

## MTH U131 (Calculus for Business and Economics) Spring 2007

**Instructor:** Steven Olson  
**Office Hrs:** M, W, Th – 12:15-1:15 543 NI  
**Website:** [www.math.neu.edu/~olson](http://www.math.neu.edu/~olson)  
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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, 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 from me.

Class packet: (for Spring 2006) must also be purchased from NU Reprographics (x2766).

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

### **Course**

**Code:** OLSON-FD617A75601A05

**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 will not be collected. Even though 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 the material in my lectures, homework exercises, and the quiz and test review exercises that are in the packet. There will also be a set of homework exercises posted on the web site. Due dates for these exercises will be announced in the first week of classes.

**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 7 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 4/25/07 at 3:30. 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 January 26<sup>th</sup> and the last date to drop a class with a 'W' is March 30<sup>th</sup>. 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 spring 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 R. Bai, the course coordinator, 541 LA, x5640, e-mail [r.bai@neu.edu](mailto:r.bai@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](http://www.math.neu.edu/~olson)) as well as the Blackboard site for this course .

1/8: 3.1: average rate of change Read project description in packet	HW: 13ab,17, 26a.
1/10: 3.1: Using the TI-83	HW: 12,13d,14; packet: Model Review probs 1,2
1/11: 3.2: Inst. Rate of change 3.3: Derivatives	HW: 3.2: 7a,8,10, 17, 21, 22; 3.3: 2,5,13; 3.4 1a
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1/15: Martin Luther King Jr.'s Birthday No Classes	
1/17: 4.1: slope graphs; 4.2: Deriv. Rules	HW: packet: Algebra Review Probs.1-5
1/18: Quiz 1; 4.3: More Deriv.Rules	HW: 4.2:1-6(slope equations only), 7-14 4.3:1-6(slope equations only), 7-14
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1/22: 4.2; 4.3	
1/24: 4.4: chain rule <b>PROJECT PART A DUE</b>	HW: 4.4: 9,10,14
1/25: Quiz 2;	HW: 4.4: 17-26
(1/26: Last day to drop a course without receiving a "W" grade)	
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1/29: 4.4: chain rule	HW: 4.4: 27-37
1/31: 4.5: Product Rule	HW: 4.5: 10-26
2/1: 4.2, 4.3 (word problems) Using nDeriv on the TI-83	HW: 4.2: 21(a)(b), 24, 25 abcd, 26 packet:Compound Interest Review Probs: 1,2
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2/5: 4.4: (word problems)	HW: 4.3: 16(a)(b)(c), 22, 23(a)(b)(c)
2/7: 4.4: (word problems) <b>PROJECT PART B DUE</b>	HW: 4.4: 41(ignore % rate of change),42ab,44,45
2/8: Quiz 3; 4.5 (word problems)	HW: 4.5: 4, 28,30abcde
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2/12: 5.1: Approximating change $\Delta f(x) = f(x+h) - f(x) \approx f'(x) \cdot h$ Marginals: Revenue, Cost, and Profit	HW: 5.1: 3,5,6, 17abc, 18abc, 19abc, 20ab packet:Algebra Review Probs 6-12
2/14: 5.2:Optimization	HW: packet:Optimization problems 1-10
2/15: 5.2 (using calculator)	HW: 5.2: 17a, 24, 29 HW: 5.2: 25 (like project optimization);
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2/19: President's Day No Classes	
2/21: Midterm Review	
2/22: MIDTERM	

2/26: 5.3: Second derivative, Inflection Points; Notes on Optimization (class packet) <b>PROJECT PART C DUE</b>	HW: 5.3: 2, 29 HW: packet: Optimization problems 11-14
2/28: Finding inf. pts using the TI-83 (class packet)	HW: 5.3: 7, 9, 14, 20
3/1: 6.4 Antiderivatives	HW: packet: Antiderivative problems 1-5
3/5 to 3/9 Spring Break	
3/12: Quiz 4	
3/14 6.4: Antiderivatives (continued) <b>PROJECT PART D DUE</b>	HW: 6.4: 9-14
3/15: 6.4: The general antiderivative Finding a specific antiderivative	HW: 6.4: 15, 17 packet: Antiderivative problems 6-10
3/19: 6.4 Word problems	HW: 6.4: 19-21
3/21: Quiz 5	HW: 6.4 26,27,33
<b>PROJECT PART E DUE</b>	
3/22: 6.1: Accumulated change Area approximation	HW: 6.1: 8ac, 13a, 18ab
3/26: <b>PROJECT PRESENTATION</b>	
3/28: <b>PROJECT PRESENTATION</b>	
3/29: 6.2: The definite integral 6.4: Fundamental Theorem of Calculus	HW: 6.2: 1, 4 HW: 6.4: 1 –4
(3/30: Last day to drop a course with a “W” grade.)	
4/2: Quiz 6	
4/4: 6.5: Evaluating definite integrals using FTC	HW: 6.5: 8c,9c,10c,11c packet: Additional Definite integral problems
4/5: 6.5: Setting up, interpreting definite integrals Using fnInt on the TI-83	HW: 6.5: 13,15,21,23
4/9: 6.6: Average value of a function	HW: 6.6: 2,5,10
4/11: Quiz 7	
4/12: Review for Final Exam	
4/16: Patriot’s Day No Classes	
4/18: Review for Final Exam	