

Stat 371-003: Introductory applied statistics for the life sciences

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Lectures	MWF 9:55-10:45am, 1240 Comp Sci & Stat
Textbooks	Samuels & Witmer, <i>Statistics for the Life Sciences</i> , 3rd edition [required] Gonick & Smith, <i>Cartoon guide to statistics</i> [recommended]
Course web	http://www.biostat.wisc.edu/~kbroman/teaching/stat371

Objectives

The course will provide students in the life sciences with an introduction to modern statistical practice. Topics include exploratory data analysis, the design of experiments, probability, estimation and statistical inference. The primary objectives are to master the basic concepts of statistics, to be able to apply these concepts correctly in biological problems, and to gain basic competence with the modern statistical software R.

Prerequisites

There is a formal prerequisite of basic mathematical knowledge that could be satisfied by a course in college algebra or calculus, but the course requires no calculus and minimal algebra. Credit cannot be given for this course if you have already taken Stat 201, 224, 301 or 324.

Computing

Modern statistics requires computing. We will use the statistical software R, which is free, open-source, and available for Windows, MacOSX and Unix. R is available in several computer labs on campus. R is widely used, particularly for bioinformatics. Mastery of R could be useful to you for years to come.

Textbook

The textbook is expensive (sorry!), but it is as good as they come. So read it, preferably in advance of the corresponding lecture.

Homework

There will be homework assignments approximately weekly. Doing homework on a regular basis is the best way to learn. Homework will be posted on the course website on Wednesdays and due in lecture the following Wednesday. Late homework will be penalized except under extenuating circumstances and if prior arrangements have been made. Your homework solutions should be well organized and neat. Demonstrate your ability to communicate your results (and be nice to your TA). If your work is painful to read, your grade will be penalized.

Exams

There will be two midterms and a final exam. You will be allowed one standard sheet of paper (front and back) with notes for each exam. Makeup exams can be a logistic nightmare, and so they will be allowed only with a reasonable and documented excuse, and only if I have been notified in advance (by email or phone).

Academic honesty

You are *encouraged* to talk to other students, your teaching assistant, and me about homework. Your TA and I may give you clues or discuss similar problems without doing your homework for you. You may look through books or web pages for solutions to problems. However, you may not present others' work as your own. If you work with other students in solving problems, make sure that you each write up your own solutions independently. It is not acceptable for one student to write a solution for another student to copy.

You must work independently during exams. You may not share calculators or pass notes during exams.

Grading

Your grade will be determined by homework assignments (25%), two midterms (20% each), and a comprehensive final exam (35%). I will assign course grades according to the following scale, though this may be adjusted if it turns out that I've been too harsh.

Percentage	Grade
94 – 100%	A
87 – 94%	AB
80 – 87%	B
73 – 80%	BC
60 – 73%	C
55 – 60%	D
0 – 55%	F

Index card

The index card you were given is for an informal, anonymous survey to be used for examples in the course. Please write the following information:

1. Left or right handed?
2. Height
3. Gender
4. Birth year
5. Birth month
6. Year in school
7. College major
8. Windows or Mac (or unix)?
9. Have a laptop?
10. Logarithms: mysterious, painful or wonderful?