

MWF 1:00 – 3:30 pm, Baskin 101

<http://people.ucsc.edu/~yorik/AMS5>**Instructor:** Yonatan Katznelson**Office:** Baskin 361B**Phone:** 459 - 1046**Email:** yorik@ucsc.edu**Required text:** *Statistics, Unlocking the Power of Data*, by Lock, Lock, Morgan, Lock and Lock.

**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.

**Quizzes/Exams:** There will be four short quizzes (dates are listed on the lecture schedule that follows) and a comprehensive final exam on the last day of summer session. Make-up quizzes will *not* be given, but your lowest quiz score will be dropped.

**Reading and homework:** The assigned reading (on the lecture schedule that follows) is meant to be done *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 prepare you for the lecture. Homework will not be collected or graded, but the questions on the quizzes and many of the questions on the final will be very similar to homework problems. The teaching assistants will review homework problems in their sections.

**Sections:** The sections will be scheduled during the first week.

**Course grade:** Your 3 best quiz 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+
79% – 89%	B– to B+;
65% – 78%	C to C+
50% – 64%	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. *Accommodations cannot be made until we have the official paperwork.* Contact DRC by phone at **831-459-2089** or by email at **drc@ucsc.edu** for more information.

### IMPORTANT SUMMER SESSION I DATES

**Last day to enroll:** Wednesday, June 25.

**Last day to drop:** Sunday, June 29.

**Withdrawal period:** Monday, June 30 - Friday, July 11.

**Last day to change grade option:** Friday, July 4.

## 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.
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 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.
4. **Ask questions.** Remember though, the more specific your question, the better and more helpful the answer is likely to be. The TAs will dedicate most of the section time to review and questions.
5. Take advantage of all the resources: lecture, section, LSS tutor, office hours.
6. Study with friends for a few hours a week. Technical skills can be practiced alone, but concepts need to be *discussed*.
7. 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 20-30 hours a week with the material in order to succeed.
8. 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)  
and Quiz/Exam Dates (*not* subject to change).**

**Monday, 6-23:** Introduction. Collecting data. Experiments and observational studies.

**Reading.** Chapter 1.

**Homework.** Chapter 1: 1-11, 14, 17, 18, 21, 24, 27-51, 53, 54, 59, 63, 64-79, 84, 85, 87, 89, 92, 95.

**Wednesday, 6-25:** Describing data - one variable.

**Reading.** Sections 2.1 - 2.4.

**Homework.** Chapter 2: 1 - 12, 17, 19, 23, 27 - 29, 31, 32-45, 51, 53, 55, 59, 63, 67, 69, 73-76, 79, 81, 87, 89, 91, 93, 97, 101, 121, 137.

**Friday, 6-27:** Describing data - two variables.      ***Quiz 1***

**Reading.** Sections 2.5 - 2.6.

**Homework.** Chapter 2: 149-162, 165, 168, 173, 177, 181, 187-193, 195, 203, 205, 206.

**Monday, 6-30:** Probability I

**Reading.** Sections 11.1 - 11.2

**Homework.** Chapter 11: 1-27, 31, 33, 36, 37, 39, 43, 45, 47, 48 - 55, 57, 60-63.

**Wednesday, 7-2:** Probability II

**Reading.** Sections 11.3 - 11.4.

**Homework.** Chapter 11: 69-83, 87, 89, 95, 96-116, 119, 121, 126, 129.

**Friday, 7-4:**      ***Holiday - no class***

**Reading.** Chapter 11

**Monday, 7-7:** Sampling distributions and confidence intervals.      ***Quiz 2***

**Reading.** Sections 3.1 - 3.2

**Homework.** Chapter 3: 1-19, 21, 24, 27, 29, 35, 37, 39-49, 53, 59, 61.

**Wednesday, 7-9:** Confidence intervals (cont.)

**Reading.** Sections 3.2 - 3.4

**Homework.** Chapter 3: 65-73, 75, 79, 81, 88, 89, 91-95, 97, 99, 107.

**Friday, 7-11:** Hypothesis tests I      ***Quiz 3***

**Reading.** Sections 4.1 - 4.2.

**Homework.** Chapter 4: 1-13, 15, 17, 21, 27, 30, 31, 32, 35, 37, 41-45, 47, 49, 51, 57, 65.

**Monday, 7-14:** Hypothesis tests II

**Reading.** Sections 4.3 - 4.5.

**Homework.** Chapter 4: 67 - 76, 78, 79, 82, 91, 93 - 98, 117 - 122, 125, 137, 146 - 149.

**Wednesday, 7-16:** Normal distributions, confidence intervals and p-values.

**Reading.** Chapter 5.

**Homework.** Chapter 5: 1 - 3, 5 - 11, 13, 15, 29, 31, 39, 44 - 49, 51 - 55, 62, 63, 65.

**Friday, 7-18:** Confidence intervals and tests for a single proportion. *Quiz 4*

**Reading.** Sections 6.1 - 6.3.

**Homework.** Chapter 6: 7, 8, 13, 14, 15, 17, 26 - 33, 37, 39, 42, 43, 57 - 61, 63.

**Monday, 7-21:** Confidence intervals and tests for a single mean.

**Reading.** Sections 6.4 - 6.6.

**Homework.** Chapter 6: 72 - 75, 84, 85, 92 - 99, 105 - 109, 111, 115, 126, 129, 135 - 140, 145.

**Wednesday, 7-23:** Confidence intervals and tests for the difference between two proportions or two means.

**Reading.** Sections 6.7 - 6.12.

**Homework.** Chapter 6: 153, 157, 159, 160, 163, 171, 173, 175, 181-184, 191, 195, 197, 211, 213, 221, 228, 229, 232, 235, 255, 265.

**Friday, 7-25:** **FINAL EXAM** (in class).