

STAT 107

Introduction to Statistical Computing With R

Description

Prerequisite(s): STAT 010; or equivalent. Introduction to R. Topics include data management, basic statistical analysis and graphics, use of functions and packages, simple programming, and reproducible work.

Instructor:	Rebecca Kurtz-Garcia	
Email:	rkurt001@ucr.edu	
Lecture:	TR 8:00 AM - 9:20 AM	Zoom ID: 980-4447-1781 (stat107)
Office Hours:	M 11:00 AM - 1:00 PM	Zoom ID: 963-7465-8170 (stat107)
Teaching Assistant:	Jeff (Benjamin) Ellis	
Email:	benjamin.ellis@email.ucr.edu	
Discussion:	T 9:30 AM - 10:20 AM	Zoom ID: 919-7434-2497
	T 12:00 PM - 12:50 PM	Zoom ID: 952-8841-1457
Office Hours:	W 1:00 PM - 3:00 PM	Zoom ID: 949-2379-7455
Course Notes:	https://rpkkgarcia.github.io/STAT107_Winter22/	
Piazza:	piazza.com/ucr/winter2022/stat107	

Course Mechanics and Grading

There will be a weekly discussion assignment, regular homework assignments, and a final exam. Grades will be calculated as follows:

- Discussion: 15%
- Participation: 5%
- Homeworks: 60%
- Final exam: 20%

Late work will not be accepted without a documented university approved excuse.

Discussion

There will be a 50 minute discussion period every Tuesday morning. There will be short exercises, generally related to the homework. Discussion assignments are generally due the Wednesday after discussion. Discussion assignments will be graded out of the following criteria: being technically-correct, with working solutions; and clean, well-formatted, easily readable code with clean output and explanation. Some problems will require a written explanation and

description, use full sentences and proper grammar when answering these problems. All discussion assignments are weighted evenly.

Homework

There will be a homework assignment approximately every one to two weeks. Homework problems will be graded out of the following criteria: being technically-correct, with working solutions; and for clean, well-formatted, easily readable code with clean output and explanation. Some problems will require a written explanation and description, use full sentences and proper grammar when answering these problems. When there are many problems on a homework assignment a subset of problems may randomly be selected to be graded.

Lectures

For the first two weeks lectures will be on Zoom. All online lectures will be recorded and posted after each meeting. If you do not wish to be a part of the recording you may turn off your microphone and camera, and you can use a pseudonym. Lectures are scheduled to be in person for the last 8 weeks of the quarter.

Participation

You are expected to participate during lecture and discussion, as well as on the course Piazza. We will incorporate all three of these aspects when determining the participation score.

Assignment Formatting

All assignments must be turned in electronically and will involve writing a combination of code and actual prose. You must submit your assignment using **R Markdown**. Exceptions may be made, with prior permission, for those who want to use Sweave or knitr. (If you don't know what those are, plan to use R Markdown.) Work submitted in any other format will receive an automatic grade of 0, without exceptions.

Every file you submit should have a file name which includes your first and last name, and clearly indicates the type of assignment (homework, discussion, etc.) and its number. For example **RebeccaKurtzGarcia_Discussion1.pdf**. You must submit both your pdf file and rmd file.

Final Exam

The final exam is open book/internet access, but absolutely no communication with other humans.

Course Software

R is a free statistical software program that is available for download at <https://www.r-project.org/>

R Studio Desktop provides free and open source tools for R and is available for download at <https://rstudio.com/>

Some Resources

- Lawrence Leemis, [Learning Base R with sample code](#)
- Norman Matloff, [The Art of R Programming: A Tour of Statistical Software Design](#)
- Phil Spector, [Data Manipulation with R](#)
- Paul Teetor, [The R Cookbook](#)
- Patrick Burns, [The R Inferno](#).
- Cosma Shalizi and Andrew Thomas, [Statistical Computing 36-350 at CMU](#)
- Roger Peng [R For Programming Data Science](#)

Collaboration, Copying and Plagiarism

You are encouraged to discuss course material, including assignments, with your classmates. All work you turn in, however, must be your own. This includes both writing and code. Copying from other students, from books, or from websites (1) does nothing to help you learn how to program, (2) is easy for us to detect, and (3) has serious negative consequences.

Technology Requirements

Because this course takes place online, you will need the following:

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|----------------------------|---|
| Hardware | <ul style="list-style-type: none">• Access to a current Mac or PC (with a fast processor and speakers)• Webcam and microphone (to participate in any video components, e.g. live sessions, remote proctoring, video presentations) |
| Software | <ul style="list-style-type: none">• Windows 8.1 or OS 10.14 or above is recommended• Please Note: Some software applications (such as Respondus LockDown Browser) are not supported by Chromebooks |
| Internet Connection | <p>You will need a reliable internet connection. Test your internet speed using speedtest.net. Recommended internet speeds:</p> <ul style="list-style-type: none">• Ping response is less than 100ms• Download speed is at least 10Mbps• Upload speed is at least 2Mbps |
| Browsers | <ul style="list-style-type: none">• Chrome or Firefox work best (avoid Safari)• Make sure you are using the most up-to-date browser |

If you do not have or cannot acquire these items, you can apply to the [Loan2Learn](#) program to get a loaner device. Please keep me aware of any difficulty or delay in acquiring these devices.

For technology support, contact Bearhelp@ucr.edu.

Calendar and Topics

Schedule is approximate and subject to change.

- Week 1
 - Introduction to RStudio and R
 - Introduction to RMarkdown
 - Operators
- Week 2
 - Vectors
 - Matrices and Data Frames
- Week 3
 - Indexing
 - Working with Data
- Week 4
 - Working with Data
 - Functions
- Week 5
 - If Statements
 - Base R Plotting
- Week 6
 - Packages
 - TidyVerse
- Week 7
 - ggplot
 - Iteration - Loops
- Week 8
 - Iteration - apply functions
 - Simulation
- Week 9
 - Text Data
- Week 10
 - Catch-up
 - Advanced Topic
- The final will be no later than Friday, March 18, 7:00 p.m. - 10:00 p.m.

UCR ACADEMIC POLICIES AND STUDENT SUPPORT

Library Online

Access digital materials and other resources at the [UCR Library](#).

ITS Help and Student Technology Support

ITS Student Technology Services supports 9 student computer labs, including 7 public labs and 2 nonpublic labs, with approximately 293 public lab hours per week (with reduced hours during breaks and summer) available for academic use by all UCR students.

Whether you need a machine to work on your paper, need to use specialized software required by your class, assistance with your R'Mail or iLearn accounts, getting on the network, or any other services used by UCR students, contact [BearHelp@ucr.edu](mailto: BearHelp@ucr.edu).

Academic Misconduct

In addition to the course conduct policies outlined by your professor in the Course Syllabus in the online classroom, please review the Graduate Student Handbook.

It is the responsibility of each student to be familiar with the definitions, policies, and procedures concerning academic misconduct. Please revisit our [Academic Integrity Policies and Procedures](#) for more information. This site also defines misconduct, provides examples of prohibited conduct, and explains the sanctions available for those found guilty of misconduct.

Plagiarism

Plagiarism is the most common form of academic misconduct at UCR. It is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit. This includes 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.

For more information about plagiarism, see [Academic Integrity Policies and Procedures](#).

Reasonable Accommodation for Disabilities

UCR is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course should contact their professor as early in the semester as possible.

Students with disabilities must be registered with the Student Disability Resource Center prior to receiving accommodations in this course.

If you have a disability and you would like to make a request for reasonable accommodation, please see the Graduate Student Handbook or get in touch with the [Student Disability Resource Center](#).

Adjustments for Pregnancy/Childbirth Related Issues

Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact me as soon as possible to discuss your options. Generally, modifications will be made where medically necessary and similar in scope to accommodations based on temporary disability. Learn more about the rights of pregnant and parenting students by consulting the [Office of Diversity, Equity, and Inclusion](#).

Title IX Resources

For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on-call 24/7, counseling services, mutual no contact orders, scheduling adjustments, and disciplinary sanctions against the perpetrator. Please see the Title IX website for more information. They can be reached at (951)827-7070. You can also [file a report](#).

Student Needs

[Student Health Services](#), [Counseling & Psychological Services \(CAPS\)](#), Residential Life, Dining, and [R'Pantry](#) are available to support students.

Religious Holidays

It is the policy of the University to excuse absences of students that result from religious observances and to provide for the rescheduling of examinations and additional required classwork that may fall on religious holidays without penalty. It is the responsibility of the **student** to make alternate arrangements with the instructor **at least one week prior to the actual date of the religious holiday**.

Copyright Policy

It is illegal to download, upload, reproduce, or distribute any copyrighted material, in any form and in any fashion, without permission from the copyright holder or his/her authorized agent. UCR expects all members of its community to comply fully with federal copyright laws.

Registration and Withdrawal

If you choose to withdraw from this course, you must complete the appropriate University form and turn the form in before the deadline. Deadlines are shown in the [Academic Calendar](#), which is available from the Office of the Registrar.