Experimental Statistics for the Biological Sciences I
10:20-1:00 T, W, Th; SAS Hall 1108

UPDATED PERMANENT COURSE WEBSITE:
http://www.stat.ncsu.edu/people/reiland/courses/st511/
WebAssign: https://www.webassign.net/ncsu/login.html

Instructor: Thomas W. Reiland, 5278 SAS Hall, telephone: 515-1939; email: reiland@stat.ncsu.edu
homepage: http://www4.stat.ncsu.edu/~reiland/

Office Hours: Reiland: Tuesday, Wednesday, Thursday - after class, and by appointment.
Teaching Assistant: Wei Li; off. hrs: T, W 9:15-10:15 1101 SAS Hall

Course Description: Preq: ST 311 or graduate standing. Basic concepts of statistical models and use of samples; variation, statistical measures, distributions, tests of significance, analysis of variance and elementary experimental design, regression and correlation, chi-square. Students will learn several methods for summarizing and describing data, in addition to techniques for using sample data to make inferences about a larger population.


Homework: Ten homework sets will be assigned during the semester. Homework assignments will be worth approximately 35 points. There will be approximately 350 possible points on the homework assignments; the exact point total will be determined as I create the assignments during the semester. No homework grades will be dropped when determining the course grade. I will use WebAssign (https://www.webassign.net/ncsu/login.html), an internet-based homework delivery system, to distribute and grade the homework. Each assignment will have a community forum in webassign where students and the instructor can discuss the homework exercises. Students are encouraged to discuss homework problems with each other; however, submission of the answers must be done independently. Violations of this rule will not be tolerated and will be considered cheating.

Exams: There will be two exams in the course, a midterm exam on Wednesday June 3 and a final exam on Tuesday June 23. The exams are closed book. For each exam students are allowed one 8½x11 sheet of notes (both sides) and their favorite calculator (no laptop computers or tablets).

Make-up exam policy: make-up exams for medical reasons will be considered only when the student presents a verifiable, written doctor's note indicating incapacitation on the day of the exam or on the days immediately preceding the exam.

Grading: The following components will contribute the indicated points to your grade:

Exams (midterm 125 pts., final 175 pts.) 300 points
Homework 350 points (approx.)
Total 640 points (approx.)

Your grade in the course is assigned according to the percentages shown in the table below. The percentage score, rounded to 2 decimal places, is determined by summing your homework scores (approx. 340 total points possible) and exam scores (300 total points possible) and dividing this sum by the total number of points possible.

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Grading: Special Considerations

THERE AREN'T ANY!! Do not ask for individually-tailored opportunities for extra credit (such as additional homework or projects) to enhance your grade, particularly at the end of the semester. All students will be assigned a grade based on the work that is assigned to the entire class. If you need to attain a specific grade in this course for whatever reason, make plans at the beginning of the semester to do the work necessary to attain the grade, and stay with the plan.

Students may be given an IN (incomplete) grade for work not completed because of a serious interruption in their work not caused by their own negligence. See http://www.ncsu.edu/policies/academic_affairs/pols_regs/REG205.00.13.php for the University IN grade policy. In the case of a student medical condition, no incomplete grade for this course will be considered without a verifiable, written doctor's note indicating more than one week's incapacitation.

Late webassign homework will be accepted at the discretion of the instructor and must be arranged at the student's initiative within one week of due date, prior to one week before the end of classes. For example, near the end of the semester don't ask to submit the 3rd webassign homework assignment that you "forgot" to submit when it was originally due.

In addition, student requests to improve the score of previously submitted webassign homework will not be granted. For example, near the end of the semester, a request to improve a low score on the 2nd assignment will not be granted.

Academic Integrity Policy: Any form of academic misconduct is a violation of the Student Code of Conduct and will not be tolerated. Academic misconduct may be defined as “any activity which tends to compromise the academic integrity of the institution, or subvert the educational process”. I expect complete honesty in the completion of exams and assignments. The student's signature on an exam means that the student neither gave nor received unauthorized aid. No help should be offered or accepted during an exam. Cheating on an exam at the least will result in an F in the course. Students are encouraged to discuss homework problems with each other; however, submission of the answers must be done independently. Violations of this rule will not be tolerated and will be considered cheating; violators at the least will receive a 0 on the assignment. Further details on academic integrity are in NC State University's Code of Student Conduct (http://www.ncsu.edu/student_conduct). Also please note the existence of the University policy on academic integrity found in the Code of Student Conduct (found in Appendix L of the Handbook for Advising and Teaching).

Computers and Calculators

Statistical calculations and graphics are, in practice, automated by software. Automating these activities increases your ability to complete problems, reduces frustration and drudgery, and allows you more time to focus on ideas and problem recognition.

Computers: You should be prepared to use Microsoft Excel or Statcrunch (http://statcrunch.stat.ncsu.edu) in many of the assigned problems.

Calculators: You do not need to purchase a graphing calculator for this course. It will be very helpful to have a calculator that does statistical calculations through correlation and simple linear regression.
IMPORTANT NCSU ACADEMIC CALENDAR DATES: SUMMER I 2015

5/18  M  First day of Summer Session classes
5/19  T  Last day to add class w/o written permission of instructor; MyPack Portal closes for adds at 11:59 pm. After this day, adds processed in 1000 Harris Hall.
5/20  W  Last day to register or add a course. Last day to drop a course, or change from credit to audit with tuition adjustment. (NOTE: The tuition and fees charge is based on the official number of hours and courses carried at 5:00 p.m. on this day.)
5/25  M  Holiday (Memorial Day); university closed
6/4  Th  Last day to withdraw or drop a course w/o a grade at all levels. MyPack Portal closes for drops at 11:59 pm
6/19  F  Last day of classes
6/22-23 M-T  Final Examinations

Lecture Schedule — The schedule of lecture topics is tentative and subject to change. The exam dates are firm.

Lectures 1-2  May 19, 20
Introduction to course; data types; descriptive statistics for univariate data.

Lectures 3-4  May 21, 26
The normal model for univariate data; descriptive statistics for bivariate data (quantitative and categorical).

Lectures 5-6  May 27, 28
Probability, random variables and probability distributions.

Lecture 7  June 2
Sampling distributions and the central limit theorem.

Lecture 8  June 3
Midterm Exam, Wednesday June 3

Lecture 9  June 4
Interval estimation and testing: proportions.

Lectures 10-11  June 9, 10
Interval estimation and testing: two proportions. Interval Estimation and Testing: One and two means.

Lecture 12-13  June 11, 16
Inference for simple linear regression. Chi-square tests.

Lecture 14-15  June 17, 18
ANOVA: contrasts and multiple comparisons
Final Exam Tuesday June 23, 8:00-11:00 1108 SAS