

Statistics 371: Introductory Applied Statistics for the Life Sciences

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Office Hours: Monday 1:00 – 2:00 P.M.,
Wednesday 10:00 – 12:00 noon,
and by appointment
Class Hours: MWF 8:50 – 9:40 A.M.
Room: 1221 CSSC (Computer Science and Statistics Center)
Textbook: *Statistics for the Life Sciences*, Third Edition, by Samuels and Witmer

Prerequisites:

There is a formal prerequisite of background mathematical knowledge that could be satisfied by a course in college algebra or calculus. Understanding the course material requires no calculus and minimal algebra. Freshmen may enroll in the course. Be aware that credit cannot be given for this course if you have already completed Statistics 201, 224, 301, or 324.

Students will need a scientific calculator with statistical functions. (Programmable calculators are very good if you have one, but nearly any scientific calculator will do.) Some homework assignments require the statistical package R, which may be freely downloaded onto your Windows PC, Macintosh, or Linux machine. The software's homepage is <http://cran.r-project.org/>, but the U.S. mirror, <http://cran.us.r-project.org/>, will be faster. R is also available in several public computer labs on campus.

Course Objectives:

The primary course objectives are for the students enrolled in the course: (1) to develop mastery of basic statistical concepts; (2) to develop the ability to apply these concepts correctly, especially in problems originating in the life sciences; and (3) to learn to communicate effectively in writing the results of a statistical analysis to a non-statistical audience; (4) to gain exposure to modern statistical computing software, specifically the statistical package R.

Grading:

Your grade will be determined by exams (90%) and homework (10%). There will be nine 25-minute exams throughout the semester, each worth ten points. During the final exam period time, you may take additional exams and possibly improve scores from earlier exams (or replace zeros on exams you might have missed).

I will not expect you to demonstrate mastery of R on exams, although I will expect you to be able to read and interpret output from R on some exams. Many homework problems will require use of R.

Your homework for the semester will be converted to a score from 0 to 10 with 90% or higher earning 10 points, 80% or higher earning 9 points, and so on.

Course grades will be assigned according to this scale:

Course Points	Grade
92–100	A
84– 91	AB
76– 83	B
68– 75	BC
60– 67	C
55– 59	D
0– 54	F

It is possible for a student who does well on all of the exams and on the homework to earn an A prior to the final exam period.

Exams:

Exams will be in three categories — probability (3), statistical inference I (3), and statistical inference II (3). Each exam is worth ten points. **I will not give make-up exams during the semester — if you miss an exam, you will need to take a replacement exam during the final exam time.** Specifically, I will not give make-up exams for attending family functions, extending breaks, or illness. There is no penalty for missing an exam other than a need to make it up during the final exam period. *At my sole discretion*, I may permit alternative exam times for students who give me prior notice of a university-related conflict.

Homework:

There will be weekly homework assignments, consisting of exercises from the textbook, exercises from other sources, and problems to solve by computer. Doing homework is the best way to learn statistics. Each homework problem is worth up to five homework points. A '5' indicates that the student made a serious attempt at solving the problem, getting a substantial part of the problem correct.

Your homework solutions should be **written up with a word processor**, although you can hand write in graphs, sketches, figures, and mathematical notation. Each problem solution should include a brief description of the problem (that may be paraphrased from the actual problem) as well as the solution. Take care to see that your written homework solutions are clear and easy to read. Put your solutions to problems in the order that they are assigned.

Honors:

Student taking the course for honors will complete a course project. A project will include finding a biological question of interest, designing an experiment, producing data, analyzing the data statistically, and writing a report. Expect that the work involved with a project may be substantial. Projects enrich rather than replace learning in the regular course curriculum. The score out of ten on a project may replace the two lowest scores from exams or homework.

If you are working in a lab on campus, you may be able to design a project appropriate for this course that involves your research in that lab. I can also provide additional ideas for projects.

Course Web Page:

The course Web page will include an anticipated schedule including exam dates, homework assignments, supplementary notes, help for the statistical package, and other information useful for the course. You will be able to access the course web page from my home page, <http://www.stat.wisc.edu/~larget/>.

Academic Honesty:

You are permitted and, in fact, *encouraged* to talk to other students, your teaching assistant, or me about homework. Your TA or 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 other people's work as your own. Make sure to include with any submitted solutions to problems references to any sources of direct assistance. If you work with other students solving problems, make sure that you write up your own solution 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 the exams.