MTH U131 (Calculus for Business and Economics) Spring 2008

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Office Hours: Mon. 3:00-4:30 PM, Thurs. 12:15-1:45 PM

Lectures: **Mon., Wed., Thurs. 4:35-5:40 PM, 235 Forsyth**

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** (**TI-83 Plus**) or **TI-84** (**TI-84 Plus**) calculator is required. **NO OTHER CALCULATOR MAY BE USED ON TESTS OR THE PROJECT WITHOUT MY EXPLICIT PERMISSION.** A class packet (for Spring 2008) must also be purchased from NU Reprographics (x2766). **Please bring your textbook, packet and calculator to each class.**

Eduspace Course Code: TBA

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, future value of an income stream, 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.

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 **may** occasionally be collected and graded. Even if they are not collected, you are responsible for knowing the solutions of **all** homework exercises. There is also a set of web homework exercises posted on the eduspace web site for this section. The entire set of web homework exercises will count as **one** quiz. All the web exercises will be due at the end of the semester, but I suggest that you complete them as they become available. The questions on exams and quizzes will be based on homework exercises from the textbook, packet and the web, **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 9 quizzes (20-30 minutes each), 1 hour test (the midterm), and a final exam. (Only the best 7 quiz grades **including** the web homework grade will be counted.) If you miss a quiz you will get a zero for that quiz and there will be no make-up quizzes. 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:** April 24, 2008 at 3:30 PM. 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 (15%); project grade (15%); and final exam score (40%). The approximate cut-offs for letter grades are as follows: D- (60), C-(70), B-(80) and A-(90).

The last day to drop a course without receiving a 'W' grade is 1/25. The last date to drop a class with a 'W' is 3/28. 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.

It is University policy that no grade, including an incomplete, can be changed after one year. Exceptions must be authorized by the Academic Standing Committee.

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 5th floor of Nightingale Hall (540B NI). Hours of operation for the spring semester 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.

Resolving disputes and 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.

Note that the syllabus below is tentative and I reserve 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.

MTH U131 **Schedule** **Spring 2008**

1/7: 3.1: average rate of change	HW: 13abc, 17, 26a. Read project description in packet
1/9: 3.1 Using the TI-83/84	HW: 12, 13d,14; packet Model Review probs 1,2. Read packet notes on Scatter Plots and Models on the TI 83-84
1/10: **QUIZ 1** 3.2; 3.3: derivatives	HW: 3.2: 7a,8, 9a,10, 17, 21, 22; 3.3: 2,5,13,15 3.4:1a
1/14: 3.5: Limit definition of the derivative	HW: 7, 13, 14, 15
1/16: 4.1: slope graphs; 4.2: Deriv. Rules	HW: packet Algebra Review Probs.1-5
1/17: **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
1/21: MLK Holiday – No classes	
(**1/22** Last day to file a final exam conflict form)	
1/23: 4.2; 4.3 continued	
1/24: **PROJECT PART A DUE** 4.4: chain rule	HW 4.4: 9, 10, 14
(**1/25** - Last day to drop a course without receiving a "W" grade)	
1/28: **QUIZ 3** Chain rule (contd)	HW: 4.4: 17-26
1/30: 4.4 chain rule 4.5: product rule	HW: 27-37 HW: 10-18
1/31: 4.5: product rule	HW: 19-26
2/4: 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
2/6: 4.4 (word problems)	HW: 4.3:16abc, 22, 23abc
2/7: **QUIZ 4**; 4.4 (word problems)	HW: 41(ignore per cent rate of change),42ab,44, 45a
2/11: 4.5 (word problems) **PROJECT PART B DUE**	HW: 4, 28,30abcde
2/13: 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
2/14: 5.2: Optimization	HW: packet Optimization problems 1-10

Notes on Optimization (class packet)
Second derivative and concavity

MTH U131 Schedule Spring 2008

2/18: President's Day – No Classes

2/20: Midterm Review

2/21: **MIDTERM**

2/25: 5.3: Inflection Points; HW: 2, 29
Point of diminishing returns HW: packet Optimization problems 11-14
PROJECT PART C DUE

2/27: 5.2: Optimization using the calculator HW: 17a, 24, 29
Project group meetings on parts C and D HW: 25 (like project optimization)

2/28: Finding inf. pts HW: 5.3: 7, 9, 14 (ignore per cent rate of change), 20
with theTI-83/84(see packet notes)
QUIZ 5

SPRING BREAK

3/10: Anti-derivatives HW: packet Anti-derivative problems 1-5

3/12: 6.4: The general anti-derivative HW: 6.4: 9-14
HW: packet Additional Anti-derivative probs 6-12
HW: 6.4: 15, 17

3/13: 6.4: Finding a specific anti-derivative HW: 6.4: 19-21
PROJECT PART D DUE
QUIZ 6

3/17: 6.4: Word problems HW: 26,27,33

3/19: 6.1: Accumulated change HW: 6.1: 8ac, 13a, 18ab
Area approximation by rectangles

3/20: **PROJECT REVISED PART D DUE**
6.2: The definite integral HW: 1, 4
(see p390 and p393) HW: 6.4: 1-4
QUIZ 7

3/24: Fundamental Theorem of Calculus (see p429) HW: packet Additional Definite integral problems 1-8

3/26: **PROJECT PRESENTATION**

3/27: **PROJECT PRESENTATION**
6.5: Evaluating def. integrals using FTC HW: 8abc,9abc,10abc,11c

(**3/28**: Last day to drop a course with a "W" grade.)

3/31: 6.5: Setting up, interpreting def. ints HW: 13,15,21,23, 25, 27, 28, 29
Using fnInt on the TI-83
Area between two curves

4/2:	6.6: Average value of a function Average value of the rate of change	HW: 6.6: 2,5,10 p467: 6

4/3:	**QUIZ 8** Income streams – Future Value	HW: 7.2: 5a, 10a, 14a
4/7	Income streams-Present value	HW: 7.2: 5b, 6, 10b, 14b
4/9	Consumers' Surplus (see packet notes)	HW: 7.3: 4abc
4/10	**QUIZ 9** Consumers' surplus	HW: 7.3: 8bc, d (use p_1=\$555); 9c, d (use p_1=\$4000) (For meaning of p_1 see packet notes on Consumers' Surplus
4/14	Review for final exam Student evaluations	
4/16	Review for Final Exam	