MATH U131 (Calculus for Business and Economics) Fall 2009

Instructor: Steven Olson
Office Hrs: Wed & Thu – 11:30-1:00 NI 540A
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Materials: Calculus Concepts (Brief Fourth Edition): An Applied Approach to the Mathematics of Change by LaTorre et. al., Houghton Mifflin, Boston, 2008;

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 2009) must also be purchased from NU Reprographics (x2766).

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

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 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: MATH U130 or the equivalent.

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 homework exercises from the textbook, packet and the **quiz and test review exercises in the packet** as well as 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.

Testing: There will be 9 quizzes and the best 7 will be used to determine your Quiz Ave. each quiz will take 30-40 minutes, 1 hour test (the midterm), and a final exam. All students without legitimate conflicts approved by the instructor will take the final exam on **TBA**. The final exam is cumulative and is common for all sections of MATH 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 approximate cut-offs for letter grades are as follows: D- (60), C-(70), B-(80) and A-(90). Borderline grades are determined by the final exam.
The last day to drop a course without receiving a 'W' grade is September 29th and the last date to drop a class with a 'W' is November 20th. 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.

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). Note that this is our class website and is not Blackboard.

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9/9: 2.1: average rate of change	HW: 9, 17, 18, 22a. Read project description in packet
9/10: 2.1, Using the TI-83/84 **QUIZ 1**	HW: 13, 23abd, 24abc; packet Model Review probs 1,2 **Read** packet notes on Use of the Calculator, Scatter Plots and Models on the TI 83-84; See page 80 of textbook
9/14 2.2; 2.3: derivatives	HW: 2.2: 7,8, 9,10, 15,17,19a, 21, 22; 2.3: 2, 5,13,15, 22a
9/16: 2.4: Limit definition of the derivative	HW: 7, 9, 12, 13
9/17: 3.1: slope graphs; 3.2: Deriv. Rules	HW: 3.1: 1,5,24; packet Algebra Review Probs.1-5
9/21: 3.3: More Deriv. Rules **QUIZ 2**	HW: 3.2: 1-6(slope equations only), 7-26
9/23: 3.2; 3.3 continued	HW: 3.3: 1-6(slope equations only), 7-20
9/24: **PROJECT PART A DUE** 3.4: chain rule	HW 3.4: 9, 10, 14
9/28: **QUIZ 3**; Chain rule (contd)	HW:3.4: 17-26

9/29 - Last day to drop a course without receiving a "W" grade)

9/30: 3.4 chain rule, 3.5: product rule	HW: 3.4:27-38; 3.5: 11-18
10/1: 3.5: product rule	HW: 19-28
10/5: 3.2, 3.3 (word problems) Using nDeriv on the TI-83	HW: 3.2: 30ab, 34, 35abc, 36; packet Compound Interest Review Probs: 1, 2
10/7: 3.4 (word problems)	HW: 3.3:21abc, 22, 33abc (ignore per cent rate of change)
10/8: **QUIZ 4**; 3.4 (word problems)	HW: 40ab, 41(ignore per cent rate of change), 42ab
10/12: Columbus Day –No classes	
10/14: 3.5 (word problems) **PROJECT PART B DUE**	HW: 4, 31,33abcde
10/15: 4.1: Approximating change $f(x+h)-f(x) \approx f'(x)h$ Marginal Revenue, Cost, Profit	HW: 3 ,5, 6, 17abc, 18abde, 19acde,21abc, 22ab packet Algebra Review probs 6-12
10/19: 4.2: Optimization Notes on Optimization (class packet) Second derivative and concavity	HW: packet Optimization problems 1-10
10/21: Midterm Review	
10/22: **MIDTERM**	
10/26: 4.3: Inflection Points; Point of diminishing returns **PROJECT PART C DUE**	HW: 2, 45 HW: packet Optimization problems 11-18
10/28: 4.2: Optimization using the calculator Project group meetings on parts C and D	HW: 30, 34 HW: 31 (like project optimization)

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10/21: Midterm Review

10/22: **MIDTERM**

10/26: 4.3: Inflection Points;	HW: 2, 45
Point of diminishing returns	HW: packet Optimization problems 11-18
PROJECT PART C DUE	
10/28: 4.2: Optimization using the calculator	HW: 30, 34
Project group meetings on parts C and D	HW: 31 (like project optimization)
10/29: Finding inf. pts with theTI-83/84	HW: 4.3: 27,32 (see packet notes)
QUIZ 5	
Anti-derivatives	HW: packet Anti-derivative problems 1-5
11/2: 5.3: The general anti-derivative	HW: 5.3: 9-15, 17; packet Anti-derivative probs 6-12
11/4: 5.3: Finding a specific anti-derivative	HW: 19-21
5.3: Word problems on anti-derivatives	HW: 24a
PROJECT PART D DUE	
11/5: **QUIZ 6**	
11/9: 5.1: Accumulated change	HW: 5.1: 14a, 19
Area approximation by rectangles	p375:1; and packet notes

11/11: Veteran's Day – No classes

11/12: **5.1**: The definite integral	HW: 8
(see p295 and p299)	HW: 5.3: 1-4
PROJECT REVISED PART D DUE	
11/16: Fundamental Theorem of Calculus (see p340)	HW: packet Additional Definite integral problems 1-8
QUIZ 7	
11/18: **PROJECT PRESENTATION**	
11/19: 5.4 : Evaluating def. integrals using FTC	HW: 8abc,9abc,10abc,11c

(11/20 - Last day to drop a course with a "W" grade.)

11/23: **QUIZ 8**	
Using fnInt on the TI-83/84	
5.4: Setting up, interpreting def. ints	HW: 13,15,21,23

11/25, 11/26 Thanksgiving – No Classes

11/30: Area between two curves	HW:5.4:25, 27, 28, 29
5.5: Average value of a function	HW: 2,5,10
Average value of the rate of change	
12/2: Differentials	Packet Integration by substitution problems: 1-6
Integration by u-substitution	
12/3: 5.6: Integration by u-substitution	HW: 1, 2, 5, 8, 11, 15
QUIZ 9	Packet Integration by substitution problems: TBA
12/7: 6.3: Consumers' Surplus (see packet notes)	HW: 6.3: 8bc, d (use p1=$555); 9c, d (use p1=$4000)

12/9: Review for final exam, Student evaluations