

MWF 1:00 – 3:30 pm, Jack Baskin Auditorium 101
<https://ams005-summer18-01.courses.soe.ucsc.edu/home>

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Required text: Statistics 4th Edition, by Freedman, Pisani and Purves.

Course Description: This course provides an introduction to statistics with an emphasis on instructive applications to the social and natural sciences. We will also study some elementary probability theory and a certain amount of computation is inevitable, but in this course we will focus less on the technical aspects of the computations and more on understanding the ideas that motivate the computations and even more on interpreting the numbers that the computations produce. Please see the lecture schedule that follows for more details.

Exams: There will be four short exams, one each Friday, and a comprehensive final exam on the last day of summer session. Make-up exams will *not* be given, but your lowest exam score will be dropped.

Reading and homework: The assigned reading (on the lecture schedule that follows) is meant to be completed *before* the lecture that covers that material. You should use the homework (also listed in the syllabus) for each chapter to test your understanding and to prepare for the lecture. After the lecture you should read the chapter(s) again and revisit the homework to reinforce your grasp of the material. Homework will not be collected or graded, but some of the questions on the quizzes and on the final will be very similar to homework problems.

Sections: We have two TAs and sections will be scheduled after consulting with the students.

Course grade: Your 3 best exam scores contribute 60% to your course score and the final exam contributes 40%. Letter grades will correspond (approximately) to the following ranges:

| 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 |

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 few days of the course. Contact DRC by phone at *831-459-2089* or by email at *drc@ucsc.edu* for more information.

Key Summer Session dates:

Last day to enroll: Thursday, June 28

Last day to drop: Monday, July 2 (with refund)

Last day to withdraw: (no refund) Friday, July 13

Last day to change grade option: Friday, July 7

TIPS FOR SUCCESS

1. 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. Have a look at the homework for the sections you have read — take note of the problems you find difficult or mysterious.
2. 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.
3. Work in detail on the 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.
4. **Ask questions** in class, during office hours and in section. Remember: the more specific your question, the better and more helpful the answer is likely to be.
5. Study with friends for a few hours a week. Technical skills can be practiced alone, but concepts should be *discussed*.
6. The standard for a 5-unit course at UCSC is 15 hours a week in a 10 week quarter, including lectures, sections and studying outside of class. In a 5-week summer session course, you should realistically expect to spend about 20+ hours a week with the material in order to succeed.
7. 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.

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 Schedule (subject to change)...
... with Exam Dates (not subject to change).

Monday, 6-25: Introduction. Experiments and observational studies.

Reading: Chapters 1 and 2.

Homework. Chapter 2: Exercise set A - 1, 4, 5, 6, 8, 11, 13; Review exercises 1, 2, 4, 7, 8, 11.

Wednesday, 6-27: Describing data: tables, histograms and statistics.

Reading: Chapters 3 and 4.

Homework. Chapter 3: Exercise sets A, B, C, D, E, F; Review exercises 2, 3, 4, 7, 8, 10.

Chapter 4: Exercise sets A, B, C, D, E; Review exercises 1, 2, 3, 4, 5, 7.

Friday, 6-29: Describing data: Normal approximation (for data). ***Exam 1*** (Chapters 1 - 4)

Reading: Chapters 4 and 5.

Homework. Chapter 5: Exercise sets A, B, C, F; Review exercises 1, 2, 3, 5, 6, 8, 9, 12.

Monday, 7-2: Correlation.

Reading: Chapters 8 and 9.

Homework. Chapter 8: Exercise sets A, B, C; Review exercises 1, 2, 3, 4, 5, 7, 10, 11.

Chapter 9: Exercise sets A, B, C, D, E; Review exercises 2, 3, 4, 8, 9, 10, 11.

Wednesday, 7-4: ***Holiday***

Friday, 7-6: Regression.

Exam 2 (Chapters 5, 8 and 9)

Reading: Chapters 10 and 11.

Homework. Chapter 10: Exercise sets A, B, C, D; Review exercises 1, 2, 3, 5, 7, 9.

Chapter 11: Exercise sets A, B, C, D, E. Review exercises 1, 2, 3, 4, 5, 6, 9.

Monday, 7-9: Regression (cont.)

Reading: Chapters 11 and 12.

Homework. Chapter 12: Review exercises 1, 2, 3, 9, 10.

Wednesday, 7-11: Probability I.

Reading: Chapters 6 (briefly), 13 and 14.

Homework. Chapter 6: Review exercises 1 - 5; Special review exercises 8, 9, 12, 13, 14.

Chapter 13: Exercise sets A, B, C, D; Review exercises 1 - 11.

Chapter 14: Exercise sets A, B, C, D; Review exercises 1 - 12.

Friday, 7-13: Probability, II — the Law of Averages

Exam 3 (Chapters 10 - 14)

Reading: Chapters 15 (briefly) and 16.

Homework. Chapter 16: Exercise sets A, B, C. Review exercises 1 - 10.

Monday, 7-16: Expected value, standard error and the *Central Limit Theorem*.

Reading: Chapters 17 and 18.

Homework. Chapter 17: Exercise sets A, B, C, D, E; Review exercises 1, 4, 5, 8, 10, 12, 13.

Chapter 18: Exercise sets A, B, C; Review exercises 1, 2, 3, 4, 5, 6, 8, 9, 12, 14.

Wednesday, 7-18: Confidence intervals I.

Reading: Chapters 19, 20 and 21.

Homework. Chapter 20: Exercise sets A, B; Review exercises 2, 6, 7, 8, 11, 12.

Chapter 21 – Exercises sets A, B, C, D, E.

Friday, 7-20: Confidence intervals, II.

Exam 4 (Chapters 16 - 18, 20).

Reading: Chapters 21 and 23.

Homework. Chapter 21: Review exercises 2, 3, 4, 5, 9, 12, 13, 15.

Chapter 23: Exercises sets A, B, C, D; Review exercises 1, 2, 3, 4, 5, 8, 9, 10, 12.

Monday, 7-23: Tests of significance I

Reading: Chapters 24, 26 and 27.

Homework. Chapter 26: Exercises sets A, B, C, D, E, F; Review exercises 1, 2, 4, 5, 6, 7, 8, 11.

Chapter 27: Exercises sets A, B, C, D; Review exercises 2, 3, 4, 5, 6, 7, 9.

Wednesday, 7-25: Tests of significance II

Reading: Chapters 27 and 29.

Friday, 7-27:

FINAL EXAM.