

SPN 6735/LIN 6708C Experimental Methods

Fall 2018

W Periods 9-11 (4:05pm-7:05pm), Matherly 112

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Office Hours: R Periods 7-8, F Period 3 or by appointment

Course Overview:

This course has 2 primary objectives. First, is to help students become better data scientists and citizens within a broader research community by learning about and practicing different steps in efficient data science workflow. Using R and R Studio, we will focus on data tidying, formatting, and transformation as well as data visualization and communication using the book *R for Data Science* (freely available) as a primary resource. Additionally, we will discuss data collaboration and version control with Git and GitHub as well as data transparency and reproducibility (e.g., Open Science Framework).

The second objective is to provide a survey on the design and implementation of repeated-measures experimental paradigms primarily used in psycholinguistics for the study of perception and production at the word, sentence, and discourse level using behavioral, eye-tracking, and ERP techniques. We will discuss the advantages and disadvantages of each technique in order to help students decide what techniques may be best suited for their research questions. It should be noted that even though we will be discussing statistical tests and models, this is not a course on statistics and no such background is required.

Prerequisites:

No prior background assumed.

Course readings:

Readings will primarily be posted on Canvas (<https://elearning.ufl.edu>). I am happy to offer supplementary references for additional background reading for students who request them. Readings on using the tidyverse suite in R and R Studio will primarily come from *R for Data Science* (<http://r4ds.had.co.nz/>), which is freely available online.

Because this is a methods course, **students should bring their laptops to class every week.**

Grading

The course grade will be calculated as follows:

Participation & Attendance	10%
Homework	30%
Writing Assignments (2)	30%
Class Presentation	15%
Scrapbook/Journal	15%

Grade Scale

The final grade scale is as follows:

A grade of C- will not be a qualifying grade for major, minor, Gen Ed, Gordon Rule or Basic Distribution Credit courses. For further information regarding passing grades and grade point equivalents, please refer to the [Undergraduate Catalog](#)

A = 100-93	C(S) = 76-73
A- = 92-90	C-(U) = 72-70
B+ = 89-87	D+ = 69-67
B = 86-83	D = 66-63
B- = 82-80	D- = 62-60
C+ = 79-77	E = 59-0

COMPONENTS

Participation & Attendance

I expect you to come to class prepared, to have completed the reading and assignments prior to class discussion, and to have questions and ideas that you are prepared to discuss. I also expect professional respect throughout the semester: that is, I ask that you refrain from using social media during class time and please silence your phones. I will not call you out for using social media during class, but it will be noticed and will affect your participation grade.

Homework exercises (6)

Homework assignments are designed to support main lectures and labs throughout the semester.

Quantitative methods are difficult to learn purely through readings and lecture, so lab tutorials are designed to aid students in self-discovering good research practices and analysis techniques.

Writing Assignments (2)

Writing assignment 1: due October 3.

Select a brief report-style article (generally 5-8 journal pages) from 2017, 2018 or in press on any psycholinguistic topic of interest. Based on introductory lectures on good research practices, you will critique the article by identifying the research questions, hypotheses, and predictions; how they set out to test their hypotheses (e.g. what experimental design did the authors choose to test their hypotheses); and how successful the research group was in answering their research questions. Critiques will be minimally 3 full and maximally 5 full single-spaced pages (not including references) with 1 in. margins. Writing assignments are to be turned in electronically before class with the chosen brief article. Please ask me if you are having difficulty identifying an article. More details will be provided in class.

Writing assignment 2: due November 14.

Write a critical comparison of the methodology used in 3 papers that all applied one technique of your choice. In particular, focus on how the technique was successfully (or not) used to test the investigators' hypotheses; the advantages of chosen technique over other techniques; and any additional critiques/commentaries on the use of the technique for the study (e.g. is there another technique or paradigm that may have been better suited for the study?). Please ask me if you are having difficulty in choosing a methodology or in finding articles. More details will be provided in class.

*When submitting your critiques, make certain that your last name appears in the filename attachment that you send me.

Class Presentation

During the semester, you will give one presentation on a recent empirical paper (2015-present) that makes use of behavioral or neurocognitive methods to study a (psycho)linguistic topic (broadly construed). Papers will be chosen in consultation with me. The rest of the class will not read the article, so the presentation is designed to aid in effectively communicating psycholinguistic methods to an audience unfamiliar with the study. Presentation length will be based on class size. More details will be provided in class.

Scrapbook/Journal

You will be asked to maintain a scrapbook/journal on good and bad Data Science practices that you come across in everyday life. The main goal of this task is to highlight for you what is effective data communication. More details will be announced in class.

UNIVERSITY POLICIES

Academic Integrity

All students are required to abide by the Academic Honesty Guidelines which have been accepted by the University. The UF Honor Code reads:

We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the University of Florida, the following pledge is either required or

Accommodations

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. For more information see <http://www.dso.ufl.edu/drc>.

Counseling and Wellness

A variety of counseling, mental health and psychiatric services are available through the UF Counseling and Wellness Center, whose goal is to help students be maximally effective in their academic pursuits by reducing or eliminating emotional, psychological, and interpersonal problems that interfere with academic functioning. The Center can be found online at <http://www.counseling.ufl.edu/cwc> or reached by phone at 392-1575.

Course Evaluation Process

Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

***Tentative Course Schedule: Reading list subject to change based on class pace and student need

Week	Lecture	Readings	Lab
1 -- 8/22	Introduction/Thinking Research	Research Manual, Chapter 1	Installing R, R Studio Intro to R
2 – 8/29	Reading Research/Asking Questions Finding the right tools	Science Articles Elsevier Infographic Jordan & Zanna	R basics R Markdown, R4DS, Chap. 27 *Social Media Accounts; Scrapbook
3 – 9/5	Variables, Experimental Design; IRB	Arunachalam (2013)	Data Visualization R4DS, Chapters 1-2; FDV, Chapters 1, 2, 5 *Homework 1: Complete IRB Training (or alternative)
4 -- 9/12	Stimuli Creation, Lexical Databases; Norming	Skezely et al. (2004); Tokowicz et al. (2002);	Data Transformation, R4DS, Chapter 3
5 -- 9/19	Counterbalancing; Pseudorandomization	MIX (Van Casteren & Davis, 2006); Heese (1997)	Exploratory Data Analysis, R4DS, Chapters 4-5 *Homework 2: stimuli dataset
6 -- 9/26	Intro to Stats I	Johnson, Chapter 1	Data Frames, Tibbles, and readr, R4DS, Chapters 6-8
7 -- 10/3	Intro to Stats II	TBD	Workshop I *Homework 3, report write-up

8 -- 10/10	Grammaticality Judgments & Magnitude Estimation	Sprouse (2011); Sorace (2010)	Tidy Data, R4DS, Chapter 9
9 -- 10/17	Behavioral Techniques--Lexical Paradigms	Kroll et al. (2007); Costa & Caramazza (2000);	Intro to Open Sesame (Relational Data, R4DS, Chapter 10) *Homework 4, Open Sesame Tutorial
10 -- 10/24	Self-paced Reading	Jegerski (2014); Jackson & Dussias (2009)	Character Strings and Factors, R4DS, Chapters 11-12
11 -- 10/31	Event-related potentials Lab Demo	Kaan (2007)	Vectors, R4DS, Chapter 16
12 -- 11/7	Eye-tracking--Reading	Keating (2014); Guzzardo Tamargo et al. (2016)	Iterations, R4DS, Chapter 17
13 -- 11/14	Eye-tracking—Auditory Lab Demo	Dussias et al. (2014); Valdés Kroff et al. (2017)	Model Basics, R4DS, Chapter 18 *Homework 5
14 -- 11/21	Priming	Roberts (2014); Bock & Griffin (2000)	Many models, R4DS, Chapter 20
15 -- 11/28	THANKSGIVING—Holiday		
16 -- 12/5	Reproducibility and Collaboration	Nieuwland et al. (2018); Transparency Guide Vuorre & Curley (2018)	Workshop II *Homework 6, report write-up