AMS/ECON 11B, Fall 2018.

MWF 10:40 – 11:45 am, Baskin Auditorium 101

https://ams11b-fall18-01.courses.soe.ucsc.edu/home

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 students have done the assigned reading and 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) and begin to work on the corresponding homework.

Comment: Some of the reading (and homework) is assigned from the *Supplementary Notes*, which can be found on the course webpage.

Homework: Assignments are listed in the lecture schedule. Homework will be not be collected or graded but most of the exam and quiz questions will be based on the homework. More importantly, working on the homework is one of the best ways to see how well you have mastered the material and to identify concepts and techniques on which you need to do more work.

Study Guides: There are seven numbered study guides on the course webpage. These guides are meant to supplement the homework and to help you prepare for the exams.

Quizzes and Exams: There will be two midterm exams in class and a comprehensive final exam. The exam dates are listed in the lecture schedule that follows. Additionally, there will be 'pop' quizzes in many of the lectures (10 - 20 quizzes throughout the quarter). The quizzes will be short — one or two questions based on recent material and related homework. Make-up quizzes will not be given (but you don't need to take all the quizzes for full quiz-credit).

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 particular, the TAs will review the homework and the study guides.

Special Accommodations: UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please contact the Disability Resource Center, which offers services that are confidential and free of charge. Contact DRC by phone at ***831-459-2089*** or by email at ***drc@ucsc.edu***. If you have an Accommodation Authorization Letter from the DRC, please submit it to me privately during my office hours or by appointment, preferably within the first two weeks of the quarter. At that time, I would also like us to discuss ways we can ensure your full participation in the course.

Course grade: The quizzes contribute 20 percent to your overall score in the class, the two midterms contribute 40 percent and the final exam contributes the remaining 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 — e.g., using a phone during an exam, copying from someone else on an exam, etc. — will not be tolerated. Students who help others cheat are also considered cheaters. Students caught cheating will be reported to the AMS department and to their college provost. In almost all cases, a student caught cheating will receive a failing grade in the class. The administrative consequences of cheating, determined by your college provost, can range from a warning to suspension and in all cases, cheating is recorded in your academic record.

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, make a list of questions to ask. Try working the examples in the book/supplementary notes on your own before reading the solutions.

⋆ Work on the homework together with the second reading. Make a note of the problems that you don't understand so that you can ask about them.

⋆ ***Ask questions:*** the more specific your question, the better and more helpful the answer is likely to be. You can ask questions in class, in section and during office hours.

⋆ ***Attend sections regularly***. You can prepare for section by making a list of the homework/study guide problems you find most challenging/confusing.

⋆ Take advantage of all the resources: lecture, section, MSI, office hours.

⋆ Study with friends for a few hours a week.

⋆ The standard for a 5-unit course at UCSC is 15 hours of studying a week. These 15 hours include the time for lectures and sections, but this still leaves close to 10 hours a week you should be spending with the material outside of class.

⋆ If you feel that you are getting lost, take action. Don't wait and hope 'it goes away'. Come to office hours or ask questions in class (or section) to clear up any confusion.

Lecture Schedule with Homework Assignments and *Exam Dates.*

Friday, 9-28: Introduction. Differentials

Reading: Section 14.1.

Homework. Section 14.1: 1 - 15.

Monday, 10-1: The indefinite integral.

Reading: Section 14.2.

Homework. Section 14.2: 1 - 30.

Wednesday, 10-3: Integration with initial conditions.

Reading: Section 14.3.

Homework. Section 14.3: 1 - 6, 11 - 14, 20.

(*) Complete Study Guide 1

Friday, 10-5: Substitution.

Reading: Section 14.4.

Homework. Section 14.4: 1 - 10, 36 - 40, 85, 86.

Monday, 10-8 Techniques of integration.

Reading: Section 14.5.

Homework. Section 14.5: 4 - 13, 31, 43, 57, 67.

(*) Complete Study Guide 2

Wednesday, 10-10: The definite integral.

Reading: Supplementary Note 1 and Section 14.6.

Homework. SN1 Exercises: 1- 4. Section 14.6: 1, 3, 7, 8, 13.

Friday, 10-12: The fundamental theorem of calculus.

Reading: Section 14.7.

Homework. Section 14.7: 7 - 15, 25 - 30.

Monday, 10-15: Applications.

Reading: Sections 14.9 and 14.10

Homework. Section 14.9: 7, 12, 21, 30, 43, 53, 59, 60. Section 14.10: 2, 3, 8.

(*) Complete Study Guide 3

Wednesday, 10-17: Catch up and review.

Reading: Chapter 14, SN 1.

Homework. Study Guides 1 - 3

Friday, 10-19: ***Midterm 1* — *Chapter 14, SN 1, SG 1 - 3.***

Monday, 10-22: More techniques of integration; Table of integrals.

Reading: Sections 15.1 – 15.3.

Homework. Section 15.3: 5 - 13, 39 - 48.

Wednesday, 10-24: More Applications.

Reading: Sections 153 - 15.4.

Homework. Section 15.3: 59, 61, 62. Section 15.4: 1 - 8.

Friday, 10-26: Separable differential equations, I.

Reading: Section 15.5.

Homework. Section 15.5: 1 - 10, 21, 23, 27, 29.

Monday, 10-29: Separable differential equations, II.

Reading: Section 15.6.

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

(*) Complete Study Guide 4

Wednesday, 10-31: Partial derivatives.

Reading: Section 17.1.

Homework. Section 17.1: 1 – 25.

Friday, 11-2: Interpretation/Application; Linear approximation.

Reading: Section 17.2 and Supplementary Note 2, Sections 1 - 2.

Homework. Section 17.2: 1 – 5, 10, 13, 23, 25.

Monday, 11-5: Higher order partial derivatives; Quadratic approximation.

Reading: Section 17.4 and Supplementary Note 2, Sections 3 - 5.

Homework. Section 17.4: 1 – 10. SN 2: 1, 4.

(*) Complete Study Guide 5

Wednesday, 11-7: ***Midterm 2 — Sections 15.3 - 15.6, 17.1, 17.2, 17.4, SG 4 - 5.***

Friday, 11-9: Optimization I — Local min/max values and first order conditions.

Reading: Section 17.6 and Supplementary Note 3.

Homework. Section 17.6: 1 – 6.

Monday, 11-12: ***Veterans day holiday***

Wednesday, 11-14: Optimization II — Second order conditions.

Reading: Section 17.6 and Supplementary Note 3.

Homework. Section 17.6: 11 – 20.

Friday, 11-16: Optimization III — Applications.
Reading: Section 17.6
Homework. Section 17.6: 21, 22, 25, 26, 30, 36.

(*) Complete Study Guide 6

Monday, 11-19: Optimization IV — The envelope theorem.
Reading: Section 17.4 and Supplementary Note 4.
Homework. SN 4: 1, 2.

Wednesday, 11-21: The envelope theorem, continued.
Reading: Supplementary Note 4.

Friday, 11-23 ***Thanksgiving holiday***

Monday, 11-26: Optimization V — Constrained optimization.
Reading: Section 17.7 and Supplementary Note 5.
Homework. Section 17.7: 1 - 8.

Wednesday, 11-28 Constrained optimization (cont).
Reading: Section 17.7 and Supplementary Note 5.
Homework. Section 17.7: 15 - 18.

Friday, 11-30: Application — Cost minimization.
Reading: Supplementary Note 5 (Section 5).
Homework. SN 5: 2.

Monday, 12-3: Application — Output maximization.
Reading: Supplementary Note 5 (Section 5).
Homework. SN 5: 3.

Wednesday, 12-5: Application — Utility maximization.
Reading: Supplementary Note 5 (Examples 4, 5 and 6).
Homework. SN 5: 1. Section 17.7: 21 - 24.

(*) Complete Study Guide 7

Friday, 12-7: Catch-up and review.

Thursday, 12-13: Final Exam, 8:00 – 11:00 am