

Stat 440 Computational Statistics

TR 11:15 - 12:45 PM

119 Thomas Bldg

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Textbook: *Statistical Computing with R* by Maria Rizzo
Web: <http://johnfricks.org/teaching/stat440spring2015/>
Prerequisite: MATH/STAT 414 and 415

Course Outline:

- Introduction to R and review of probability and statistics basics. (Chapts 1 and 2, 2 weeks)
- Generating Random Variables (Chapter 3, 1.5 weeks)
- Basics of Monte Carlo (Chapts 5 and 6, 2.5 weeks)
- Midterm
- Bootstrap and Jackknife (Chapter 7, 2 weeks)
- Permutation Tests (Chapter 8, 1 week)
- Probability Density Estimation and Non-parametric Regression. (Chapter 10, 2 weeks)
- Optimization and non-MC numerical methods. (Chapter 11, 2.5 weeks)
- MCMC (Chapter 10, if time permits)

Grade Policy: Grades will be determined by the following components:

Quiz	40
Midterm	25
Comprehensive Final	35

The final grades will be determined using the following intervals. If the grades are curved, a higher grade may be received, but you will not receive a lower grade than what is found below.

[93, 100]	A
[90, 93)	A-
[87, 90)	B+
[83, 87)	B
[80, 83)	B-
[77, 80)	C+
[70, 77)	C
[60, 70)	D
[0, 60)	F

Homework:

No late homework will be accepted under any conditions. Homework is due at the beginning of the class period. The beginning of class is the beginning of class. If you need to enter the class a few minutes late, please come up to the front of the class to turn in your assignment. You are welcome to turn in your homework any time before the due date; you can either give it to me personally or put it in my mailbox in 325 Thomas. (Note that if you put it in my mailbox DURING the class that it is due, then I will receive it after class and will thus be late.) In order to receive credit for homework, all assignments must include HOW an answer is obtained, not just the numerical solution. You may discuss the homework with your classmates; however, the assignment needs to be written up independently.

Exam Policies:

In the case of a University approved conflict, an arrangement will be made with the instructor. You must inform the instructor one week before the exam date. The comprehensive final exam will take place at the registrar-designated time and place during the week of May 4-11. Like the midterm, it will be closed-book and closed-notes. It will cover the entire semester and not merely the period after the second midterm. No rescheduled final exams will be allowed except for those mandated by the Penn State registrar because of conflicts. This means that you must attend the final exam and should under no circumstances make end-of-semester travel arrangements before knowing your final exam schedule.

Integrity:

All Penn State University and Eberly College of Science policies regarding academic integrity apply to this course. Those policies are available at: www.science.psu.edu/academic/Integrity/index.html

Please pay particular attention to the student conduct section from those policies:

All course work by students will be done on an individual basis unless an instructor clearly states that an alternative is acceptable. Any reference materials used in the preparation of an assignment, whether quoted or paraphrased, must be explicitly cited. In an examination setting, unless the instructor gives explicit prior instructions to the contrary, regardless of whether the examination is in-class or take-home, violations of academic integrity shall consist of any attempt to receive assistance from any person or papers or electronic devices, or of any attempt to give assistance, whether the student doing so has completed his or her own work or not. Other violations include, but are not limited to, any attempt to gain an unfair advantage in regard to an examination, such as tampering with a graded exam or claiming another's work to be one's own.

Statement on Disability Services:

Penn State welcomes students with disabilities into the University's educational programs. If you have a disability-related need for reasonable academic adjustments in this course, contact the Office for Disability Services (ODS) at 814-863-1807 (V/TTY). For further information regarding ODS, please visit the Office for Disability Services Web site at <http://equity.psu.edu/ods/>. In order to receive consideration for course accommodations, you must contact ODS and provide documentation (see the documentation guidelines at <http://equity.psu.edu/ods/guidelines/documentation-guidelines>). If the documentation supports the need for academic adjustments, ODS will provide a letter identifying appropriate academic adjustments. Please share this letter and discuss the adjustments with your instructor as early in the course as possible. You must contact ODS and request academic adjustment letters at the beginning of each semester.