

STATISTICS 10
INTRODUCTION TO STATISTICAL REASONING
Section 3; Spring, 2000

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Virtual office hours: I will try to respond to your emails during my office hours on W 2-3 or later that evening

Meeting times and places:

Lectures: Monday, Wednesday, Friday, 10:00-10:50am, Kinsey 169

Sections:

| ID | Time | Room | TA | Office | Office Hrs | E-Mail |
|----|---------|--------------|---------------|--------------|-------------|--|
| 3A | Tues 10 | Boelter 9413 | Jun Xie | MS 3903 | T 11-12, Th | jxie@stat.ucla.edu |
| 3B | Thur 10 | Boelter 9413 | Jun Xie | | 2-3 | jxie@stat.ucla.edu |
| 3C | Tues 4 | Boelter 9413 | Vanessa Beddo | Boelter 9401 | | beddo@stat.ucla.edu |

Texts: Freedman, D., Pisani, R., & Purves, R, *Statistics*, 3rd edition. New York: W.H. Norton & Company, 1998. There is also a supplemental "Reader" for the course in the Student Store that includes some of your homework questions, copies of my overheads used in lecture, a lab manual for the discussion section, practice questions for exams, and other handouts.

Optional: Velleman, *ActivStats*. Glenview, IL: Addison Wesley Interactive, 1999, is available in the student store in the Stat textbooks section. This is the computer program we will use in the discussion section. You do not need it if you attend discussion sections, but you can load it on your own computer to have access to the program at times other than section or when the computer lab has open hours.

Overview: This course is an introduction to the study of uncertainty and scientific decision-making. Contrary to popular belief, statistics is not all math. Here, you will be introduced to methods of making informed decisions about what we observe in the world around us and how to use computers to do the math for you. We will emphasize conceptual understanding of the material; hand calculations require no more preparation than algebra. You need a hand-calculator, at a minimum one that can store ΣX^2 in memory. Another good choice is one that has memory functions to store separately the sums of two variables (x and y) and produce r (the correlation). You may **not** use a "hand held" electronic device like a Palm Pilot or a laptop during exams, so it is best to have a separate hand calculator that you are comfortable using.

The web: Course materials, lecture outlines (but not copies of the overheads), and the stat lab manual are on the web. There are 2 ways to reach the course. One is through your automatic [my.ucla](http://my.ucla.edu) web page. The second way is to go directly to the real site. Sometimes this works better. The address is:

<http://www.stat.ucla.edu/~cochran/stat10/spring>

When you have a question, the course web page should be the first place to look for the answer. You can probably get the correct answer here the quickest. Do download my lecture outlines to make your notetaking easier, but with the caveat that the notes reflect only what I intend to say, and as has been said before, "the best laid plans often go astray."

Sections: The discussion sections will be held in the Stat computer lab. Here, you will learn how to use a computer software program to create the calculations described in your text. The TA's will also go over questions that you might have about course material. All students interested in getting a C or better in this class should make certain to attend the sections that are starred in the schedule. In the past, students have found these especially helpful to doing passing work in this class.

Exams: There will be two midterms (Friday, April 21 and Friday, May 12) and a final (Wednesday, June 14, 8:00 am). Mark your calendars now; there will be no early or late exams given for any reason. Mark

your calendars now; there will be no early or late exams given for any reason. The midterms are not cumulative. One half of the final exam will cover the material presented after the second midterm and is essentially a 3rd "midterm"; 1/2 of the final will be cumulative covering the whole course. You may use a hand-held calculator during the exams. Exams will be based on my lectures, discussion sections, and the textbook. They include multiple choice, short answers and manipulation of data, including calculations. Doing the homework and the exercises in the book (including those not assigned as homework) are the best means of preparation for the exams. Because the computer lab is experimental this quarter, there will be **no** questions on the exams requiring you to know how to generate commands in the software program you are learning in the discussion sections, but you may need to know how to read results that are produced by the program (see example questions in the course reader). Always bring your student photo ID to exams because identification will be checked on a random basis.

Homework: There are 9 problem sets assigned--but #3 and #6 are **not** turned in for credit so that I can post the answers to aid your studying for the midterms. Assignments and the date the 7 other assignments are due are listed below. The problem numbers refer to the REVIEW EXERCISES at the end of the chapter unless SR (Special Review Section) or DISC (computer lab manual question) is specified. Assignments are turned in at the end of class lecture on the day due. Because answers to homework questions from the textbook are posted on the web right after they are due, **no late homework will be accepted** for any reason. If you are going to miss class when homework is due, you can always turn it in **early** to my mail box in the Statistics Department, 8th floor, MS 8142. FAXing or E-mailing the homework to myself or TA's is **not** allowed. The TA's have been instructed **not** to accept homework from you to avoid problems with lost homework. Each homework assignment is graded as follows:

| Points | Criteria |
|--------|--|
| 0 | Not done |
| 2 | Less than 1/2 done |
| 4 | 1/2 or more done but not completely done |
| 6 | All problems done |

The homework is meant to give you practice at mastering concepts--for this reason you will not be penalized for occasionally getting the wrong answer. Because the homework is being graded for how much of it you attempted and completed, the decision as to how "done" is done will be left to the reader. Answers that suggest you did not *thoroughly* attempt the homework, such as answering simply "yes" or "no" to complicated questions or answering most questions in a way that indicates you did not study the chapter, will not be considered "done." You must show all your work.

Grading: Your grade will be determined as follows:

| Work Product | What is used | Max. points | % of Grade |
|-------------------------------|---|-------------|------------|
| Homework | Your 6 highest scores of 7 assignments | 36 | 10.7% |
| Midterm 1 | Each of these are 100 pts possible. | | |
| Midterm 2 | From your 3 exams, I will drop the | 200 | 59.5% |
| Final--"Midterm" portion only | midterm exam or the "midterm" portion of the final that is your worst performance, keeping only your two best exams.* | | |
| Final--Cumulative portion | The cumulative portion of the final | 100 | 29.8% |

*You **must** take all exams (see missed exams below).

I will assign grades to standardize the 3 midterms to maintain your class ranking. In the past, grades in Stat 10 sections have averaged about 26% in the A's, 33% in the B's, 31% in the C's, and 10% in the D's and F's. Grades in this section will be generally consistent with that distribution, although sometimes classes perform better or worse than the average.

Housekeeping:

Homework: Please remember the reader grades approximately 100 homework assignments each week as quickly as possible so that we can return it to you without delay. To make this task go

smoothly, you are responsible for following the guidelines below. The reader is allowed to mark your work as not done if he or she cannot find it. Be sure you get the credit you deserve for your homework.

1. Your pages *must* be stapled. Don't trust someone else to keep your pages together. Forget paper clips, tape, folds, gum, rubberbands. These do not work.
2. In the upper right corner of every page put:
 - a. Your full name
 - b. Your student ID number
 - c. Your section number
 - d. Your TA's name
3. On the first page in the upper left corner, put the number of the homework assignment and the date you turned it in.
4. Clearly number problems using Chapter/Problem numbers in the book or lab manual.
5. Do the problems in the order assigned. The reader will not go looking for them.
6. Write clearly. You want the reader to know that you completed the work. If your writing is illegible, that may be hard to determine. Print if you have to.
7. Remember, the reader is only trying to be sure that you did the work. If he or she cannot make sense of your homework then it might not be considered done.

Missed exams: By definition, emergencies beyond a student's control are rare events. There will be no make-up midterm exams given. If you do not take both midterms, then I will average the F from the missed midterm with the other two "midterms." However, if for unavoidable and exceptional reasons you are unable to take a midterm, you are still eligible to drop your F midterm score as your lowest midterm if 1> you seek the instructor's permission to miss the exam--you should do this as early as possible, and before the midterm you expect to miss, because such requests are granted only in exceptional circumstances, 2> the reason for missing the exam is well documented (you must provide the written documentation requested by the professor) and, 3> the instructor agrees that the reason is beyond your control and makes you unable to take the exam when it is scheduled. A make-up final examination is given only when circumstances beyond a student's control make it impossible to take the final. Students will be required to provide written documentation of the reason why the final exam was not taken. Make-up final exams are written individually for the student and have a different format than the regular exam. Final determination of whether or not to drop a missed midterm or to give a make-up final exam rests solely with the instructor

Grade appeals: If you believe that a mistake has been made in grading your exam, write a note describing the error, attach it to the original exam, and give it to the instructor or your TA. **You have 3 working days to do this starting from the day that the TA returns the midterms to your discussion section.** If you do not attend discussion section, you will have to obtain your midterm from your TA during the TA's office hours. If you are ill or have some other circumstance that will prevent you from complying with this 3 day requirement, you need to discuss this with your TA before or during this three day period in order to make alternative arrangements. Appeals after 3 working days will not be considered. Please be advised that we commonly copy your graded answer sheets before returning them to you and will compare the two when considering your appeal.

If you have a concern about the homework grading, you must bring this to the attention of your TA the day your homework is returned to you in section. The TA will take your homework back and discuss your concern with the instructor. Because grading of the homework is very straightforward, most difficulties arise due to failure to follow the guidelines for homework preparation given above. If that is so, the appeal will be denied. But sometimes, mistakes are made. If you do not attend the discussion section when the homework is returned, you will not be able to appeal because homework answers are already posted on the class web site. For that reason, we are unable to consider late appeals and the grade will stand--but remember, you do get to drop your lowest score.

Incompletes: In the event you miss the final exam, you must meet the following criteria before I can give you an Incomplete: (1) your work must be of passing quality throughout the course, e.g., your homework and midterms are passing work, (2) missing the exam was due to an emergency beyond your control that you have documented to my satisfaction, and (3) you contacted me on or before the day of the final to arrange a conference.

Course Schedule

| DATE | TOPIC COVERED | READING | DISC SECTION | HOMEWORK ASSIGNMENT [#] |
|---------|--------------------------------------|----------------|----------------------------|--|
| 4/3/00 | Asking questions; collecting data | Chapter 1 | Wk 1: Lab 1 | #1: Ch 2: 3,4,6,11; Ch 3: 2,4,6,7,12; DISC 2 |
| 4/5/00 | Common elements of research design | Chapter 2 | | |
| 4/7/00 | Summarizing data graphically | Chapter 3 | | |
| 4/10/00 | Summarizing data numerically | Chapter 4 | Wk 2: Lab 2 | #1 due; #2: Ch 4: 1,3,7,10; Ch 5: 4,6,8; Ch 6 SR : 6,15; DISC 4 |
| 4/12/00 | Normal distributions | Chapter 5 | | |
| 4/14/00 | Measurement error/Chance | Chapter 6, 13 | | |
| 4/17/00 | Chance continued | Chapter 14 | Wk 3: Lab 3 | #2 due; #3: Ch 13: 6,7,10,12; Ch 14: 4,6,13; Ch 15: 3,6,8 |
| 4/19/00 | Binomial processes/Review | Chapter 15 | | Homework #3 is not turned in |
| 4/21/00 | MIDTERM #1 | | | Bring calculator, student photo ID |
| 4/24/00 | Repeated trials, expected values, SE | Chapter 16, 17 | Wk 4: Review midterm* | #4: Ch 16: 4,10; Ch 17: 4,8; Ch 18: 5,11; Ch 19: 2,10; DISC 7 |
| 4/26/00 | More S.E./Normal approximations | Chapter 18 | | |
| 4/28/00 | Sampling | Chapter 19 | | |
| 5/1/00 | Sampling error | Chapter 20 | Wk 5: Lab 4 | #4 due; #5: Ch 20: 6,10; Ch 21: 1,4,6; Ch 23: 4,10; Ch 23 SR : 18; DISC 9 |
| 5/3/00 | Confidence intervals | Chapter 21 | | |
| 5/5/00 | Confidence intervals | Chapter 23 | | |
| 5/8/00 | Correlation | Chapter 8 | Wk 6: Prepare for midterm* | #5 due; #6: Ch 8: 5,6,8,9,10; Ch 9: 2,4,7,8,12 |
| 5/10/00 | More correlation/Review | Chapter 9 | | Homework #6 is not turned in |
| 5/12/00 | MIDTERM #2 | | | Bring calculator, student photo ID |
| 5/15/00 | Regression | Chapter 10 | Wk 7: Review Midterm* | #7: Ch 10: 2,4; Ch 11: 3,6,7; Ch 12: 2,7,11 |
| 5/17/00 | Regression continued | Chapter 11 | | |
| 5/19/00 | Regression continued | Chapter 12 | | |
| 5/22/00 | The z-test | Chapter 26 | Wk 8: Lab 5 | #7 due; #8: Ch 26: 2,5,8,12; Ch 27: 3,7,8,10; DISC 12 |
| 5/24/00 | The one sample t-test | | | |
| 5/26/00 | The two sample z-test | Chapter 27 | | |
| 5/29/98 | Holiday | | | |
| 5/31/00 | Chi-square | Chapter 28 | Wk 9: Lab 6 | #8 due; #9: Ch 28: 1,5,6; Ch 29: 4; Ch 29 SR : 5,9,12,19; DISC 14 |
| 6/2/00 | More chi-square | | | |
| 6/5/00 | Drawing conclusions | Chapter 29 | Wk 10: Prepare for final* | #9 due |
| 6/7/00 | Recap | | | |
| 6/9/00 | Review | | | |
| 6/14/00 | FINAL | | | Bring calculator, student photo ID |

*Even if you choose not to attend discussion sections regularly, in the past students have found these sections important to doing well in the course.

[#]Numbers refer to REVIEW EXERCISES, except **SR** = SPECIAL REVIEW EXERCISES SECTION, DISC = Lab Manual questions