

Course Information for 22S:248 Computer Intensive Statistics

Semester: Spring 2008

Lectures: MWF 10:30PM – 11:20PM

Room: Schaeffer 74

Instructor: Luke Tierney, Schaeffer 241, luke@stat.uiowa.edu.
Office Hours MWF 9:30PM – 10:20PM or by appointment.
Web Page: <http://www.stat.uiowa.edu/~luke/classes/248>
DEO: Luke Tierney, 241 SH, 335-3386

Outline

The goal of this course is to develop skills, knowledge, and tools useful in applying modern computationally intensive statistical methods to research in any field. Topics will be selected from random variate generation, design and analysis of simulation experiments, optimization algorithms for model fitting, bootstrap, Markov chain Monte Carlo, and smoothing, machine learning and data mining, and graphical methods. Most topics will be presented in the context of the R statistical computing language.

Reading and Homework

Homework assignments consisting of a mix of computational and theoretical problems will be given roughly every two to three weeks. Assignments will be posted on the class web site. Suggested reading will also be posted on the class web site when appropriate, but you should also seek out and explore relevant references on your own. Most assignments will need to be submitted electronically. Many students find that these assignments take up to 20 hours to complete, so plan your time accordingly.

Class Project

Students registered for this class are expected to complete a class project. Your project should represent about 20 hours of work on a topic of your choice that involves computation. You should start to think about the topic as soon as possible. You might investigate properties of a methodology you find interesting, you might compare several methods on a variety of problems; there are many choices for the topic of your project. Some general suggestions will be posted within the first few weeks of the course, but you should feel free to choose other topics as well. The project should represent new work, not something you have done for another course or as part of your thesis.

A proposal for your project is due on Friday, March 28. The proposal should be at most two pages long. A final report on your project is due on Friday, May 9. The report should be three to five pages in length, excluding any appendices you wish to attach, and must be submitted electronically. You may also be asked to share your results either by preparing a web page or in a 15 minute presentation to the class.

Grading

The course grade will be based on assignments and the class project. You may discuss general issues and approaches with your fellow students, but your work must be your own. If you use any references, including solutions to similar problems prepared by other students, you *must* cite and credit your sources.

EMail and World Wide Web

Announcements on changes or clarifications of assignments or other matters may be sent by email to your class account or posted on the class web page. You should check the class home page and your class email account regularly. You can arrange to forward your class email to another address if you wish.

College of Liberal Arts and Sciences: Policies and Procedures

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 graduation requirements. 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 also contains important CLAS academic policies: www.clas.uiowa.edu/students/academic_handbook/index.shtml

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 who deals with academic fraud according to these guidelines: 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 an 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.

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.

Student Classroom Behavior

The ability to learn is lessened when students engage in inappropriate classroom behavior, distracting others; such behaviors are a violation of the Code of Student Life. When disruptive activity occurs, a University instructor has the authority to determine classroom seating patterns and to request that a student exit the classroom, laboratory, or other area used for instruction immediately for the remainder of the period. One-day suspensions are reported to appropriate departmental, collegiate, and Student Services personnel (Office of the Vice President for Student Services and Dean of Students).