PSYC 11: Laboratory in Psychological Science (Spring 2025)

Meeting Times: MWF 10:10 — 11:15AM
X-hour: Th 12:15—1:05PM
Classroom: Moore B03
Auxiliary Classrooms: Moore 302, Moore 303, and Moore Library

Staff

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Course Description

How can we use experiments and data analysis to study the human mind, behavior, and social interactions? This course uses hands-on demonstrations and exercises to introduce students to modern approaches to experimental psychology. The course will culminate by having students carry out independent research projects in small (3–5 person) teams. Students will present their findings in a poster session at the end of the term and will also write up their work in a final paper.

Course Goals

My primary objective is for you to gain a solid understanding of how psychological research is "done." This is the course where you apply some of those fancy theories and techniques you've been learning about in your previous PSYC courses.

I also want you to be able to apply what you learn in my course in your everyday life. When we think about what good research "looks like," it can help us to understand and reason about a broad range of topics. For example, we'll learn (in general) about what information we might need to answer a question or make a decision. We'll also learn how to go about collecting that information. Finally, we'll learn how we can use information or data that we've collected to start to answer questions and form (or test) hypotheses. Although we won't be able to cover every aspect of every technique, I hope the course will help you to develop good problem solving skills and intuitions.

Pre-Requisites

You *must* have taken a course on statistics (ideally PSYC 10). Specifically, you should know about concepts like *p*-values, *t*-tests, ANOVAs (including the difference between paired/repeated-measures and independent samples tests), and chi-squared tests. Knowing about correlation and regression will come in handy, too. You should also have some basic knowledge about experimental design. One way to think of PSYC 11 is as an "applied" version of PSYC 10. In order to apply the concepts you learned in PSYC 10, you'll need to come into this class having already achieved a high level of fluency with the material. You should also have some experience with a statistical analysis toolkit or framework like Python, MATLAB, R, SPSS, etc.

I'd also like you to have taken PSYC 1, PSYC 6, or some other "non-PSYC 10" PSYC course at Dartmouth. That will help to ground the materials covered in this course. It's not necessarily a deal-breaker if you haven't taken those courses, but you may have some additional catching up to do— so you should come talk to me if this is your first PSYC course (aside from PSYC 10) at Dartmouth.

If you have any questions about what you are expected to know prior to starting my course, please ask me! Similarly, if you notice yourself falling behind at any point in the course, or if you're worried that you're not fully understanding something, I expect you to let me know so that we can proactively address the situation. *Your agreement to proactively address any course difficulties or issues is a pre-requisite for this course.*

Course Materials

All required text, tutorial, and audiovisual materials will be freely available to you throughout the term. You do not need to purchase any additional materials to fully participate in this course. A complete outline, with links to all materials and assignments, may be found here.

You will need your laptop computer to collect, log, and analyze data during class meetings. You should bring your laptop to every class meeting.

Format and Overview

The design of this course is substantially different from other more traditional courses you may be familiar with. Specifically, this course is self-driven in the sense that instructor-led lectures comprise only a small part

of the course. Most of your learning will come from hands-on training where you carry out experiments in small groups. Your TAs and I will be available throughout the term to help if you encounter issues, and there are some safeguards in place to keep you on track, but the system will work best if you **recognize when you have questions and proactively seek out help when you need it**.

During (roughly) the first five weeks of the course, we will use guided experiments to practice thinking about and constructing the major elements of a research paper. Each week (approximately) will be designed around a central theme:

- Theme 1: Asking questions in a scientific way
- Theme 2: Research motivation and background: writing an effective *Introduction* section
- Theme 3: Describing what you did (and why): writing an effective *Methods* section
- Theme 4: Interpreting your analyses and describing what you found: writing an effective *Results* section
- Theme 5: Situating your work within the broader literature: writing an effective *Discussion* section

During the remaining weeks of the course, you will carry out a final project in a way that synthesizes content from the first part of the course. Each group will receive a small research budget to carry out a real-world research study. Groups will present their findings in a "conference-style" poster session that is open to the Dartmouth community, and will also write a final paper:

- Week 6: Implement an experiment
- Week 7: Collect data
- Week 8: Analyze data
- Week 9: Interpret results
- Week 10: Project presentations and wrap up (final poster and paper due)

Note: the above schedule reflects a rough estimate and is subject to change.

X-hours and Office Hours

We won't generally use the X-hours for this course. As needed, we may use one or more X-hours to schedule informal tutorials or workshops organized around some skill or theme related to the course material.

My office hours will be scheduled by appointment; instructions for scheduling appointments with me will be available on Canvas. When you sign up for a meeting time, you should specify whether you would like to meet in person or over Zoom.

Slack

We will use Slack (a tool for organizing notes, files, and conversations) to provide a forum for asking and answering questions, posting demos, etc. You will need to join the class workspace at the beginning of the term by following the link above. We'll set up a series of channels (e.g., for different labs, research topics, etc.) and will use Slack during and outside of class to keep track of ideas and progress.

Grading

All course materials will be graded on point scale (1 point = 1% of your final grade), added together, and converted to the nearest equivalent letter grade as follows: A (93–100); A- (90–92); B+ (87–89); B (83–86); B- (80–82); C+ (77–79); C (73–76); C- (70–72); D+ (67–69); D (63–67); D- (60-62); or F (0–59). All final numerical grades will be rounded to the nearest integer (e.g., a 92.5 average will result in a final grade of "A," whereas a

92.4999 average will result in a final grade of "A-"). Out of fairness to all students in the course, there will be no "negotiations" about grading— e.g., your grade will be determined solely by your numerical score, and I do not "round up" arbitrarily.

Note that all of the grading in this course is typically done by the teaching assistants. To maintain consistency and fairness across students, each assignment is normally graded by a single TA. Therefore *across* assignment you may notice some minor differences, despite our best efforts, since grading free response written work is inherently an imprecise endeavor and entails some subjectivity. To help mitigate these issues, I provide a detailed rubric for every assignment on Canvas.

Re-grading

If you believe that an error has been made in grading one of your assignments, you may address the issue as follows:

1. Carefully review the feedback you received, checking against the assignment's rubric on Canvas. Document your concerns in detail, referencing specific elements of the rubric, your writing, and the feedback you received. Also make it clear what you are "asking" for— e.g., correcting an error in how the points were added up, answering a question about how something was evaluated, requesting that some portion of the assignment be considered for regrading, etc.
2. Email a copy of your request to the TA who graded the assignment and CC me.
3. Meet with the TA who graded your assignment during their office hours.
4. If a non-trivial issue (e.g., something more serious than a simple math error or typo) has been identified, I will have a follow-up discussion with the TA.
5. You will be notified of the outcome (e.g., updated grade, request approved/denied, request for additional information).

Note that if you request a re-grade of some aspect of your assignment, your grade may increase or decrease. Once a re-grade has been completed (whatever the outcome— whether it has resulted in a higher grade, a lower grade, or the same grade) your grade on that assignment will be considered final.

Please do not abuse our re-grading policy. Grading in this course is very labor intensive, and we do not have the bandwidth to re-grade much more than a handful of assignments across all students throughout the entire term.

On the other hand, if you have **questions** about your assignments or any other aspect of the course (concepts you don't fully understand, advice on how to approach an assignment before you turn it in, suggestions for how to improve), then the TAs and I are very happy to help! Just send me (or the TAs) an email and we can set up a time to discuss.

Lab Exercises (40%)

We'll do a total of 4 graded in-class labs, which you'll write about in lab reports. Each report will be worth 10% (10 points) of your final grade. The lab exercises are intended to give you hands-on research experience and to help reinforce the concepts from the lectures and readings. Each lab will include a hands-on component and a written component. Some labs will also include data analysis.

Final Project

The final project will culminate in the creation of a poster and paper. You will carry out these projects in small groups. As you and your group are progressing on the final project, you will also fill out weekly updates to track your progress and keep me and the TAs informed about how things are going.

Poster Presentation (15%)

At the end of the course, you'll create a poster summarizing your research project and findings. You'll present the poster in a format similar to a at scientific conference or professional meeting. In class during the last week, you'll present your group's poster to the class.

You'll also present your poster a second time during a public poster session (open to the Dartmouth community). Poster session attendees (often including other Psychology faculty and students) will ask questions, and you will be expected to "defend" your project by answering questions. Poster session attendees will vote on their favorite poster/project, and a prize will be awarded to the group with the best votes.

You'll be graded based on the quality of your poster and presentation, as well as your ability to field questions about your project.

Final Paper (40%)

A 15-page (double-spaced, 1 inch margins, 12 pt Times New Roman font or similar) final paper (not including title page, figures, or bibliography) will serve as a focal point for the course, and will ask you to synthesize many elements from the course into a unified whole. Your paper should include the following sections: title page, abstract, introduction, methods, results, discussion, and bibliography. Each group will write one paper.

Weekly Snippets (5%)

During weeks 5—9 (while you are working on your project), you'll write a very brief report about each week, answering the following three questions (roughly 2—4 sentences per question):

1.) What did I work on over the last week?
2.) What am I planning to work on next week?
3.) What are the impediments to my progress?

Each snippet will be worth 1 point. To receive credit for a snippet you must answer all three questions and submit the assignment on time, but the specific content will not be graded. Snippets will be due by 11:59PM on Monday of each week.

Group Contribution (not directly graded)

You'll rate (and receive ratings from) your group members regarding your contribution to the group. These ratings will serve as a guideline for me, and may result in adjustments to your project grade. I also reserve the right to make additional adjustments to portray what I believe to be a fair reflection of each student's contribution. This aspect of your final project provides a formal means of evaluating your and your classmates' contributions to your final project.

The Academic Honor Principle

I expect you to abide by Dartmouth's Academic Honor Principle at all times. Any work you hand in should be your **own**. For group projects, all students must contribute to the final product, and any issues or concerns should be raised promptly with me and/or the TAs.

The "point" of this course is for **you** to learn the material, rather than to show that you can prompt an LLM to complete an assignment on your behalf. Therefore my strong *recommendation* (if you really want to learn the material!) is to **not** use LLMs for your assignments. However, I won't police your work or even attempt to guess whether or not you secretly used Generative AI. There are just two official "rules" about using Generative AI:

- **You** are responsible for the content of your assignments, whether written by you "from scratch" or with the help of an LLM (or similar). If facts or references are "made up" (as LLMs are wont to do) you will very likely be penalized (or potentially called out on an honor violation, depending on the context and scope) for doing that.
- You are bound by Dartmouth's Academic Honor Principle to acknowledge any use of AI in your work. This may be done by adding a note to the relevant section(s) of your assignment, changing the font color, adding a comment to your code, and/or explicitly citing the tools you use. Each situation is unique, but you **must** make it clear exactly what work is your own vs. produced by AI. You must also include a chat history (including any prompts you used) as an addendum to any assignments where you used AI.

Violations of the Academic Honor Principle (e.g., plagiarism, including from AI-based tools like ChatGPT; re-using work from other courses; and/or other forms of academic dishonesty) will not be tolerated. If you become aware of any such violations you are honor-bound to take action by reporting the issue to me. If you have any questions about the Academic Honor Principle and how it applies to this course, please ask.

Scheduling Conflicts

Succeeding in this class requires you to be physically present (e.g. to take part in the in-class labs, discussions, your group project, etc.). I expect you (to the best of your ability to do so) to attend *and be on time for* every class. ***If you know you will have a scheduling conflict with this course during the term, please meet with me before the end of Week 2 to discuss arrangements to make up the class.***

If you are feeling sick, an emergency comes up, etc., please reach out to me via email to let me know. We can figure out how to get you back on track when you return.

Student Needs

I strive to maintain a welcoming and accessible classroom environment. I want you to be an active participant and contributor to ongoing discussions and activities, and that means that every student should feel comfortable in my classroom. If you would like me to be aware of any issues that arise during the term, or any personal needs that may require adjusting how I run my class or how you participate, I encourage you to see me or email me privately. Dartmouth's Student Accessibility Services Office can also help assist with setting up disability-related accommodations.