

STAT 516: Statistical Methods II

Spring 2024

Time/place: 10:05 – 11:20 TR, LeConte College 103
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Office hours: See [course website](#).

Bulletin description

Statistical Methods II. (3) (Prereq. C or higher in STAT 515, STAT 509, STAT 512, or equivalent) Applications and principles of linear models. Simple and multiple linear regression, analysis of variance for basic designs, multiple comparisons, random effects, and analysis of covariance. Statistical packages such as SAS.

Purpose of the course

This course can be considered a continuation of Statistical Methods I (STAT 515 or STAT 509), which covers several concepts fundamental to statistics such as basic probability rules, random variables, sampling distributions, tests of hypotheses for means and proportions, for comparing two means or two proportions, and for comparing two or more means in comparative experiments (ANOVA), as well as simple linear regression and contingency table analysis. Statistical Methods II (STAT 516) covers some of these topics in greater depth and extends the ANOVA and regression material to much greater generality, in addition paying considerable attention to the design of experiments. Most of the course material is presented in the context of linear models, of which many useful models can be formulated as special cases. The purpose of the course is to equip students to understand data analyses in scientific publications, conduct analyses themselves in a variety of settings, and be able to design experiments which can answer scientific questions.

Required textbook

The course will focus primarily on Chapters 6, 7, 8, 9, 10 and on portions of Chapters 11 and 13 of this book:

Mohr, D. L., Wilson, W. J., & Freund, R. J. (2021). *Statistical methods, 4th Ed.* Academic Press.

I will also post supplemental lecture slides on the [course website](#).

Computing

The statistical software R will be used throughout the semester. No previous experience with R is needed. I recommend using R studio. Download the free version at [this link](#).

Grading

- Homework (20%): There will be around 8 assignments during the semester. The lowest homework score will be dropped when computing the average homework score. Each homework must be typeset using Quarto or R markdown (I will show you how) and uploaded as a single pdf document into Blackboard.
- Two midterm exams (25% each): In class on *Thursday, Feb 15th* and *Tuesday, Apr 2nd*.
- Final Exam (30%): On *Tuesday, Apr 30th at 9:00 am*.

If your final exam score is higher than the lower of your two in-semester exam scores, your final exam score will replace that in-semester exam score in the calculation of your course grade. The thresholds 90%, 87%, 80%, 77%, 70%, 67%, and 60% will be used to determine the assignment of the letter grades A, B+, B, C+, C, D+, and D, respectively. The grade of F will be assigned to those earning less than 60%.

To find important dates about withdrawal from the course etc., go to [this link](#).

Honor code

See the Carolinian Creed in the Carolina Community: Student Handbook & Policy Guide. Violations of the USC Honor Code may result in a 0 for the work in question, and, in accordance with University policy, other punishments up to and including expulsion from the University.

Accommodations

If you require special accommodations, they must be arranged in advance through the Office of Student Disability Services Close-Hipp, Suite 102. (803-777-6142, SADRC@mailbox.sc.edu).