MATH 1231 (Calculus for Business and Economics) Fall 2011

Instructor: Nicholas Matteo
matteo.n@neu.edu

Office Hours: 3:00 – 4:00 pm, Monday, Thursday, 537 Nightingale
4:30 – 5:30 pm, Tuesday, 537 Nightingale
Email to arrange another time.

Lectures: 8:00 – 9:05 am, MWR, 241 Forsyth

Materials:

- *Calculus Concepts (Fifth Edition): An Informal Approach to the Mathematics of Change* by LaTorre et al, Brooks/Cole, Cengage Learning, 2012 with Enhanced Web Assign (EWA).
- 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 the explicit Permission of your instructor.**
- A class packet (for Fall 2011) must also be purchased from NU Reprographics (x2766). **Please bring your 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, 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: MATH 1130 (formerly MTH U130) or the equivalent.

You will need to create a WebAssign account to access EWA and do your homework assignments. Go to www.webassign.net and choose "I have a class key." On the next page, enter the class key **neu 9564 5665**. If you already have a WebAssign account from another class, you can use that; otherwise, create a new one. Please put in your first name, last name, and student id number the same as in University records, so that EWA records can be automatically matched with Blackboard. You have a two week grace period before providing an access code.

You have several options for obtaining the textbook and EWA:

• You can purchase the "bundle" at the NU Bookstore which includes the hardcover textbook and the access code to the EWA online homework, or you can purchase the "Standalone" code, which includes the ebook. The second option is much cheaper.

• You can purchase the Standalone Access Code on CengageBrain, the ecommerce website, by visiting www.cengagebrain.com. Here is the ISBN: 0538738103.

• You can purchase the Standalone Access Code directly through the WebAssign Home Page, www.webassign.net. Use the same ISBN as above.

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. 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, **quiz and test review exercises in the packet** and the material in lectures. **In order to get credit for doing homework you must do the corresponding exercises on line using EWA.** Your scores will be recorded automatically, and this will be the basis of your homework grade. Log in to EWA at www.webassign.net; there is a link on Blackboard.

Attendance

You are expected in class each day. If for some reason, you are unable to come to a class, then (if possible) please call or 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), a 1 hour test (the midterm), and a final exam. (The grade from quiz 1 and the best 7 other quiz grades 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 at the scheduled time**. The final exam is cumulative and is common for all sections of MATH 1231. It is scheduled for December 14, 10:30 am – 12:30 pm in Snell Engineering Center 308. **DO NOT MAKE TRAVEL PLANS THAT CONFLICT WITH THE FINAL EXAM.**

There will be no make-ups except for University-excused absences (see your catalog.) In this case, the missed exam must be made up within a week.

Grading

Your final grade will be determined by the following quantities: quiz grades (25%); homework (5%), midterm grade (15%); project grade (15%); and final exam score (40%). Borderline grades are determined by the final exam score.

The approximate cut-offs for letter grades are as follows:

Course Average	Course Grade
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
63-66	D
60-62	D-
0-59	F

The last day to drop a course without receiving a 'W' grade is September 27. The last date to drop a class with a 'W' grade is November 18. 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.

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 policy on cheating and related disciplinary actions is detailed in the Student Handbook and at the following web site: http://www.northeastern.edu/osccr/academichonesty.html.

Tutoring

There is a free math tutoring center located in the math department on the 5th floor of Nightingale Hall (540B NI). Hours are Mon-Wed 10 am – 9 pm, Thurs 10 am – 6 pm, Fri 10 am – 1 pm. Tutoring is on a first-come first-served basis. Students must come in person to schedule appointments. Appointments cannot 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, email: d.king@neu.edu.

Note that the schedule 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.**

9/7:	2.1: average rate of change	HW: 9, 17, 18, 22a. Read project description in packet
9/8:	2.1 Using the TI-84 **QUIZ 1**	HW: 13, 23, 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 textbook page 121
9/12:	2.2; 2.3: Tangent line and the derivative	HW: 2.2: 7, 8, 11ab, 13ab, 15,17,19, 21 2.3: 2, 5,13,14ab
9/14:	2.4: Differentiability 2.5: Limit definition of the derivative	HW: 1, 3, 15-18 HW: 1, 3, 4, 5
9/15:	2.6: slope graphs; 3.1: Deriv. Rules Powers and Logs (See packet)	HW: 2.6: 2, 3, 6; Packet Algebra Review probs 1-5
9/19:	3.2: More Deriv. Rules **QUIZ 2**	HW: 3.1: 1-27 (odd), 29abc
9/21:	3.1; 3.2 continued **PROJECT PART A1+A2 DUE**	HW: 3.2: 1-14
9/22:	3.3: chain rule	HW: 3.3: 9, 10, 14
9/26:	**QUIZ 3** **PROJECT PART A DUE** 3.4: Chain rule (contd)	HW: 3.4: 1-28
9/27:	**Last day to drop a course without receiving a "W" grade**	
9/28:	3.5: product rule	HW: 1, 4, 11, 12, 13, 16, 19
9/29:	3.6: product rule (cont'd)	HW: 1-17 (odd)
10/3:	Using nDeriv on the TI-84 (word problems) Word Problems (3.1, 3.2)	HW: 3.1: 31ab, 35, 36; 3.2: 21, 28 Packet Compound Interest Review probs 1, 2
10/5:	Word problems (3.3-3.6)	HW: 3.4: 34, 38, 42
10/6:	**QUIZ 4**	HW: 3.6: 21abc, 22, 23
10/10:	Columbus Day –No classes	
10/12:	4.1: Approximating change $f(x+h) - f(x) \approx f'(x)h$ 4.5: Marginal Revenue, Marginal Cost, Marginal Profit **PROJECT PART B DUE**	HW: 4.1: 2, 5, 7 4.5: 1, 3, 5, 7, 9, 11, 16ab, 17abc Packet Algebra Review probs 6-12
10/13:	4.2: Optimization Critical points Relative and absolute extreme points First Derivative Test	HW: 4.2: 1,3,5, 9, 11, 13, 15, 21, 23

10/17:	Optimization (cont.) Second derivative and concavity Second Derivative Test Notes on Optimization (class packet)	HW: 4.4: 11, 13, 15 Packet Optimization probs 1-10
10/19:	Midterm Review	
10/20:	**MIDTERM**	
10/24:	4.4: Inflection Points; Point of diminishing returns	HW: 1, 2, 19 Packet Optimization probs 11-18
10/26:	4.3: Optimization using the calculator Project group meetings on parts C and D	HW: 17 (like project optimization), 20
10/27:	Finding inf. pts. with theTI-84 **QUIZ 5** Anti-derivatives **PROJECT PART C DUE**	HW: 4.4: 30, 31 (see packet notes) HW: Packet Anti-derivative probs 1-5
10/31:	5.4, 5.5: The general anti-derivative	HW: 5.4: 11-15, 18, 25, 29 5.5: 1, 3, 6 Packet Additional Anti-derivative probs 6-12
11/2:	Finding a specific anti-derivative Word problems on anti-derivatives	HW: 5.4: 19-21, 23a 5.5: 21a, 22a
11/3:	**QUIZ 6**	
11/7:	Area under a curve Area approximation by rectangles	HW: 5.2: 8 Packet Area Approximation problems: 3
11/9:	The definite integral (p336) Accumulated Change Properties of the definite integral (Packet Notes) **PROJECT PART D DUE**	HW: 5.1: 7, 8; 5.2: 4; 5.3: 5b
11/10:	Fundamental Thm of Calculus (p375)	Packet problems on Properties of def. ints. : 1-4 HW: 5.6:9
11/14:	Fundamental Thm of Calculus **QUIZ 7**	HW: Packet Additional Definite integral problems 1-7
11/16:	Evaluating def. integrals using FTC	HW: Packet Additional Definite integral problems 8-10
11/17:	**REVISED PROJECT DUE** Using fnInt on the TI-84 5.6: Setting up, interpreting def. ints	HW: 14, 16
11/18:	**Last day to drop a course with a "W" grade.**	
11/21:	**QUIZ 8** 5.8: Average value of a function Average value of the rate of change	HW: 1, 3, 5

11/23, 11/24 Thanksgiving – No Classes

11/28:	Differentials Integration by u-substitution	Packet Integration by substitution problems: 1-6
11/30:	**Project Presentation**	
12/1:	**QUIZ 9** 5.9: Integration by u-substitution	HW: 1, 3, 5, 8, 11, 15, 20 Packet Integration by substitution problems: 7-19
12/5:	6.3: Consumers' Surplus (see packet notes)	HW: 6.3: 11, 12, 23ab, d (use p_{max}=\$555)
12/7:	Review for final exam Student evaluations	
12/8:	Reading Day	