

# Statistics 510 Syllabus for Spring 2017

Location: Kildee 107

Time: 11:00 – 11:50 A.M. MWF

Instructor: Dan Nettleton

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Web: <http://dnett.github.io>

Phone: 515-294-7754

Office: Snedecor 2115

Hours: Tuesdays and Thursdays 3:10-4:00  
or other times by appointment

# Main Course Topics

- Linear Model Analysis of Multi-Factor Experiments
- Linear Mixed-Effects Models
- Maximum Likelihood Estimation and Inference
- Generalized Linear Models
- Generalized Linear Mixed-Effects Models
- Data Analysis Applications

# Learning Outcomes and Expectations

Students successfully completing STAT 510 should be able to identify appropriate generalized linear mixed-effects models for most datasets whose conditional responses are approximately normal, binomial, or Poisson. Students should also be able to fit such models to datasets using either R or SAS software. Students should be able to make appropriate statistical inferences about effects of interest based on fitted models and should understand the basic theory that makes such inferences possible.

# Prerequisites

All of the following are required.

- STAT 500
- STAT 447 or current enrollment in or past completion of STAT 543
- Knowledge of calculus and matrix algebra

## Grading

Homework	20%	
Exam 1	25%	Thursday, February 16, 7:00–9:00 P.M. Durham 171
Exam 2	25%	Thursday, March 30, 7:00–9:00 P.M. Durham 171
Final Exam	30%	Monday, May 1, 9:45–11:45 A.M. Snedecor 3105

No make-up exams will be given unless circumstances are exceptional.

## Grading (continued)

- Your final course score will be determined by the following formula:

$$\text{Course Score} = 0.20H + 0.25M_1 + 0.25M_2 + 0.30F,$$

where  $H$ ,  $M_1$ ,  $M_2$ , and  $F$  represent the score out of 100 possible on homework, midterm exam 1, midterm exam 2, and the final exam, respectively.

- Letter grades will be assigned according to the course scores.
- Students with similar course scores (as judged by the instructor) will receive similar letter grades. The order of the letter grades will match the order of the course scores.

# Homework

- The main purpose of all homework assignments in STAT 510 is to help you learn the course material.
- All homework assignments will be posted at <http://dnett.github.io/S510/hw.html>.
- Due dates are posted on the web site and written on the homework documents.
- No late homework will be accepted, but your lowest homework score will not be used to compute your grade.
- Answers to homework assignments should be written neatly or typed and well organized with no extraneous information.
- You are welcome to work with other students on homework problems. You must, however, write your own answers to the questions. Copying another's work is prohibited.

# Software

- STAT 510 requires the use of R and SAS.
- To download and install R for free, see <http://www.r-project.org/>.
- Information about using SAS is available at <http://stat.iastate.edu/statistical-software-sas>.
- R and SAS code relevant for STAT 510 will be posted at <http://dnett.github.io/S510/code.html>.
- Videos on computing are available at <http://www.public.iastate.edu/~pdixon/stat511/computing.html>



# Resources

- No textbook is required for STAT 510.
- STAT 510 Web Page at <http://dnett.github.io/S510/stat510.html>
- Teaching Assistant: Xiangmei Zhang, [xmzhang@iastate.edu](mailto:xmzhang@iastate.edu)
- Teaching Assistant Office Hours:

Mondays 3:00–4:00 in Snedecor 2404

All students have the opportunity to earn good grades in STAT 510 by learning the course material well. Please let your instructor know of any difficulties as soon as possible. Iowa State University is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. All students requesting accommodations are required to meet with staff in Student Disability Resources (SDR) to establish eligibility. A Student Academic Accommodation Request (SAAR) form will be provided to eligible students. The provision of reasonable accommodations in this course will be arranged after timely delivery of the SAAR form to the instructor. Students are encouraged to deliver completed SAAR forms as early in the semester as possible. SDR, a unit in the Dean of Students Office, is located in room 1076, Student Services Building or online at [www.dso.iastate.edu/dr/](http://www.dso.iastate.edu/dr/). Contact SDR by e-mail at [disabilityresources@iastate.edu](mailto:disabilityresources@iastate.edu) or by phone at 515-294-7220 for additional information.