

LING3290 | Statistical & Experimental Methods in Linguistics | FALL 2020

Course Delivery

The course modality is **blended**. On Mondays, you are expected to work through asynchronous material posted to ICON. On Wednesdays, we will meet virtually. Zoom links for each meeting is in our ICON calendar.

Mondays [asynchronous]

Wednesdays 10 - 11:15am

Instructor: Prof. Zuzanna Fuchs

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451 Phillips Hall

Phone: (319) 467 1635

Drop-in hours: Wednesdays 2:30 – 5:30pm

Modality: virtual

<https://uiowa.zoom.us/j/97124581107>

or by appointment

Administrative home: Department of Linguistics

Note: Some of the policies relating to this course (such as the drop deadline) are governed by its administrative home, the College of Liberal Arts and Sciences, 120 Schaeffer Hall.

DEO: Prof. Mercedes Niño-Murcia

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463 Phillips Hall

Course description

Experimental work is rapidly gaining popularity in linguistics, and with such research comes lots and lots of data. This data needs to be prepared, analyzed, and presented appropriately in order to accurately represent the facts. The goal of this class is therefore to increase the students' understanding of statistical and experimental methods in linguistics. Upon completing the course, students will be able to understand data and results presented in experimental work, and to take the necessary steps to choose and apply experimental and statistical methods in their own work.

The type of experimental method and statistical analysis that is appropriate is determined by properties of the research questions and the data itself. For this reason, the course also aims to expose students to the kind of linguistic work in which data analysis may be necessary. Thus, lectures will include examples and discussion of experimental work in linguistics that involves the relevant methodology that might produce the type of data we are analyzing that day. In addition, students will have the opportunity to work with real linguistic data in their problem sets and in their capstone project, in order to apply newly learned skills to the types of data they may themselves encounter.

Importantly, this course is not about learning as many statistical tests as possible. Rather, it is about promoting statistical and experimental literacy: understanding what we as linguists need to know about our data and our research questions in order to choose the appropriate test, based on the assumptions that must be met by the data in order to use a given test. Some basic tests will indeed be introduced, but more importantly, this course will allow the students to go beyond what is taught in the class, giving them the knowledge and background they need to read about and understand many more statistical tests encountered in the literature.

Goals

At the end of this course, students should be able to...

- Describe an experimental design and variables using professional vocabulary.
- Discuss ethical considerations when conducting experimental work.
- Discuss how experimental methods need to be sensitive how to special populations.
- Describe selected common experimental methods in linguistics and the types of research questions they are best suited to address.
- Calculate basic measures of center and spread for continuous variables.
- Conduct statistical hypothesis tests.
- Interpret linear models and mixed effect models.

Broadly useful skills that students will develop throughout this course:

- Data analysis.
- Critical engagement with claims based on scientific research.
- Argumentation and critical thinking skills.

Course materials

There is no textbook required for this course. Weekly readings will be available in pdf format on ICON.

Course requirements

Components:

Attendance & Participation	15%
Knowledge checks	5%
Discussion boards	25%
Problem sets (6)	25%
Capstone project	30%

Grading Scale:

A	94 +	B	84 - 86.99	C	74 - 77.99	D	64 - 66.99
A-	90 - 93.99	B-	80 - 83.99	C-	70 - 73.99	D-	60 - 63.99
B+	87 - 89.99	C+	77 - 79.99	D+	67 - 69.99	F	< 60

Attendance & Participation: Attendance is mandatory. Please see the attendance policy below for what to do in the event of an absence. Students are expected to actively participate in class discussions. We will be discussing strengths and weaknesses of various experimental and statistical approaches, so there should be ample opportunity for participation.

What is participation in the Zoom era?

- Keeping your video on during lecture (if your internet connection prevents this, please get in touch with me).
- Asking questions verbally (the chat feature can be hard to keep track of on my end).
- Participating in discussion.
- Using our class hand-signals when appropriate to indicate your thoughts. See here for how and why: <https://www.youtube.com/watch?v=-9T99GAWuKE>
- Annotating shared screens when appropriate.
- Note: We all know the internet can be fickle. If you experience internet disruptions and get disconnected, please rejoin if possible. If rejoining is not possible, please send me an email so that we can discuss how to make up what you missed. Your participation grade will not be affected by internet outages, since this is obviously not in your control.

Knowledge checks: As you progress through the asynchronous statistics material, you will be asked to complete 2-3 knowledge checks per week to make sure you are understanding the material. These will be graded for completion but should help you figure out if you need to ask questions to ask on Wednesdays before you tackle problem sets.

Discussion boards: Discussion board prompts will be posted Wednesdays after lecture and will be due Fridays at 5pm. The discussion boards are an opportunity for you to demonstrate your learning and critical thinking regarding experimental methodologies we read about and discuss in class. Once you post your own post, you will be able to see your peers' posts, and the discussion board prompt will ask you to engage with these posts in a specific way (ex. critiquing a particular aspect of it or identifying strengths and weaknesses). This is due by the following Tuesday at 5pm.

Problem sets: The purpose of problem sets is for students to enhance their understanding of the statistics concepts discussed in class through applying them on their own to real linguistic data. You will have a problem set due every other week. Problem sets will be due by 5pm the following Tuesdays (this gives you the opportunity to come to office hours to ask questions), to be submitted via ICON as a scanned pdf. You should also submit a .R file with the R script you used to solve any questions that required use of R.

Capstone project: Throughout the semester, you will be leading an independent project to describe and analyze a real linguistic experiment and its results using the vocabulary and tools learned in class. At the beginning of the semester, you will be responsible for obtaining a dataset (with no identifying information of participants) from a faculty member from the department, or from the website of a linguist outside of this department. You will work with this problem set throughout the semester, and you will be responsible for submitting your work at a few points throughout the semester. These are marked in the schedule. There will also be optional "lab hours" during the time slot reserved for our class on Mondays ahead of deadlines for this project, for those who would like support in working on their project.

Class policies

Collaboration: Collaboration on homework assignments is allowed and encouraged. Each student should submit their own write up of the homework assignment, with the names of all collaborators listed near the top. Collaboration is not allowed on the take-home midterms or the take-home final. Violation of

this no-collaboration policy will be considered academic misconduct and will result in no credit on the exam for anyone involved.

Absences: If you do not come to class, you also cannot contribute to the learning that day. Therefore, attendance is mandatory. If you must miss class for health reasons, please let me know in advance if possible. You are responsible for all material you miss, and regular homework deadlines still apply unless you discuss possible extensions with me ahead of time. Expect to come to drop-in hours as soon as possible after the missed class. One absence will not affect your grade, but if you miss two or more classes you can expect it to affect your participation grade. Absences due to internet issues will not affect your participation grade as long as you communicate with me clearly regarding the issue and make clear that you have worked through the material you missed.

Communication outside of class: I always prefer email, and I check my email frequently. If you email me before 9pm on a weekday, you can reasonably expect a response the same day. Generally, I do my best to respond within 24 hours. If I fail to do so, please do not hesitate to send a follow-up.

Late policy: Life happens, so I will accept **one** late assignment (one problem set or one discussion board) up to 5 days after the original due date, no questions asked. All other work must be submitted on time, or it will not receive credit.

A student-teacher contract

A syllabus should be an agreement between the students and the instructor, in which we set expectations for the learning and the behavior that will take place in this course. Below are my expectations and what I can offer. We can also add to this list as a class.

I ask you to...

- Be on time and prepared for all class meetings.
- Be vocal. Share your ideas and ask questions. This helps you and your classmates learn, and it helps me assess our progress.
- Communicate with me. If things are going too fast, let me know via email or in office hours. If it's genuinely too much work (I am aware that as grad students you have a lot of responsibilities), ask me for help in prioritizing readings and assignments.
- Be honest. If you have not done the reading or are still struggling with a concept, let me know. Lecturing to a classroom that doesn't know what I'm talking about is a waste of my time and of your time, so I will try to adjust accordingly. Please do not abuse this.
- Do not stand me up for meetings outside of office hours.

And in return I will...

- Be on time and prepared for all class meetings.
- Treat every question with patience and respect, and attempt to answer it to the best of my ability either in class, via email, or in a meeting.
- Adjust the level and pace of the course to meet the students' needs. My job is to help you learn, not to talk at you for 3 hours a week.
- Be flexible in my lectures, so that we can dedicate more time to concepts you are struggling with.
- Be generous with my time.

Zoom etiquette

- You are expected to have your video ON, unless the quality of your internet connection prevents it, in which case please talk to me about your options.
- Please make sure that your background (whether real or virtual) is appropriate for a classroom setting and is not distracting to other viewers (no flashing lights/colors, changing screens, etc.)
- You are expected to have your audio OFF when you are not speaking, in order to prevent various types of background noise from distracting me and your classmates. When participating verbally, please unmute yourself and remember to go back on mute when you are done.

University policies

Absences and Attendance

Students are responsible for attending class and for contributing to the learning environment of a course. Students are also responsible for knowing their course absence policies, which will vary by instructor. All absence policies, however, must uphold the UI policy related to student illness, mandatory religious obligations, including Holy Day obligations, military service obligations, unavoidable circumstances or University authorized activities. Students may use the CLAS absence form to aid communication with the instructor who will decide if the absence is excused or unexcused. The form is on ICON in the top banner under "Student Tools." More information is at <https://clas.uiowa.edu/students/handbook/attendance-absences>.

Academic Integrity

All undergraduates enrolled in courses offered by CLAS have, in essence, agreed to the College's [Code of Academic Honesty](#). Misconduct is reported to the College, resulting in suspension or other sanctions, with sanctions communicated with the student through UI email. Visit this page for information: (<https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code>).

Accommodations for Disabilities

UI is committed to an educational experience that is accessible to all students. A student may request academic accommodations for a disability (such as mental health, attention, learning, vision, and physical or health-related condition) by registering with Student Disability Services (SDS). The student is then responsible for discussing specific accommodations with the instructor. More information is at <https://sds.studentlife.uiowa.edu/>.

Administrative Home of the Course

The College of Liberal Arts and Sciences (CLAS) is the administrative home of this course and governs its add/drop deadlines, the second-grade-only option, and related policies. Other colleges may have different policies. CLAS policies may be found here: <https://clas.uiowa.edu/students/handbook>.

Class Behavioral Expectations

Students are expected to comply with University policies regarding appropriate classroom behavior as outlined in the [Code of Student Life](#). This includes the policies and procedures that all students have agreed to regarding the Steps Forward for Fall 2020 in response to the COVID-19 pandemic. Particularly, all students are required to wear a

face covering when in a UI building, including a classroom. In addition, the density of seats in classrooms has been reduced; in some instances, this will allow 6 feet or more between students while other cases, it may be less. Regardless, wearing a face covering and maintaining as much distance as possible are vital to slowing the spread of COVID-19. In the event that a student disrupts the classroom environment through their failure to comply with the reasonable directive of an instructor or the University, the instructor has the authority to ask that the student immediately leave the space for the remainder of the class period. Additionally, the instructor is asked to report the incident to the [Office of Student Accountability](#) for the possibility of additional follow-up. Students who need a temporary alternative learning arrangement related to COVID-19 expectations should contact [Student Disability Services arrangements/](#); +1 319 335-1462) (<https://sds.studentlife.uiowa.edu/fall-2020/covid-19-temporary-learning-arrangements/>).

Class Recordings: Privacy and Sharing

Some sessions of a course could be recorded or live-streamed. Such a recording or streaming will only be available to students registered for the course. These recordings are the intellectual property of the faculty, and they may not be shared or reproduced without the explicit **written** consent of the faculty member. Students may not share these sessions with those not in the class; likewise, students may not upload recordings to any other online environment. Doing so is a breach of the Code of Student Conduct and, in some cases, a violation of the Federal Education Rights and Privacy Act (FERPA).

Communication and the Required Use of UI Email

Students are responsible for official correspondences sent to the UI email address (uiowa.edu) and must use this address for all communication within UI ([Operations Manual, III.15.2](#)).

Complaints

Students with a complaint about an academic issue should first visit with the instructor or course supervisor and then with the Chair of the department or program offering the course; students may next bring the issue to the College of Liberal Arts and Sciences; see this page for more information: <https://clas.uiowa.edu/students/handbook/student-rights-responsibilities>.

Final Examination Policies

The final exam schedule is announced around the fifth week of classes; students are responsible for knowing the date, time, and location of a final exam. Students should not make travel plans until knowing this information. No exams of any kind are allowed the week before finals with very few exceptions made (for labs, ESL and some world language courses, and off-cycle courses): <https://registrar.uiowa.edu/final-examination-scheduling-policies>.

Nondiscrimination in the Classroom

The University of Iowa is committed to making the classroom a respectful and inclusive space for people of all gender, sexual, racial, religious, and other identities. Toward this goal, students are invited in MyUI to optionally share the names and pronouns they would like their instructors and advisors to use to address them. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University's Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity (<https://diversity.uiowa.edu/eod>; +1 319 335-0705 or (diversity.uiowa.edu)).

Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community must uphold the UI mission and contribute to a safe environment that enhances learning. Incidents of sexual harassment must be reported immediately. For assistance, please see <https://osmrc.uiowa.edu/>.

** Progression through topics is subject to change based on student progress. **

Week	Statistics	Experimental methods	Assignments & readings	Capstone project
Week 1	Introduction, types of variables	Introduction to not-just-experimental methods in linguistics	RMP Chp 1	
Week 2	Measures of center & spread	Manipulated variables; frequency, association, causation	RMP Chp 3 Pset 1 assigned	
Week 3	Introduction to R	Ethical guidelines in experimental research	RMP Chp 4	Dataset & proposal due Sept 11
Week 4	Visualization best practices	Frequency claims: surveys & observations	RMP Chp 6 Pset 2 assigned	
Week 5	LAB DAY	Sampling	RMP Chp 7	Research questions & Descriptive statistics due Sept 25
Week 6	Introduction to hypothesis testing & p-values	Introduction to simple experiments	RMP Chp 10	
Week 7	Testing means (parametric)	Methods: Grammaticality judgments & Likert scales	Reading tbd Pset 3 assigned	
Week 8	Testing means (non-parametric)	Methods: Truth value judgment tasks	Reading tbd	
Week 9	Chi-squared test, Fisher's exact test	Methods: Priming & lexical judgment tasks	Reading tbd Pset 4 assigned	
Week 10	LAB DAY	Methods: eye-tracking	Reading tbd	Statistical tests due Oct 30
Week 11	Linear models and correlation	Special populations: child language acquisition	Reading tbd	
Week 12	Linear models	Special populations: bilingualism	Reading tbd Pset 5 assigned	
Week 13	Understanding random effects	Experimental Phonetics & Phonology: VOT	Reading tbd	
Week 14	Understanding random effects	Experimental Semantics: N400 & P600	Reading tbd Pset 6 assigned	
Week 15	Wrap-up	Experimental Syntax: filled gap effects	Reading tbd	Capstone project due Dec 18