

STAT 2010 (22S:030) Statistical Methods and Computing

Spring 2013

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DEO: Prof. Luke Tierney, Chairman.
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Lectures: MWF 2:30P–3:20P, 31 SH

Office hours: MWTh 10:00A–11:00P, 217 SH
or by appointment

Prerequisite: 22M:008 (Math:1005)

Textbook: Moore and McCabe, *The Basic Practice of Statistics*, 4th ed. 2007, Freeman

About the course: Central goal of this course is encouraging students to learn basic statistical methods for data analysis. The emphasis will be on choosing appropriate statistical techniques for a given problem, verifying whether the assumptions behind the techniques are met by the dataset, drawing appropriate conclusions from the analysis, and communicating the results. Students will learn the basics of SAS, a statistical software package that is widely used in business, industry, government, and research.

Class meetings: Please do not arrive late or leave early. Students should read material prior to lecture. In the case of an absence, students are responsible for the material covered and must get the notes from a fellow student.

Lab: Attendance at lab is very important to your success in the class. We will go over fundamental SAS commands and discuss how to use SAS for statistical analysis.

Grading System: The following system will be used to determine course grades:

- Assignments 10%
- Midterm (3) 45% (15% each)
- Project 20%
- Final 25%

A plus-minus grading system will be used. As a rough guide: Overall score 90% => A- or up, 80% => B- or up, 70% => C- or up)

Homework: HW will be assigned on Fridays and due on the following Friday at the beginning of the class, unless prior arrangements are made. Late HW will be penalized. You are encouraged to discuss HW problems with other students.

Exams: There will be three 50-minute exams and one two-hour cumulative final exam. The examination will be closed book and closed notes. Calculator may be used for exams, and any necessary statistical tables will be provided. Two 8.5"x11" formula sheets (both sides) may be used for each exam. If an exam is missed, a make-up exam will be permitted only if the circumstances of missing the exam satisfy university policies.

1. *Midterm One:* Friday, February 22; 2:30P –3:20P, (31 SH or Lab)
2. *Midterm two:* Friday, March 29; 2:30P –3:20P, (31 SH or Lab)
3. *Midterm three:* Friday, April 26; 2:30P –3:20P, (31 SH or Lab)
4. *Final:* To be determined

Project:

Description

Students will work in groups (optimally, three or four group members) to carry out projects involving application of the statistical methods covered in the course to problems of their own choosing. I will be available to work with you at each stage of your project if you need to discuss anything. Each group will:

- a. Come up with a research question
- b. Obtain a dataset that can be used to address this question. You can either:
 - i. Collect your own data
 - ii. Obtain a data set from the web, from a book, from an instructor in your major field, or any other reasonable source
 - iii. See me if you're having trouble finding a dataset
- c. Determine an appropriate method of analysis
- d. Use SAS to check the data
- e. Use SAS to carry out the analysis
- f. Report and interpret the results as Word document or other Text document
- g. Present the findings in an oral presentation in the last week of class
 - i. no more than 12-15 minutes long
 - ii. in a statistical analysis presentation, always give your audience plenty of background on your data and research question so they can follow the analysis you're presenting
 - iii. (optimally) all members will have a part in the oral presentation
 - iv. Presented the week of May 6-10 (the week before finals)

Time line

Please meet me at least once while you are working on your project.

- Look for a team group (start as early as possible) and think about a possible data set or research question.
- Group check (**April 01**, please send me the list by email). You should have your groups formed by this time, and have a general topic (or analysis) in mind.

- **Proposal** (due April 08). At this point, you should have a detailed description of what you plan to do, including question(s) to be addressed, dataset to be used, and methods to be applied.
- Project interim report (**due April 30**). This informal report will indicate that your project is "on track." All computing should be done. Turn in code and output, and a brief summary (hand-written is O.K.) of what the results mean and what remains to be done.
- Oral presentations will be given in class during the week of 05/06.
- Final report (**due 05/10**). Along with the final project, the team must turn in an itemized list of each person's contributions to the project.

Resources for additional help: Supplementary materials, such as handouts, may be distributed during class. If you miss class, please inquire if any materials were handed out.

Students with disabilities: I would like to hear from anyone who has a disability which may require seating or testing accommodations, or accommodations for other class requirements, so that appropriate arrangements may be made. Please contact me during my office hours.

Policies: Course policies are governed by the College of Lib Arts and Sciences.

The College of Liberal Arts and Sciences Policy and Procedures

Academic Fraud. Plagiarism and any other activities that result in a student presenting work that is not his or her own are academic fraud. Academic fraud is reported to the departmental DEO and then to the Associate Dean for Academic Programs and Services in the College of Liberal Arts and Sciences.
www.clas.uiowa.edu/students/academic_handbook/ix.shtml

Making a Suggestion or a Complaint. Students have the right to make suggestions or complaints and should first visit with the instructor, then with the course supervisor if appropriate and next with the departmental DEO. All complaints must be made within six months of the incident.
www.clas.uiowa.edu/students/academic_handbook/ix.shtml#5

Accommodations for Disabilities. A student seeking academic accommodations first must register with Student Disability Services and then meet with a SDS counselor who determines eligibility for services. A student approved for accommodations should meet privately with the course instructor to arrange particular accommodations. www.uiowa.edu/~sds/

Understanding Sexual Harassment. Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. Visit www.sexualharassment.uiowa.edu/ for definitions, assistance, and the full policy.

Administrative Home of the Course. The administrative home of this course is the College of Liberal Arts and Sciences, which governs academic matters relating to the course such as the add / drop deadlines, the second-grade-only option, issues concerning academic fraud or academic probation, and

how credits are applied for various CLAS requirements. Please keep in mind that different colleges might have different policies. If you have questions about these or other CLAS policies, visit your academic advisor or 120 Schaeffer Hall and speak with the staff. The CLAS Academic Handbook is another useful source of information on CLAS academic policy:

www.clas.uiowa.edu/students/academic_handbook/index.shtml

University Examination Policy

Final Examinations. An undergraduate student who has two final examinations scheduled for the same period or more than three examinations scheduled for the same day may file a request for a change of schedule before the **published deadline** at the Registrar's Service Center, **17 Calvin Hall**, 8-4:30 M-F, (384- 4300).

Missed exam policy. University policy requires that students be permitted to make up examinations missed because of illness, mandatory religious obligations, certain University activities, or unavoidable circumstances. Excused absence forms are required and are available at the Registrar web site:

www.registrar.uiowa.edu/forms/absence.pdf

Reacting Safely to Severe Weather. The University of Iowa Operations Manual section 16.14 outlines appropriate responses to a tornado (i) or to a similar crisis. If a tornado or other severe weather is indicated by the UI outdoor warning system, members of the class should seek shelter in rooms and corridors in the innermost part of a building at the lowest level, staying clear of windows, corridors with windows, or large free-standing expanses such as auditoriums and cafeterias. The class will resume, if possible, after the UI outdoor warning system announces that the severe weather threat has ended.