review	
10/18: MIDTERM	
10/22: 5.3: Inflection Points; Point of diminishing returns PROJECT PART C DUE	HW: 2, 29 HW: packet Optimization problems 11-14

10/24: Finding inf. pts with the TI-83/84 Anti-derivatives	HW: 5.3: 7, 9, 14 (ignore per cent rate of change), 20 Read pages 41-42 in packet
10/25: QUIZ 5 Project group meetings on parts C and D (Bring projects to class) Anti-derivatives	HW: packet Anti-derivative problems 1-5
10/29: 6.4: The general anti-derivative	HW: 6.4: 9-14 HW: packet Additional Anti-derivative probs 6-11 HW: 6.4: 15, 17
10/31: 6.4: Finding a specific anti-derivative PROJECT PART D DUE	HW: 6.4: 19-21
11/1: 6.4: Word problems	HW: 26,27,33
11/5: 6.1: Accumulated change Area approximation by rectangles	HW: 6.1: 8ac, 13a, 18ab
11/7: PROJECT PART E DUE 6.2: The definite integral (see p390 and p393)	HW: 1, 4 HW: 6.4: 1-4
11/8: QUIZ 6 Fundamental Theorem of Calculus (see p429)	HW: packet Additional Definite integral problems 1-8
11/12: Veteran's Day – No classes	
11/14: PROJECT PRESENTATION	
11/15: PROJECT PRESENTATION 6.5: Evaluating def. integrals using FTC	HW: 8c,9c,10,11c
(11/16: Last day to drop a course with a “W” grade.)	
11/19: QUIZ 7 6.5: Setting up, interpreting def. ints Using fnInt on the TI-83	HW: 13,15,21,23, 28a
11/21, 11/22: Thanksgiving – No classes	
11/26: 6.6: Average value of a function Average value of the rate of change Consumers' Surplus (see packet notes)	HW: 6.6: 2,5,10 p467: 6 HW: 7.3: 4abc
11/28: Consumers' surplus	HW: 7.3: 8cd(use $p_1 = \$555$); 9cd(use $p_1 = \$4000$) (For meaning of p_1 see packet notes on Consumers' Surp
11/29 QUIZ 8	
12/3 Review for final exam Student evaluations	
12/5 Review for Final Exam	
12/6 Reading Day	