

AMS/ECON 11B: Math Methods for Economics II, Fall 2016.

MWF 1:20 – 2:25 pm, Oakes 105

<https://ams011b-fall16-01.courses.soe.ucsc.edu/home>

Instructor: Yonatan Katznelson

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Office hours: WF 10:00 - 11:30 am, or by appointment.

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Required text: *Introductory Mathematical Analysis for Business, Economics, etc.* 13th edition, **OR** the custom UCSC version of the 13th edition (blue paperback), by Haeussler, Paul and Wood.

Course Description: This course covers integral calculus in one variable and differential calculus in several variables, with a focus on applications to Economics. Topics include antiderivatives, definite integrals, the fundamental theorem of calculus, elementary differential equations, partial derivatives, linear approximation, elasticity, and optimization. For more details, please see the lecture schedule.

Reading: The reading assignments listed with the lecture schedule are meant to be completed at least once *before* the corresponding lecture. The lectures are prepared based on the assumption that the students have done the reading, so they will be significantly easier to follow if you have read the material in advance. After the lecture, you should read the material again, in greater depth.

Some of the reading is assigned from the *Supplementary Notes*, which can be found on the supplements/review page of the course web site.

Quizzes: There will be four short exams in class, one every other Friday, and a comprehensive final exam. The quiz/exam dates are listed in the lecture schedule that follows. Make-up quizzes will *not* be given, but your lowest score will be dropped. There will be a study guide posted for each quiz, and the TAs will go over these study guides in section.

Homework: Assignments are listed in the lecture schedule. These assignments will *not* be collected or graded. Working on the homework is crucial to mastering the material and succeed in the class.

Sections: Sections are not mandatory, but are *highly recommended*. Mastering the material of this course requires practice and discussion, and in section you will have the opportunity to engage in both activities under the guidance of an experienced Teaching Assistant. In addition, the TAs will review the study guides for the bi-weekly exams during sections.

Special Accommodations: If you have special needs, we will accommodate you. The Disability Resource Center offers services that are confidential and free of charge. Contact DRC by phone at **831-459-2089** or by email at **drc@ucsc.edu**. After you contact the Disability Resource Center, bring your Accommodation Authorization form to me after class, or during office hours and we will discuss your accommodations.

Course grade: Your (three highest) quiz scores contribute 60 percent to your overall score in the class and the final exam contributes 40 percent. Letter grades will correspond (approximately) to the following ranges:

Overall Score	Grade
90 – 100	A– to A+
80 – 89	B– to B+;
65 – 79	C to C+
60 - 64	C-
50 – 59	D
0 – 49	F

*To pass the class, your overall score must be 65 or above
and you must score at least 50% on the final exam.*

CHEATING:

Cheating in any form (using unauthorized notes on tests or exams, copying from someone else, etc.) will not be tolerated. Any student caught cheating will be reported to the AMS and ECON departments and to his or her college provost. In almost all cases, a student caught cheating will receive a failing grade. Students who help others cheat are also considered cheaters.

*Cheating devalues everyone's grades.
You should not tolerate it either.*

Lecture Schedule with Homework and Quiz/Exam Dates.

Friday, 9-23: Introduction; Differentials and antiderivatives.

Reading: Sections 14.1 - 14.2.

Homework. 14.1: 1 - 10, 20, 21; 14.2: 3, 5, 6, 7.

Monday, 9-26: The *indefinite* integral.

Reading: Section 14.2.

Homework. 14.2: 10, 13, 17, 22, 26, 29, 33, 35, 41, 43, 51, 52.

Wednesday, 9-28: Application: integration with initial values.

Reading: Section 14.3.

Homework. 14.3: 1, 2, 3, 4, 5, 11, 12, 13, 14, 20.

Friday, 9-30: Integration formulas.

Reading: Section 14.4.

Homework. 14.4: 1, 3, 7, 12, 18, 21, 27, 32, 35, 39, 46, 51, 54, 57, 65, 74, 85.

Monday, 10-3: More techniques of integration.

Reading: Section 14.5.

Homework. 14.5: 1, 5, 10, 13, 16, 21, 27, 30, 34, 41, 53, 57, 59, 64, 67, 70.

Wednesday, 10-5: Summation and the definite integral.

Reading: SN #1; Sections 1.5, 14.6.

Homework. SN #1: 1, 2, 4, 8, 9; 14.6: 1, 3, 5.

Friday, 10-7: The *definite* integral (cont.) **Quiz 1**

Reading: Section 14.6.

Homework. 14.6: 6, 7, 9, 11, 15.

Monday, 10-10: The fundamental theorem of calculus.

Reading: Section 14.7.

Homework. 14.7: 3, 8, 11, 15, 20, 25, 29, 38, 53, 55, 59, 61, 62.

Wednesday, 10-12: Applications.

Reading: Section 14.9.

Homework. 14.9: 3, 6, 15, 30, 43, 46, 51, 59, 60.

Friday, 10-14: More applications.

Reading: Section 14.10, 15.4.

Homework. 14.10: 1 - 4; 15.4: 1, 4, 7, 10, 11.

Monday, 10-17: Table of integrals.

Reading: Sections 15.1 - 15.3 (*skim* 15.1 and 15.2).

Homework. 15.3: 1, 3, 6, 9, 12, 17, 21, 24, 31, 35, 43, 59, 62.

Wednesday, 10-19: More examples and applications.

Reading: Section 15.3

Homework. 15.3: 1, 3, 6, 9, 12, 17, 21, 24, 31, 35, 43, 59, 62.

Friday, 10-21: Separable differential equations. **Quiz 2**

Reading: Section 15.5

Homework. 15.5: 1 - 6, 9, 10, 12, 15.

Monday, 10-24: Applications

Reading: Sections 15.5 - 15.6

Homework. 15.5: 21, 22, 25, 35.

Wednesday, 10-26: More applications

Reading: Section 15.6

Homework. 15.6: 1, 4, 5, 9, 11.

Friday, 10-28: Functions of several variables and their partial derivatives.

Reading: Section 17.1.

Homework. 17.1: 1 - 20, 38.

Monday, 10-31: Linear approximation.

Reading: Section 17.2 and SN #2.

Homework. 17.2: 3, 4, 5, 6, 8, 11, 20, 23.

Wednesday, 11-2: Higher order partial derivatives, and quadratic approximation.

Reading: Section 17.4 and SN 2.

Homework. 17.4: 1 - 10, 17.

Friday, 11-4: Quadratic approximation (cont). **Quiz 3**

Reading: SN #2.

Homework. SN #2: 1 - 4.

Monday, 11-7: Optimization in several variables I: first order conditions.

Reading: Section 17.6 and SN #3.

Homework. 17.6: 1 - 6.

Wednesday, 11-9: Optimization II: the second derivative test.

Reading: Section 17.6; SN #3.

Homework. 17.6: 7 - 14.

Friday, 11-11: *Veteran's day – no class.*

Monday, 11-14: The chain rule and the envelope theorem.

Reading: Section 17.5; SN #4.

Homework. 17.6: 7, 9, 11, 21, 23, 25, 26, 36.

Wednesday, 11-16: Constrained optimization I.

Reading: Section 17.7 and SN#5.

Homework. 17.7: 1 - 6.

Friday, 11-18: Constrained optimization II. *Quiz 4*

Reading: Section 17.7 and SN#5.

Homework. 17.7: 1 - 8.

Monday, 11-21: Maximizing Utility.

Reading: SN #5.

Homework. 17.7: 21, 22, 23; SN #5: 1, 4.

Wednesday, 11-23: Minimizing cost.

Reading: SN #5.

Homework. 17.7: 13, 14; SN #5: 2.

Friday, 11-25: *Thanksgiving – no class.*

Monday, 11-28 : Maximizing output.

Reading: SN #5.

Homework. 17.7: 15, 16, 18; SN #5: 3.

Wednesday, 11-30: Catch up and review.

Reading: Your notes — come to class with questions.

Friday, 12-2: Examples and Review.

Reading: Your notes — come to class with questions.

Wednesday, 12-7: *Final Exam: 12:00 – 3:00 pm*