

EXP4174C: Laboratory in Sensory Processes

Course Syllabus

Fall 2023, Class #13717, Section 0453

Meeting room:	Psychology Building, Room 191
Meeting times:	Monday / Wednesday, 9:35 AM – 11:30 AM
Instructor:	Dr. Peter Kvam (pkvam@ufl.edu)
Office:	Psychology 216 (or online)
Office hours:	Mondays / Wednesdays, 11:30AM – 12:30PM, or by appointment
TA:	TBA
TA office hours:	TBA

Course Description

This lab provides hands-on experience in the methods and approaches of perceptual psychophysics. Students in this class will learn and apply methods of scientific communication, summarize results, and do lab write-ups, present data, and write a final paper. Activities in the lab will challenge students to think carefully and critically about every aspect of the research process, relating these to benefits and limitations of the scientific method in psychological research. After completing a progression of small assignments involving data care, students conduct instructor-supervised group projects to run an experiment of their own. Students will collect, analyze, and present the results of behavioral data collected from psychological experiments. In the end, students will judge similarities and differences between the methods and results of their own experiments.

Course Objectives

By the end of this course, you will be able to:

- Be able to program experiments in JavaScript and analyze data in MATLAB.
- Learn how research paradigms relate to the gaps in knowledge we seek to fill.
- Understand how experiments work and understand the principles of machine learning in psychology.
- Learn how to analyze experiment data in an open and reproducible way.
- Become proficient in communicating research methods and findings.

Grading

Your grade(s) in the course will be based on a combination of attendance / participation (10%), lab activities (30%), lab reports (30%), and your final project (30%) as follows:

Assignment	Points (%)	Due
Participation & Attendance	50 (10%)	End of semester
Lab Activities – Total 150 (30%)		

Threshold activity	30 (6%)	9/13
Visual Search activity	30 (6%)	9/27
Stroop Task activity	30 (6%)	10/18
Attentional Blink activity	30 (6%)	11/1
Signal Detection activity	30 (6%)	11/15
Lab Reports – Total 150 (30%)		
Lab Report #1	30 (6%)	9/20
Lab Report #2	30 (6%)	10/4
Lab Report #3	30 (6%)	10/18
Lab Report #4	30 (6%)	11/8
Lab Report #5	30 (6%)	11/20
Final project – Total 150 (30%)		
Final project methods	50 (10%)	11/29
Final project full report	100 (20%)	12/13 (5 p.m.)
Total	500 (100%)	

Grading Scale

90-100%	A	72-74.9%	C
87-89.9%	A-	69-71.9%	C-
84-86.9%	B+	66-68.9%	D+
81-83.9%	B	63-65.9%	D
78-80.9%	B-	60-62.9%	D-
75-77.9%	C+	0-59.9%	E

See the [Current UF Grading Policies](#) for more information.

There are two ways to earn credit for participation & attendance. One is to show up in class and actively participate in discussions, which will be noted by your instructor or TA. Another is to make a discussion post on Canvas that includes both (a) a question pertinent to the reading / topic of the day, to be posted before class; and (b) a post-class reflection on how your thinking has changed (or not) based on the class content that day. Plan to complete one of these two options for at least 24 classes during the semester for full credit. Your engagement in the group final project (as rated by your team) will also count toward this grade, so be sure to play your part in completing it!

Academic Integrity

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Conduct Code specifies a number of behaviors that are in violation of this

code and the possible sanctions. [Click here to read the Conduct Code](#). If you have any questions or concerns, please consult with the instructor or TAs in this class.

Absences

In general, acceptable reasons for absence from or failure to participate in class include career-relevant activities like academic conferences or workshops, illness, serious family emergencies, military obligation, severe weather conditions, religious holidays, participation in official university activities, or court-imposed legal obligations (e.g., jury duty or subpoena). All of these will be excused when it comes to attendance / participation grades – just let the instructor know as soon as possible before class.

Respect and non-discrimination

Respect for fellow students and instructors is expected of all class attendees. Intentionally disruptive or disrespectful conduct affecting other students may result in removal from the class session or from the course altogether.

Sexual Harassment. Sexual Harassment is not tolerated in this class, in the Department of Psychology, or at the University of Florida. Sexual harassment includes: the inappropriate introduction of sexual activities or comments in a situation where sex would otherwise be irrelevant. Sexual harassment is a form of sex discrimination and a violation of state and federal laws as well as of the policies and regulations of the university. All UF employees and students must adhere to UF's sexual harassment policy which can be found here: <https://hr.ufl.edu/forms-policies/policies-managers/sexual-harassment/>. Please review this policy and contact a university official if you have any questions about the policy. As mandatory reporters, university employees (e.g., administrators, managers, supervisors, faculty, teaching assistants, staff) are required to report knowledge of sexual harassment to UF's Title IX coordinator. You can also complete a Sexual Harassment Complaint Form (Title IX) here: <https://titleix.ufl.edu/title-ix-complaint-form/>.

Accommodation for Disabilities. Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://disability.ufl.edu/>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

In-class Recording

This course will be offered as both in-person and online (HyFlex), meaning that students are not required to attend in-person this semester. However, if you choose to participate online, you will still need to engage in discussions if you wish to receive attendance / participation credit for the corresponding days. This can be accomplished by speaking on Zoom through your microphone (though see not below about recording), or by engaging in the Zoom chat. For those attending online, please refer to the Canvas page for the Zoom link for class.

Our class sessions may be audio visually recorded for students in the class to refer back to and for enrolled students who choose to attend online. Students who participate online

with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared.

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Course feedback

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Other notes

Studying and working together on assignments is permitted, and working together on final projects is highly encouraged, but everything you turn in must be original and written in your own words. The University and instructors reserve the right to penalize any student who is guilty of academic misconduct, including but not limited to plagiarism, collusion, cheating, or discrimination or harassment. Students are welcome to use any resources at their disposal (notes, papers, internet) for all lab reports and assignments, but these should be completed on your own (not in groups, no stack exchange, no asking your faculty advisor, etc.).

In this course, we will be focusing on state-of-the-art methods for creating experiments, collecting data, analyzing and visualizing results, and reporting statistics. **This will include some programming**, which is an indispensable part of modern scientific research in almost every field. In the course, you will learn to do each of these research steps in MATLAB and Psychtoolbox. However, if there is another language you prefer (such as R or Python), you are welcome to use that instead. We will have a great deal of class time devoted to learning these skills, but you are welcome to contact the TA or instructor with any questions or requests for additional assistance on these tools (as well as any other part of class).

Weekly class schedule

You may attend class either in person or online (HyFlex). If you choose to attend online, you can do so by joining via Zoom using the link provided on Canvas.

Week	Topic	Lab / programming skill	Assignment due
1	(8/23) Introduction to the course		
2	(8/28) The modern laboratory (8/30) Asking scientific questions	Using UFApps	(Reading – N73)
3	(9/5) NO CLASS – Labor Day (9/6) Programming languages	MATLAB interface	(Reading – O17)
4	(9/11) Designing experiments (9/13) Methods	Variables & data types Vectors, arrays, matrices	(Reading – C17-1) Threshold activity
5	(9/18) Formatting in LaTeX (9/20) Math in science	Computing summary stats Saving & loading	(Reading – N21) Lab Report #1
6	(9/25) Literature searches (9/27) Scientific inference	Loops & functions Linear algebra	(Reading – E99) Visual search
7	(10/2) The replication crisis (10/4) Probability distributions	Plots & Visualizations Adding figures to text	(Reading – C17-2) Lab Report #2
8	(10/9) Is reproducibility enough? (10/11) Simulation-based analyses	Inferential statistics Reporting your results	(Reading – C17-3)
9	(10/16) Results (10/18) Classical vs Bayesian stats	Bayes rule Bayesian statistics	(Reading – W18) Lab & activity #3
10	(10/23) Drawing conclusions (10/25) Abstracts & headings	Analysis using JASP Psychtoolbox	(Reading – C14) Project survey
11	(10/30) Figures and diagrams (11/1) Intro & Discussion sections	Displaying stimuli Experiment conditions	(Reading – R14) Attentional blink

12	(11/6) Peer review & publishing (11/8) Eye tracking	Randomizing & balancing Debugging	(Reading – C17-6) Lab report #4
13	(11/13) Running simulation studies (11/15) Neuroimaging	Dynamic stimuli Example experiments	(Reading – M13) Signal detection
14	(11/20) Work on final projects (11/22) NO CLASS - Thanksgiving	Work on final projects	Lab report #5
15	(11/27) Work on final projects (11/29) Data collection for projects	Submitting a LaTeX paper Work on final projects	(Reading – FW15) Final methods
16	(12/4) Data collection for final projects (12/6) Reading day	Work on final projects Work on final projects	
(12/13) 5:00 PM - FINAL PROJECT PAPERS DUE			

Reading Schedule

Day	Citation	Title
(Week 2)	Newell, 1973	You can't play 20 questions with nature and win
(Week 3)	Ozgun et al, 2017	MATLAB vs Python vs R
(Week 3)	Chambers, 2017	Chapter 1: The Sin of Bias
(Week 5)	Navarro, 2021	If mathematical psychology did not exist, we might need to invent it
9/20 (Week 6)	Ehrenstein & Ehrenstein, 1999	Psychophysical Methods
9/27 (Week 7)	Chambers, 2017	Chapter 2: The Sin of Hidden Flexibility
10/4 (Week 8)	Chambers, 2017	Chapter 3: The Sin of Unreliability
10/11 (Week 9)	Wagenmakers et al, 2018	Bayesian inference for psychology. Part I: Theoretical advantages and practical ramifications
10/18 (Week 10)	Cumming, 2014	The New Statistics: Why and How
10/25 (Week 11)	Rougier et al, 2014	Ten Simple Rules for Better Figures
11/1 (Week 12)	Chambers, 2017	Chapter 6: The Sin of Internment
11/15 (Week 13)	Moran & Zaki, 2013	Functional Neuroimaging and Psychology: What Have You Done for Me Lately?

11/17 (Week 15)

Forstmann &
Wagenmakers, 2015

Model-Based Cognitive Neuroscience: A
Conceptual Introduction

Campus resources

Health and Wellness

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit the [Counseling and Wellness Center website](#) or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the [Student Health Care Center website](#).

University Police Department: Visit [UF Police Department website](#) or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the [UF Health Emergency Room and Trauma Center website](#).

Academic Resources

E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

[Career Connections Center](#): Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

[Library Support](#): Various ways to receive assistance with respect to using the libraries or finding resources.

[Teaching Center](#): Broward Hall, 352-392-2010 or to make an appointment 352-392-6420. General study skills and tutoring.

[Writing Studio](#): 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: Visit the [Student Honor Code and Student Conduct Code webpage](#) for more information.

On-Line Students Complaints: View the [Distance Learning Student Complaint Process](#).