

SYLLABUS: SPAN 581

Title: Research Methods: Open Science and Reproducible Research in Linguistics

01:940:581:01 - Spring 2019

Meetings: AB 5190, Thursdays, 08:10–11:10

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Office: AB 5174

Office hours: by appointment



## Course description

In this course students will examine the fundamental principles of doing open and reproducible research in SLA, linguistics, and psycholinguistics. Specifically, the focus is on developing an in depth understanding of the most common experimental paradigms and procedures used in quantitative research. Additionally, students will learn details about the entire research process, from generating research questions, collecting and analyzing data, to writing and submitting a scientific report. The course will also focus on how to make scientific research reproducible and shareable. Students will develop a foundation in the most common tools at the disposal of today's data scientist (i.e. OSF, GitHub, Knitr, etc.). Necessarily this entails understanding and implementing the current protocols of open science, i.e., pre-registration, registered reports, open lab notebooks, codebooks, and version control, in order to produce research projects that are organized and reproducible. The procedures covered in this course will help beginning researchers assure the integrity of their data, as well as apply the general principles of transparency, reproducibility, and replicability—collectively known as open science—to their own work.

**Prerequisites:** No prior experience with statistics or programming is necessary.

## Materials

### Class websites

- Canvas: <https://rutgers.instructure.com/courses/21827>
- Class website: [http://www.jvcasillas.com/ru\\_teaching/ru\\_spanish\\_581/581\\_01\\_s2019/](http://www.jvcasillas.com/ru_teaching/ru_spanish_581/581_01_s2019/)

### Books (recommended)

- Wickham, H. and G. Grolemund (2016). *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data*. O'Reilly Media.

### Weekly readings

Students will receive a package of readings to be distributed in electronic format (.pdf).

## Coursework

## Evaluation

Component	Percentage	Grade distribution	
Preparation and participation	15%	A	92–100
Programming assignments (3)	45%	B+	87–91
Presentations (2)	10%	B	80–86
Research project	30%	C+	77–79
		C	70–76
		D	65–69
		F	0–64

### Preparation and participation

Students are expected to attend class prepared and to actively participate. Part of this grade is derived from reading summaries. Students will occasionally be required to write a brief summary (max. 1 page) of the weekly readings and/or answer assigned questions.

### Programming assignments

Students will complete 3 programming assignments over the course of the semester. These assignments are designed in a way so that the student must demonstrate adequate knowledge of basic programming and statistical principles covered in class. The skills required in each assignment are cumulative, each building on the material learned in the previous weeks. All statistical programming assignments must be completed in RMarkdown and will be handed in via GitHub unless otherwise noted.

### Presentations

**Experimental paradigms** The first presentation will highlight an experimental paradigm used in an area of linguistics (the choice of the presenter). Students must consult with the professor beforehand. The presentation can be completed in any format. The presentation should include the following:

- a critique of the technique, including an explanation of the questions the technique is used to answer
- a thorough discussion of the advantages and disadvantages of the technique
- a demonstration, to the extent possible, of how the technique works

**Reproducibility in the wild** The second presentation will deal with the reproducibility of some published paper. This presentation must be hosted on GitHub and in HTML format using RMarkdown. Aside from creating an online presentation, students will also be required to read and comment on the presentations of two classmates in the form of a github issue.

### Research Project

Each student will participate a research project in which they put in practice the tools learned over the course of the semester. The primary focus will be on managing the project in an automatic and reproducible way and developing an understanding of the intricacies of completing all phases of a research project: from conceptualizing an idea to publication.

## Department rules and course policy

The course is designed to satisfy the learning goals of the Department of Spanish and Portuguese. More information available at: <http://span-port.rutgers.edu/learning-goals>

### Communication

All course communication will be via Slack. You should have received an email with an invitation link to join the course Slack. Some rules for using Slack:

- Use an identifiable username and add your picture to your profile.
- Only the professor is allowed to use the @channel and @here mentions.
- While this is an informal communication channel, all rules of academic discourse apply.
- Ask and answer questions on the appropriate channel.
- Create channels as needed, especially for study groups.

### Attendance

Regular class attendance is essential for successful completion of the course. More than 1 absences will have a negative effect on your final grade. The 2nd absence and every subsequent absence after that will result in the loss of 5% point off the final overall course grade, regardless of reason. Keep in mind that while you have 1 “free” absence, on the day/s you miss you will not be able to earn participation points, you will miss the material given in class and you might miss your own presentation. If you are absent, contact a classmate immediately to get the assignments and to keep up with the material scheduled in the syllabus. The instructor is not responsible for catching you up. Do not send emails to the instructor asking for updates if you missed class.

Any planned absence that you are aware of ahead of time, such as religious holidays recognized by Rutgers University or Dean’s excuses, should be made up before the absence occurs. If you know that you will be absent, it is your responsibility to let the instructor know ahead of time. All holidays or special events observed by any religion will be honored for those students who show affiliation with that particular religion. Absences pre-approved by the RU Dean of Students (or Dean’s designee) will be honored.

### Code of academic integrity

The professor will initiate an academic integrity case against students suspected of cheating, plagiarizing, or aiding others in dishonest academic behavior. Students are responsible for reading and understanding the Code of Academic Integrity.

Examples of academic dishonesty include, but are not limited to, plagiarism, cheating, and aiding and abetting dishonesty. An example of plagiarism would be to submit a written sample which in part or in whole is not the student’s own work without attributing the source. Cheating includes allowing another person to do your work and to submit the work under one’s own name. Any work which is submitted for a grade must be 100% the student’s own work. If you are not sure when it is appropriate to seek help, please see the professor.

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**Plagiarism** is the use of another person’s words, ideas, or results without giving that person appropriate credit. Do not plagiarize.

Rutgers University Academic Integrity Policy, p. 2: [http://academicintegrity.rutgers.edu/files/documents/AI\\_Policy\\_2013.pdf](http://academicintegrity.rutgers.edu/files/documents/AI_Policy_2013.pdf)

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For more information

- <http://academicintegrity.rutgers.edu/>
- [http://www.libraries.rutgers.edu/avoid\\_plagiarism](http://www.libraries.rutgers.edu/avoid_plagiarism).

### Students with disabilities

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>.

If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

### Tentative schedule

Week	Date	Topic
1	01/24	Intro. What is open science? Setup.
2	01/31	Reproducibility crisis. Version control I: Intro to <code>github</code> .
3	02/07	Registered reports. Communicating/sharing I: Intro to <code>RMarkdown</code> . P1.
4	02/14	Version control II: Reproducible projects in <code>RStudio</code> . P2.
5	02/21	Welcome to the <code>tidyverse</code> I: Standards and plots. P3.
6	02/28	Welcome to the <code>tidyverse</code> II: Tidying and descriptives. P4.
7	03/07	Communicating/sharing II: Literate programming with <code>knitr</code> and <code>papaja</code> . P5.
8	03/14	Communicating/sharing III: HTML presentations using <code>xaringan</code> . P6.
–	03/21	<b>Spring break</b>
9	03/28	Communicating/sharing V: Manuscript preparation using <code>github</code> . P7.
10	04/04	Presenting stimuli using <code>PsychoPy</code> . P8.
11	04/11	Online experiments. P9.
12	04/18	Speech production. P10.
13	04/25	Speech perception. P11.
14	05/02	Communicating/sharing VI: Websites and blogs using <code>blogdown</code> . P12.
	05/??	Final exam day. Research project.