

Political Science 207

Statistical Programming for the Social Sciences

Tuesday 9:10- 12pm, Watkins Jenkins Library

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2229 Watkins Hall

Office Hours: Tuesday 2-4 pm

Syllabus is subject to change as course develops

Course Description: This course is designed to enhance students' understanding of concepts related to statistical programming.

Prerequisites includes POSC 202A/B (Introduction to Quantitative Analysis and Advanced Quantitative Analysis), or similar classes in other disciplines.

Teaching Philosophy:

I begin with the premise that each student enrolled in this course is intelligent and capable and we have high expectations for both your academic commitment and personal behavior. You are responsible for your success in this course and the course is designed such that if you work hard, participate, and consider the material, you may do well. The course has all the ingredients necessary to engage and challenge you.

I expect students to refrain from engaging in any distracting or disruptive behavior such as, but not limited to, using cell phones, texting, surfing the web, taking pictures, and talking to classmates. I will not tolerate any disruptive behavior and will refer egregious cases to Student Judicial Affairs.

Required Text(s): *Modern Applied Statistics with S*

Author(s): Venables and Ripley

Required Text(s): *S Programming*

Author(s): Venables and Ripley

Required Text(s): *Introduction to Scientific Programming and Simulation Using R*

Author(s): Jones, Maillardet, Robinson

Required Text(s): *Seamless R and C++ Integration with Rcpp*

Author(s): Dirk Eddelbuettel

Please note: A few copies of the texts will be placed on reserve at Rivera library. Please be careful with them.

Course Requirements:

Students will be responsible for writing and submitting an R package to CRAN and/or Github. The course is designed to introduce students to basic programming concepts, identify opportunities with political science data, then develop a plan to produce a suite of functions that build towards task automation. In this class, students will pair up with one or two other students to work towards a programming goal identified in week 1. It is expected students will have completed POSC 202A/B.

Grading:

Participation	20%
Assignments	30%
Final Project	50%

Letter Grade Distribution:

≥ 94	A	74 - 76	C
90 - 93	A-	70 - 73	C-
87 - 89	B+	67 - 69	D+
84 - 86	B	64 - 66	D
80 - 83	B-	60 - 63	D-
77 - 79	C+	≤ 59	F

- Grades in the **C** range represent performance that **meets expectations**; Grades in the **B** range represent performance that is **substantially better** than the expectations; Grades in the **A** range represent work that is **excellent**.
- Late Assignments are NOT ACCEPTED without both prior approval and documented evidence of a University Approved Excuse (e.g., medical emergency, etc.).

Re-grading and other relevant Policies:

- Any student wishing to challenge a paper/exam grade must complete a one page single spaced argument before I will consider a challenge within one week of receiving the grade. You must specify why you think the grading was unfair. The specific areas will then be re-examined with the possibility of the grade going down.
- If you have an existing time conflict regarding my office hours please email me and let me know the first week of class.
- Concerns related to credit and graduation circumstances will not be taken into consideration in evaluating performance in this class
- Student athletes please let me know about any conflicting dates. I am more that happy to work with you but expect the same out of you as anyone else (I was one myself...humblebrag).

Plagiarism and Academic Misconduct:

This section is taken from the Academic Integrity Brochure for Students (<http://conduct.ucr.edu/>).

“At the University of California, Riverside (UCR) honesty and integrity are fundamental values that guide and inform us as individuals and as a community. The academic culture requires that each student take responsibility for learning and for producing work that reflect their intellectual potential, curiosity, and capability. Students must represent themselves truthfully, claim only work that is their own, acknowledge their use of others’ words, research results, and ideas, using the methods accepted by the appropriate academic disciplines and engage honestly in all academic assignments. Misunderstanding of the appropriate academic conduct will not be accepted as an excuse for academic misconduct. If a student is in doubt about appropriate academic conduct in a particular situation, he or she should consult with the instructor in the course to avoid the serious charge of academic misconduct.”

Plagiarism is the “copying of language, structure, or ideas of another and attributing (explicitly or implicitly) the work to one’s own efforts. Plagiarism means using another’s work without giving credit. Examples include but are not limited to:

- Copying information from computer-based sources, i.e., the Internet
- Allowing another person to substantially alter or revise your work and submitting it entirely as your own.”

Other forms of academic dishonesty include cheating by “copying from another student’s examination, quiz, . . . or homework assignment.” Note that the definition of cheating also includes “submitting for academic advancement an item of academic work that you have previously submitted for academic advancement” without prior authorization from the faculty member supervising the work. “Unauthorized collaboration” is also considered inappropriate.

If I suspect you have committed an act of academic misconduct, I will discuss it with you and file a report with the Student Conduct & Academic Integrity Programs (SCAIP). You may receive a zero on the assignment and an “F” for the course. Further disciplinary action may also be taken by SCAIP. If you ever have a question about plagiarism or other academic conduct, please ask me before you turn in any work that may be problematic.

Students with Disabilities: If you have a physical, psychiatric, emotional, medical, or learning disability that may impact your ability to carry out assigned coursework, I urge you to contact the staff in Student Special Services (<http://specialservices.ucr.edu/>), who will review your concerns and determine, with you, what accommodations are necessary and appropriate. All information and documentation are confidential. I will sign the necessary documentation during my office hours.

Tentative Course Outline:

The weekly coverage might change as it depends on the progress of the class. Usually I run behind.

Week	Content
Week 1	<ul style="list-style-type: none">• Introduction to R and Data Types: matrices, data frames, lists, vectors, indexing; reading and writing data. Object concepts• Identify student projects, abilities, and needs
Week 2	<ul style="list-style-type: none">• Combining Datasets: Merging, joining, manipulating data at/to different levels; Plotting (base and ggplot)• Problem Set 1 Due
Week 3	<ul style="list-style-type: none">• Beginning Automation: Loops and Functions; apply() functions; vectorized programming
Week 4	<ul style="list-style-type: none">• Classes and Methods; extracting elements from objects; Sourcing Functions• Problem Set 2 Due
Week 5	<ul style="list-style-type: none">• Interacting with the web: web-scraping, APIs, downloading external data, common errors• Integrating Python code
Week 6	<ul style="list-style-type: none">• Interacting with the terminal and other open-sources programs. Syncing multiple programs• Problem Set 3 Due
Week 7	<ul style="list-style-type: none">• Big data and writing programs in C++ that interact with R; includes big text corpora; voter files; Cloud-computing; Parallel Processing
Week 8	<ul style="list-style-type: none">• Map Making and Geographic Modeling in R• Student projects• Problem Set 4 Due
Week 9	<ul style="list-style-type: none">• Text Analysis in R: Machine Learning; Topic Modeling; Supervised Learning• Student projects
Week 10	<ul style="list-style-type: none">• Writing R packages• Student projects• Problem Set 5 Due
Week 11	<ul style="list-style-type: none">• Projects Finalized and uploaded to CRAN and/or github