

AMS/ECON 11B — Math Methods for Economics II — Fall 2011.

MWF 3:30 - 4:40 pm, Oakes 105

<http://people.ucsc.edu/~yorik/11B>

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**Required text:** *Introductory Mathematical Analysis for Business, Economics and the Life and Social Sciences*, 13<sup>th</sup> edition, by Haeussler, Paul and Wood. The paperback *Custom UCSC Edition* of this book is fine (and cheaper). This is the same book used in AMS/ECON 11A.

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

**Exams:** There will be two midterm exams and a comprehensive final exam. The exam dates are listed in the lecture schedule that follows.

**Homework:** The homework assignments are listed on the lecture schedule. The assignments will be collected in class on the day it is due, and you may also leave your homework in the drop-box next to 'Jack's Lounge' in Baskin Engineering *no later than 4:45 pm* on the day that it is due. Each assignment will be reviewed in section the week *after* it is turned in. There will be MSI attached to this class, where you can get help with the homework you are working on.

**Note:** Late homework is *not accepted* for any reason, but your lowest three homework scores will be dropped (including possible 0's for missed assignments).

**Reading:** The reading assignments listed with the lecture schedule are meant to be completed at least once *before* the corresponding lecture. This will make the discussion of the material in lecture much easier to follow. After the lecture, you should read the material again, in greater depth. The material should be read a third time as you are working on the corresponding homework problems.

**Course grade:** The average of your six highest homework scores contributes 15% to your course score; the higher of your two midterm scores contributes 30%; the lower of your two midterm scores contributes 15%; and the final exam contributes 40%. Letter grades will correspond (roughly) to the following ranges:

Score	Grade
90% – 100%	A– to A+
78% – 89%	B– to B+;
60% – 77%	C to C+
50% – 59%	D
0% – 49%	F

**Students with disabilities:** If you qualify for classroom/exam accommodations because of a disability, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to me as soon as possible, preferably within the first week of the quarter. Contact DRC by phone at *831-459-2089* or by email at *drc@ucsc.edu* for more information.

## TIPS FOR SUCCESS

- ★ Come to all the lectures, and come prepared — read the assigned sections at least once before the lecture, so you have an idea of what we will be discussing in the lecture. You don't have to read the material in depth the first time through.
- ★ Read the material again after the lecture, this time in more depth. Read actively: take notes, try to work through the examples on your own as you read the book's solution.
- ★ Work on relevant homework problems after the second reading. Make a note of the problems that you don't understand so that you can ask about them.
- ★ Go to section every week to discuss the homework.
- ★ Take advantage of all the resources: lecture, section, MSI, office hours.
- ★ Study with friends for an hour or two a week. Technical skills can be practiced alone, but concepts need to be *discussed*.
- ★ The standard for a 5-unit course at UCSC is 15 hours a week, including lectures, sections and studying outside of class. Most students in this class will need to put in this much work to master the material and do well in the class.  
  
To be successful, you should spread your studying over the week. Studying for five or six hours in a row is not as effective as three or four 1 - 2 hour blocks.
- ★ If you feel that you are getting lost, take action. Don't wait and hope 'it goes away'. Come to office hours to clear up any confusion or difficulty.
- ★ Come to office hours prepared: the more specific your questions the better and more helpful the answers will be.

### **CHEATING:**

**Cheating in any form (e.g., using notes on quizzes or exams, or copying from someone else) will not be tolerated. Any student caught cheating will be reported to the AMS department and to his or her college provost. In most cases, students 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/reading schedule, exam dates and homework.*

**Friday, 9-23:** Introduction: Functions of several variables.

**Monday, 9-26:** Partial derivatives.

*Reading:* Section 17.1.

**Wednesday, 9-28:** Linear approximation and elasticity.

*Reading:* Section 17.2

**Friday, 9-30:** Higher order partial derivatives.

*Reading:* Section 17.4.

**Homework assignment #1 due:**

- **Section 17.1: 2, 6, 8, 12, 14, 18, 20, 28, 32.**
- **Section 17.2: 2, 4, 8, 10.**

**Monday, 10-3:** The chain rule.

*Reading:* Section 17.5.

**Monday, 10-5:** The quadratic Taylor polynomial in several variables.

*Reading:* Supplementary note #2.

**Friday, 10-7:** Optimization in several variables.

*Reading:* Section 17.6.

**Homework assignment #2 due:**

- **Section 17.2: 14, 18, 20, 22, 24.**
- **Section 17.4: 4, 6, 10, 14, 16.**
- **Section 17.5: 4, 6, 20.**

**Monday, 10-10:** The second derivative test.

*Reading:* Supplementary note #3.

**Wednesday, 10-12:** Examples.

*Reading:* Supplementary note #3.

**Friday, 10-14:** *Midterm #1.*

**Homework assignment #3 due:**

- **Supplementary Note 2: 1, 2, 4.**
- **Section 17.6: 2, 4, 6, 8, 12, 14, 22, 30, 36.**

**Monday, 10-17:** Constrained optimization.

*Reading:* Section 17.7, Supplementary note #4.

**Wednesday, 10-19:** Applications of constrained optimization, I

*Reading:* Supplementary note #4.

**Friday, 10-21:** Applications of constrained optimization, II

*Reading:* Supplementary note #4.

**Homework assignment #4 due:**

- **Section 17.7:** 4, 8, 16, 18, 20, 22, 24.
- **Supplementary note 4:** 2, 3.

**Monday, 10-24:** Differentials; The indefinite integral.

*Reading:* Sections 14.1 - 14.2.

**Wednesday, 10-26:** Applications.

*Reading:* Section 14.3

**Friday, 10-28:** Techniques of integration, I.

*Reading:* Section 14.4.

**Homework assignment #5 due:**

- **Supplementary note 4:** 1, 4.
- **Section 14.2:** 4, 6, 8, 10, 14, 22, 24, 30, 40, 46, 50.

**Monday, 10-31:** Techniques of integration, II.

*Reading:* Section 14.5.

**Wednesday, 11-2:** Summation and review.

*Reading:* Supplementary note #1; Section 1.5.

**Friday, 11-4:** *Midterm #2*

**Homework assignment #6 due:**

- **Section 14.3:** 4, 12, 16, 20.
- **Section 14.4:** 2, 6, 10, 16, 18, 30, 44, 60, 74.
- **Section 14.5:** 2, 10, 12, 16, 28, 30.

**Monday, 11-7:** The definite integral.

*Reading:* Section 14.6.

**Wednesday, 11-9:** The Fundamental Theorem of Calculus.

*Reading:* Section 14.7.

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

**Monday, 11-14:** Area computations.

*Reading:* Section 14.9.

**Homework assignment #7 due:**

- **Supplementary note 1: 1, 3.**
- **Section 14.6: 4, 6, 8, 12.**
- **Section 14.7: 6, 12, 18, 24, 42.**

**Wednesday, 11-16:** Applications.

*Reading:* Section 14.10.

**Friday, 11-18:** Integration by parts and partial fractions.

*Reading:* Sections 15.1 - 15.2.

**Monday, 11-21:** Table of integration formulas.

*Reading:* Section 15.3.

**Homework assignment #8 due:**

- **Section 14.7: 60, 62.**
- **Section 14.9: 12, 24, 50, 58, 60.**
- **Section 14.10: 2, 4, 8.**

**Wednesday, 11-23:** Applications.

*Reading:* Sections 15.3 - 15.4.

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

**Monday, 11-28:** Elementary differential equations.

*Reading:* Section 15.5.

**Wednesday, 11-30:** More differential equations.

*Reading:* Section 15.6.

**Friday, 12-2:** Catch-up and review.

**Homework assignment #9 due:**

- **Section 15.3: 2, 4, 8, 12, 22, 32, 44, 50, 54, 62.**
- **Section 15.4: 4, 10.**
- **Section 15.5: 6, 8, 12, 22, 24.**
- **Section 15.6: 2, 4, 10.**

**Thursday, 12-8:** **FINAL EXAM, 12:00 – 3:00 pm**