

Statistics 371: Introductory Applied Statistics for the Life Sciences

Professor: Bret Larget
Office: 1250A MSC (Medical Sciences Center)
Contact: Phone: 262-7979; E-Mail: larget@stat.wisc.edu; (email preferred)
Web: <http://www.stat.wisc.edu/~larget/>
Office Hours: Mon. 11:00–noon, Tue. 3:45–5:00, Wed. 8:00–9:30, and by appointment.
Class Hours: T R 8:00 – 9:15
Room: 331 SMI (Service Memorial Institute)
Textbook: *Statistics for the Life Sciences*, Third Edition, by Samuels and Witmer

Prerequisites:

While there is a formal prerequisite of background mathematical knowledge that could be satisfied by a course in college algebra or calculus, the course requires no calculus and minimal algebra. 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. Any scientific calculator that can compute a standard deviation will suffice.

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; (3) to learn to communicate effectively in writing the results of a statistical analysis to a non-statistical audience; and (4) to gain basic competence with the modern statistical computing software R.

Statistical Computing:

Modern statistical practice depends on statistical computing. For many homework assignments and some exams, I will ask you to use R, an open-source free software that runs under Windows, Macs, and Linux. R is also available in several public computer labs on campus. If you learn to use R well in this course, you will have gained a skill will benefit you in your other courses and whenever you need to do data analysis the rest of your life.

Some exams will include a take-home portion in which I will expect you to carry out some analyses using R. In-class portions of exams will not test R syntax, but will ask you to interpret R output.

Grading:

Your grade will be determined by exams (90%) and homework (10%). There will be nine short exams throughout the semester, each worth twenty points. On some days I will give two short exams. During the final exam period time, you may take additional exams to replace worse scores from earlier exams or scores from exams you missed.

I will convert your homework total to a score from 0 to 20 with 95% or higher earning 20 points, 90% or higher earning 19 points, and so on.

I will assign course grades according to this scale:

Course Points	Grade
188–200	A
174–187.5	AB
160–173.5	B
146–159.5	BC
120–145.5	C
110–119.5	D
0–109.5	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:

The nine exams will be in three categories — probability (3), one- and two-sample inference (3), and linear models (3). Each exam is worth twenty 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 12 homework assignments worth 50 points each consisting of exercises from the textbook, exercises from other sources, and problems to solve by computer.

Your homework solutions should be organized and neat with solutions in order the order problems were assigned. Each problem solution should include a brief description of the problem (that may be paraphrased from the actual problem) as well as your work. We will penalize homework that is not clearly legible and out of order. Very late homework will receive no credit.

Honors:

Student taking the course for honors will write a short criticism of the statistical methods employed in two papers and will carry out and report on statistical analyses based on data from these papers.

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, including take-home portions of exams. You may not share calculators or pass notes during the exams.