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Required text: *Introductory Mathematical Analysis for Business, Economics and the Life and Social Sciences, 13th 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 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 — with and without constraints. For more details, please see the schedule of lectures.

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.

Quizzes/Exams: There will be six quizzes (in class), a midterm exam and a comprehensive final exam. The quiz/exam dates are listed in the lecture schedule that follows. Make-up quizzes will not be given. Your two lowest quiz scores will be dropped.

Homework: Assignments are listed in the lecture schedule. These assignments will not be collected or graded. However, the quiz problems and some of the exam problems will be similar, if not identical to homework problems. Some of the homework is assigned from the *Review Questions*, which can be found on the review page of the course web site.

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.

Course grade: Your (four highest) quiz scores contribute 25 points to your overall score in the class, the midterm contributes 25 points and the final exam contributes the remaining 50 points. Letter grades will correspond (approximately) to the following ranges:

<table>
<thead>
<tr>
<th>Overall Score</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90 – 100</td>
<td>A– to A+</td>
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<tr>
<td>79 – 89</td>
<td>B– to B+</td>
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<tr>
<td>60 – 78</td>
<td>C to C+</td>
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<tr>
<td>50 – 59</td>
<td>D</td>
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<tr>
<td>0 – 49</td>
<td>F</td>
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To pass the class, your overall score must be 60 or above and you must score at least 50% on the final exam.

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 find difficult so that you can ask about them in section (or office hours).

★ 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 (e.g., computing integrals or derivatives) can be practiced alone, but concepts and applications 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 — this means about 10 hours a week studying outside of lecture/section. 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, six or more hours in a row is not as effective as four or five blocks of 1 - 2 hours.

★ If you feel that you are getting lost, take action. Come to office hours to clear up any confusion or difficulty. Moreover, you should come to office hours prepared — the more specific your questions the more specific and helpful the answers will be.

CHEATING:

Cheating in any form (using notes on quizzes 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 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 Schedule with Homework and Quiz/Exam Dates.

**Monday, 3-31:** Introduction; Differentials and antiderivatives.
*Reading:* Sections 14.1 - 14.2.

**Wednesday, 4-2:** The *indefinite* integral.
*Reading:* Section 14.2.
*Homework:* 14.2: 10, 13, 17, 22, 26, 29, 33, 35, 41, 43, 51, 52.

**Friday, 4-4:** Application: integration with initial values.
*Reading:* Section 14.3.
*Homework:* 14.3: 1, 2, 3, 4, 5, 11, 12, 13, 14, 20.

**Monday, 4-7:** 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.

**Wednesday, 4-9:** More techniques of integration. **Quiz 1**
*Reading:* Section 14.5.
*Homework:* 14.5: 1, 5, 10, 13, 16, 21, 27, 30, 34, 41, 53, 57, 59, 64, 67, 70.

**Friday, 4-11:** Summation.
*Reading:* Section 1.5, SN #1.
*Homework:* SN #1: 1, 2, 4, 8, 9.

**Monday, 4-14:** The *definite* integral. *Reading:* Section 14.6.
*Homework:* 14.6: 1, 3, 5, 6, 7, 9, 11, 15.

**Wednesday, 4-16:** The fundamental theorem of calculus.
*Reading:* Section 14.7.

**Friday, 4-18:** Applications. **Quiz 2**
*Reading:* Section 14.9.
*Homework:* 14.9: 3, 6, 15, 30, 43, 46, 51, 59, 60.

**Monday, 4-21:** More applications. *Reading:* Section 14.10, 15.4.
*Homework:* 14.10: 1 - 4; 15.4: 1, 4, 7, 10, 11.

**Wednesday, 4-23:** 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.
Friday, 4-25: Separable differential equations
Reading: Section 15.5
Homework. 15.5: 1 - 6, 22, 23, 29, 36.

Monday, 4-28: Models for population growth. Quiz 3
Reading: Section 15.6
Homework. 15.6: 1, 3, 4, 5, 9, 13.

Wednesday, 4-30: Catch-up and review.
Reading: Review.
Homework. Review:

Friday, 5-2: Midterm exam.

Monday, 5-5: Functions of several variables and their partial derivatives.
Reading: Section 17.1.
Homework. 17.1: 1 - 20, 38.

Wednesday, 5-7: Linear approximation and applications.
Reading: Section 17.2.
Homework. 17.2: 3, 4, 5, 6, 8, 11, 20, 23; RQ #6: 2, 3, 4.

Friday, 5-9: Linear Taylor polynomials and higher order partial derivatives.
Reading: Section 17.4 and SN #2.
Homework. 17.4: 1 - 10, 17.

Monday, 5-12: Quadratic Taylor polynomials. Quiz 4
Reading: SN #2.
Homework. SN #2: 1 - 4; RQ #7: 1.

Wednesday, 5-14: Optimization in several variables I: first order conditions.
Reading: Section 17.6 and SN #3.
Homework. 17.6: 1 - 6; RQ #7: 2.

Friday, 5-16: Optimization II: the second derivative test.
Reading: Section 17.6; SN #3.
Homework. RQ #7: 3.

Monday, 5-19: The chain rule and the envelope theorem.
Reading: Section 17.5; SN #4, §4: The envelope theorem.
Homework. 17.6: 7, 9, 11, 21, 23, 25, 26, 36; RQ #7: 5, 7; RQ #8: 4.

Wednesday, 5-21: Constrained optimization, I - substitution. Quiz 5
Reading: Section 17.7 and SN #4.
Homework. 17.7: 1 - 6; RQ #8: 1.
Friday, 5-23: Constrained optimization, II - Lagrange multipliers (cont.). *Reading:* Section 17.7 and SN#4.

*Homework.* 17.7: 13, 17, 18, 21.

**Monday, 5-26:**  *Holiday – Memorial Day*

**Wednesday, 5-28:** Application – Maximizing output.
*Reading:* SN #4.
*Homework.* SN #4: 2; RQ # 8: #3.

**Friday, 5-30:** Application – Minimizing cost. *Quiz 6*
*Reading:* SN #4.
*Homework.* SN #4: 3; RQ # 9: 2.

**Monday, 6-2:** Application – Maximizing utility.
*Reading:* SN #4.
*Homework.* SN #4: 1; RQ # 8: #2; RQ #9: 5.

**Wednesday, 6-4:** Examples and review

**Friday, 6-6:** Examples and review.

**Thursday, 6-12:**  *Final Exam: 8 – 11 am*