

# Research Methods: Cognition & Decision Making

PSYC UN1490  
Tentative Syllabus for Fall 2022  
Updated June 7, 2022

## Course Information

**Points:** 4

*Students must register for both UN1490 and one of the lab sections of UN1491.*

**Lecture:** Monday 2:10-4pm, in 200b Schermerhorn

**Lab Section 1:** Monday 4:10-6pm, in 200b Schermerhorn

**Lab Section 2:** Monday 4:10-6pm, in 200c Schermerhorn

**Lab Section 3:** Monday 6:10-8pm, in 200c Schermerhorn

We will finalize all lab-section assignments during the first week of the fall semester, so if you cannot enroll in your preferred section, look out for an email shortly before classes start.

## Instructor Information

**Katherine Fox-Glassman**

Office: 314 Schermerhorn

Fall drop-in hours: TBD

email: [kjt2111@columbia.edu](mailto:kjt2111@columbia.edu)

pronouns in use: she/her/hers

## TA Information

This course has three graduate TAs. Our Canvas homepage will always have the most up-to-date list of TA contact info and office hours. You may stop by any TA's office hours for help—you're not limited to your section leader!

## Course Description

Introduces research methods employed in the study of the cognitive and social determinants of thinking and decision making. Students gain experience in the conduct of research, including: design of simple experiments; observation and preference elicitation techniques; the analysis of behavioral data, considerations of validity, reliability, and research ethics; and preparation of written and oral reports.

Note: Fee: \$70. Attendance at the first class is essential.

## Prerequisites

- PSYC 1001 (Science of Psychology) or equivalent introductory psych course.\*
- An introductory statistics course (e.g., PSYC 1610; or STAT 1001, 1101, or 1201).\*
- Students are *not* required to have taken PSYC 2235 (Thinking & Decision Making), but you will find advantages to having taken either PSYC 2235 or another 2000-level psychology lecture course that introduces related topic areas (e.g., Developmental, Social Cognition).

\*Students who have not taken both of these prerequisites need instructor permission to register.

In semesters when space is limited, priority for enrollment will go first to Psychology majors, post-bac students in the Psychology Certificate program, and Neuroscience & Behavior majors.

## Role in the Psychology Curriculum

This course is designed primarily to introduce students to experimental methods in psychology, and as such fulfills the following requirements:

- the Laboratory (Research Methods) requirement of the Psychology major, and of the Psychology Post-Bac certificate program;
- the P3 (Research Methods / Statistics) requirement of the Neuroscience & Behavior major.

This course may not be used to fulfill the Group I requirement. It is considered overlapping with the other Research Methods courses in the Psychology Department (e.g., 1420, 1450, 1455), so if you have taken one of those courses already, you should not take this course—you may not apply more than one course numbered in the 1400s toward the major or concentration.

## Motivating Questions

1. How do we design, carry out, analyze, and communicate the results of research in the field of cognitive psychology?
2. What makes a psychology study good—how do we measure the reliability and validity of the methods used and results obtained, and how can we judge the usefulness of those results?
3. What are the common tradeoffs researchers face when trying to conduct good research, and what measures can we take as scientists to conduct research responsibly, accurately, and ethically?
4. What are the differences between data and results, and between results and inferences? Why do these distinctions matter?

## Course Overview

In many science courses, it's easy to see how we've come to the knowledge we have about the field. We know a chemical reaction has occurred when the reagents change temperature, color, or state of matter; we can calculate the velocity of a particle by measuring the distance it traveled and the time that journey took. But in psychology, it isn't always obvious how we know the things we know—for example, why are we confident that cognitive dissonance exists, and that it can influence people's attitudes and behavior? How did Kahneman & Tversky come up with Prospect Theory, and why do so many people (including the Nobel Prize committee) consider it a groundbreaking way of describing people's preferences in situations involving risky choice? How can cognitive researchers justify telling climate scientists or emergency managers that one method for presenting scientific information to the public is more or less effective than another?

Research methods and experimental design are the backbone of the study of psychology, and are the reason we classify it as a scientific discipline. This course is designed to introduce students to the basics of conducting research into questions of human behavior and judgment. This goal is shared by each of the Experimental Psychology courses at Columbia (PSYC 1420, 1450, 1455, and 1490): each of these courses covers the same general principles of hypothesis testing, methodology, experimental design, data analysis & interpretation, and theory building. The differences in these methods courses are the perspectives from which each approaches those same topics; in PSYC UN1490, our perspective is the cognitive topics of thinking, judgment, and decision making. As such, we will be taking most of our examples from classic studies in the fields of heuristics & biases, decisions under risk and uncertainty, intertemporal choice, social dilemmas, memory, decision architecture, and environmental decision making.

## Course Organization

### Lecture – in person

Our weekly class meeting will consist of a mixture of lecture, discussion, and group work. Lectures are designed to clarify and add depth to the assigned readings, but they do not duplicate the assigned reading material. Please come to class each week having already completed the required readings and/or video mini-lectures for that day.

### Laboratory – in person

For the first half of the semester, laboratory sections will be a space to expand on topics from lecture, practice applying the concepts we discuss in class (e.g., reliability, validity) to specific research papers and studies, and to begin learning some basics of data analysis.

In the second half of the semester, the focus of lab will shift toward work on your own research projects: you will each propose a study that could be carried out within the constraints of our class (see Research Projects, below, for more details), and each lab section will choose 4-5 student-proposed studies to work on in small groups. With your group, you will finalize your hypotheses and methods, design your study instruments (e.g., surveys, online tasks, etc.), collect data from real participants, and analyze and interpret the results. Much of this work will be done during lab meetings, with input and help from your TA, though you will likely also need to work with your group outside of lab time in some weeks.

The first two lab assignments, as well as the analysis of your group's study data, will require you to use R, the free, open-source statistical software package. R has a reputation for having a steep learning curve, but your lab assignments are designed to introduce you to R in an intuitive way, and the analyses you'll be doing for this class won't get very complex. Plus, your TAs will be there to help guide you. R is an incredibly powerful tool, and although it can be frustrating at times (no matter how experienced you are at data analysis!), it's very much worth the time it takes to learn to use it.

## Course Requirements

### Grading

I don't grade on a curve in this class, so your grade will be determined only by your own work, not by how well you do relative to the other students. There is no pre-determined proportion of students who will receive As, Bs, Cs, etc.—if every student does A-level work, then everyone will receive an A in the course. Your grade will be calculated out of a total of 1000 points, roughly half each from the laboratory component of the course and from the lecture component, as follows:

#### Lecture

Class intro survey:	25 points	(due before class on Monday, Sept. 12)
Class participation:	50 points	(during every class)
Weekly quizzes:	100 points	(due before each class, starting Monday, Sept. 19)
Midterm wrapper:	(50 or 0 points)	(week of Monday, Nov. 7)
Final exam:	(200 or 250 points)	(Monday, Dec. 19)

#### Laboratory

Lab attendance	60 points	(5 points per lab meeting)
Lab assignments	165 points	(5 assignments due across the first 6 lab meetings)
Research Proposal:	100 points	(due Friday, Oct. 28)
Final Research Paper:	150 points	(due Dec. 17)
Group Presentation:	100 points	(presented in class/lab Monday, Dec. 12)

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Total: 1000 points

The cutoffs for each letter grade are as follows:

990* – 1000 points	= A+
930 – 989.9 points	= A
900 – 929.9 points	= A-
870 – 899.9 points	= B+
830 – 869.9 points	= B
800 – 829.9 points	= B-
770 – 799.9 points	= C+
730 – 769.9 points	= C
700 – 729.9 points	= C-
600 – 699.9 points	= D
0 – 599.9 points	= F

*\*An A+ grade is a rare distinction indicating exceptional work. If no students score above 990 points, the cutoff for an A+ may be lowered at the instructor's discretion.*

Your total points are not rounded: if you end up with 929.9 points you have earned an A-, and you cannot raise that to an A after the fact. The grading scheme for this course includes several categories that are easy to earn perfect scores in if you stay on top of your work—if you are concerned about your grade, make sure you come talk to a member of the teaching team early in the semester so we can help you get and stay on track.

**Course Intro Survey.** You will fill out a decision survey before class starts, and we'll use your (anonymous) responses on this survey as example datasets for both lecture and lab. To receive full points for the intro survey, you must complete it before noon on Monday, September 12.

**Participation.** You will earn your lecture participation grade (50 points out of 1000 total) by responding to poll questions during class. These questions will serve several purposes: (1) to give me real-time feedback on what concepts you're understanding and which topics we might want to spend a little more time on; (2) to help you engage with the material and be an active learner; (3) to help you gauge your own understanding as we go; and (4) to augment the results of the class intro survey with polls and questions that are better asked "live" than in an online survey.

To receive the maximum 50 points for lecture participation, you must respond to at least 90% of the questions posed during 10 of the 11 lectures for which we count participation. (We will use clickers during the first class meeting, but participation won't be counted for that day. We recommend bringing your clicker on that day to test it out and troubleshoot any technical issues.) You must also participate actively in in-class group work to earn full participation points for each class.

**I will drop your lowest participation score when calculating your final participation grade,** which means you have one free absence. *You do not need to email anyone* on the teaching team in order to use this free absence—it is applied automatically for everyone. Each student may also make up the points for a second lecture absence by recruiting a friend to complete the class's studies. If you anticipate needing to miss more than two lectures this semester, you might be best off switching to another Research Methods course (PSYC 1450 is also offered this semester, and PSYC 1420 will be offered in spring), as it is difficult to keep up with this course if you miss too many classes.

You also have a *separate free pass* for "forgot my clicker / dead batteries" situations where you are present but for some reason not able to submit clicker responses: *to use this pass, you must check in with a TA at the beginning and end of class.*

You may purchase an iClicker at the Columbia Bookstore, online, or from another student; it's fine to use the same clicker you used for past classes. The two models to look for are the 2<sup>nd</sup> Edition iClicker (ISBN 9780716779391) and the i-clicker+ (ISBN 9781464120152).

We also have a limited supply of class iClickers available to loan out to students on limited budgets. Let your TA or the instructor know if you would like to borrow one for the semester.

A handout with instructions on how to register your iClicker is available for download on Canvas.

Note: while you will earn participation points for each class by responding to clicker questions, it is possible to lose those participation points for a particular lecture if you are disrupting class or distracting those around you. The vast majority of students come to class prepared to participate and learn, so it is very rare for students to lose points in this way; hopefully this year will continue that trend.

**Lab Assignments.** Your lab assignments will range in format, but will each be designed with the same aim: to allow you to practice, combine, and question the concepts you've learned about in lecture and lab. There will be 5 assignments, worth a total of 165 points:

- R Assignment I (15 points)
- R Assignment II (20 points)
- Class Data Analysis Project (50 points)
- Literature Search Writeup (30 points)
- Research Proposal First Draft (50 points)

**Research Proposal.** Midway through the semester, you will submit a research proposal in lab. For most students, the proposal will be based on the same topics that you've been writing about in your Literature Search Writeup and your Research Proposal First Draft. The final draft of your Research Proposal will consist of two components: (1) a formal written proposal of an experiment you think would be interesting (and feasible!) to carry out as a group project, and (2) a short oral presentation designed to explain your research question, proposed methods, and expected results. In the written proposal, worth 75 points, you'll demonstrate how much you've absorbed about asking a good research question, laying out sound experimental logic, and designing a valid and reliable study. The purpose of the presentation (25 points) is to convince your lab-mates that your idea is worth carrying out in reality—after the presentations, you'll rank the proposals you'd most like to work on, and your TAs will use these rankings to create the groups that you'll be working in for the rest of the semester.

**Group Presentation.** We'll finish off the semester with a research fair: each group will have 8-10 minutes to present their study to the rest of the class. These presentations will start during our regular class meeting time on the final day of classes (Dec. 12), and finish up during the usual meeting time of the first lab sections. This presentation cannot be made up, so **if you know you will have a conflict on Monday, Dec. 12, you should not take this class.** Your presentation is scored out of 100 points, based on the content and quality of your group's talk, and on your individual success at communicating your portion of it. You won't, however, be graded on whether or not your group's experiment "succeeded" in finding a significant effect—most studies don't, when carried out under the limitations that ours have. All a successful presentation needs to do is to clearly communicate what question your project attempted to answer, the methods you used, and whatever results you found.

**Final Research Paper.** At the end of the semester, you'll submit a paper that summarizes your group's research. Using APA format, your paper will cover the background literature, motivating question, hypotheses and experimental logic, methods, results, and inferences that you used/made in your group project. **The final paper is due on Friday, December 16,** and is worth 150 points.

Although the original idea for the project may not have been yours alone, and although you will likely have worked very closely with your fellow group members on elements of study design, analysis, and interpretation, **your final paper must represent your own original work, and only your work.** This means that you will need to be extremely careful about: using your own words when writing up

your study's results, attributing ideas to their appropriate source, and coming to original conclusions about your group's study results. We'll discuss how to identify and avoiding plagiarism in a lot more detail in both class and lab, but please also take the time now to carefully read the section in this syllabus about Academic Integrity, below.

**Quizzes.** Since a large portion of each of our lecture meetings will consist of discussion, it's important to make sure that everyone is coming to the class armed with a base understanding of the topics for that class. Before each lecture, you'll complete a short quiz on material from that week's reading and video prep segments. These quizzes will take the place of some of the points usually allotted to exams, which tends to help students' grades (though of course that depends on how much time you allot to the quizzes). You should also use them to help you assess on a weekly basis which parts of the material you're more and less comfortable with—come ask us questions in class or office hours on any topics you're unsure about! Although you may not work with other students on your quizzes, *you absolutely may ask for help from your instructor or a TA... just be aware that due to a weekly Departmental meeting, we will typically not be available for help in the 2 hours just before class.*

There will be a quiz due before each of the lectures starting in Week 2, and each is worth up to 10 points. Of those 11 quizzes, I'll drop your lowest score when calculating your final grade. Quizzes submitted after lecture has started (2:10pm Mondays) can only receive up to 5 points. You'll have two attempts at each quiz, and your higher score will be kept; if you encounter any technical issues and need a quiz re-opened, please let your TA know before noon on the day it is due.

**Exams.** We will have one midterm assessment and one final exam, both of which will consist primarily of short-answer questions. The final will cover the material from the whole course. **Although the two exams will ask similar types of questions, they will be administered and scored very differently:**

- The **final exam** will be an in-person, closed-book/notes exam. It will not focus on definitions: its purpose is to assess your ability to *apply, examine, and explain* our course concepts.
- The **midterm assessment** will be open-book and open-notes, and administered online via Canvas during the week when we're off for fall break (if you are eligible, make sure you vote!). This midterm is *optional, but very strongly encouraged*, as putting in the work on it at this point in the semester will give you two huge advantages on the final exam:
  1. It's designed to be a practice test of sorts—it'll ask similar types of questions to those that will be on the final—to help you identify the concepts and question styles that you may need to spend more time on in order to show us your best work on the final. If you skip the midterm and then feel blindsided by the final, well... ˘(ツ)˘
  2. Completing both the midterm and a **Midterm Wrapper** self-assessment will allow you to replace 20% of your final exam grade (50 points out of the 250 for the final) with your score on the Midterm Wrapper:
    - The Midterm Wrapper is an assignment that will ask you to compare your own midterm responses to the answer key and write a short assessment of what you did well and what you still need to work on.
    - Since the Midterm Wrapper will be *scored based on the effort* you put into your self-assessment (rather than how well you did on the midterm itself), scores tend to be quite high. For almost everyone, replacing 50 points on your final exam with the Midterm Wrapper score will give your final exam grade a boost—though if you end up doing better on the final than on the Midterm Wrapper, we'll keep your full final score out of 250. (In other words, completing this assessment cannot lower your final exam score.)
    - You may complete the midterm and/or the Wrapper at any point after they are made available (Monday, Nov. 7), but *you can only get the points for the Wrapper if you complete it by the deadline* (Friday, Nov. 11). If you have a conflict with the Midterm Wrapper deadline, an extension may be granted *only if arranged in advance*.

The dates for the two assessments are:

**Midterm Assessment:** Week of Monday, Nov. 7

**Final Exam:** Monday, Dec. 19, 1:10-4pm (Registrar's projected time slot)

**If you know that you will have a conflict with the final exam date, you should not take this class.**

Although it is subject to change up until the Registrar confirms final exam dates midway through the semester, the ultimate exam date is almost always the same as the projected one. Please take this date into consideration when making travel plans for the end of the semester, since Columbia University only allows final exams to be taken outside of the scheduled slot in extreme circumstances such as a medical or family emergency. If you are a student athlete and anticipate that you might be traveling during the final exam date, please come talk to me *before the end of the second week of class* to see if there will be a possibility of making alternate testing plans.

**Extra Credit.** There is no extra credit in this course. The weekly quizzes, Midterm Wrapper, and points for participation are built in as ways for students to earn high scores on a substantial portion of the coursework simply by putting in the effort. If you are eager to do well in this course, make sure you keep up with the readings and quizzes, set aside time to spend on your written work, complete the Midterm Wrapper, and pay attention to the feedback your TA gives you on your assignments.

## Course Policies

### Lecture

**Lecture Attendance.** Attending lectures and actively participating is a fundamental component of this course. Lectures will go into more depth on topics covered in the readings, and cover some material that is not included in the readings. We will break frequently for discussions, group exercises, and other activities. **We will not be posting video recordings for this course.** If you miss a class, make sure you go over the lecture slides, ask a classmate if you can look over their notes, and then come to office hours to ask questions about any topics you think you may need help catching up on.

**You cannot earn participation credit for classes you missed, even if those absences are excused.** Since there will be 11 lectures for which we count participation, but only 10 of those will count toward your final grade, that leaves one “freebie”—use it wisely! You don't need to contact us to use this free absence: I will automatically drop your lowest score when I calculate your final grade. In contrast, to use your “forgotten/broken clicker” freebie, you *do* need to check in with a TA at the start and end of the class in question. See the Participation section, above, for details.

Up to 5 points of lecture attendance (1 missed class beyond the freebie) can be made up by recruiting a friend to conscientiously complete the surveys for our class's online experiments. This option cannot raise your total lecture participation score above the maximum 50 points.

**Lecture Notes.** We will post slides after each class, so you do not need to copy down everything (or anything!) that's written on each slide. Lecture slides are numbered, to help you keep track of which slide your class notes refer to. Slides will not be posted before class—for logistical reasons, but also because taking notes on material you don't have a copy of is a useful skill to practice (for college but also for life generally), and the process of merging your notes with the lecture slides after class is a useful first step for effective studying. We will attempt to audio record class as well, but the recordings won't be able to capture the group work or discussions well, so lecture recordings are not a good substitute for attending class.

**Class Conduct.** Please turn your cell phone ringer off during class, and keep it stowed in your pocket or bag. Laptops are fine for taking notes, but please respect your classmates and instructor by limiting yourself to class-related activities. Using a laptop for purposes other than taking notes is disruptive to those around you (as a student-led research project in a previous semester of this course found!). If you anticipate using your laptop for non-course-related activities, please sit in the back of the classroom to avoid distracting your classmates.

## Laboratory

**Lab Attendance.** Lab meetings are active and interactive, and to get the most out of this course you need to attend and participate in all of them. You will receive 5 points toward your lab participation grade for each of the 12 lab meetings that you attend and actively participate in. Up to 10 points of lab attendance can be made up by recruiting a friend or friends to complete the surveys for our class's online experiments: you'll receive 5 points per friend who conscientiously completes the surveys. Note, though, that your total lab attendance score cannot exceed 60 points.

**Late Assignments.** Assignments are generally due before class starts each Monday; you'll receive the instructions for each assignment during the previous week's lab period. Late assignments will receive a 10% penalty per day (24 hours) past their deadline, unless you have arranged an extension with the instructor prior to the due date. If you have not completed an assignment by the start of lecture, there is no benefit to working on it during lecture or lab—it'll have the same late penalty if you turn it in 20 minutes late as if you turn it in 20 hours late.

The reason for this strict late policy is to help keep everyone on schedule in a semester where we have quite a fast-paced assignment schedule, and where many assignments depend on the previous week's work. This structure means that falling behind on one assignment will end up cutting into your time to complete the next one, and likely also means your TA won't be able to give you feedback in time for you to use it to improve your later work. But with all that said: *If something comes up that you think will interfere with your ability to meet an assignment deadline, please let us know* rather than stressing in silence! The sooner you get in touch with us, the more flexible we can be with accommodations.

## Academic Integrity

Academic honesty includes presenting only your own work in exams and assignments, and correctly attributing others' ideas where appropriate. Taking credit for work that is not your own is a serious violation within the academic community, and anyone found to be cheating or plagiarizing in this class will be reported to the university. **Using another student's clicker on their behalf, or asking another student to use your clicker for you, is also considered a breach of academic honesty** and will be reported to the Office of Student Conduct. Detailed definitions and examples of academic dishonesty (and a rundown of the consequences) are available in Columbia's Guide to Academic Integrity (<http://www.college.columbia.edu/academics/integrity>). You will be held to the standards in this guide whether or not you read it, so... you really should read it.

Academic honesty is important to every course, but is perhaps even more so for a course like ours, which involves major writing assignments based on group work, and which will touch directly on the topics of honesty in conducting and presenting research. **Your final paper for this course must represent entirely your own work, even though it summarizes a project that depends heavily on the contributions of a group of your peers.** It can sometimes be challenging to ensure that you're presenting your own unique work in your final paper when you've been consulting closely with a group throughout the rest of your project—if you're having trouble with this at any point, please reach out to your TAs for help. It's a common problem, both in this course and in the greater field of research, and this course is a good opportunity to learn good habits in research ethics, attribution, and communicating shared ideas.

Your TAs and I assume you're all here because you're interested in psychology research and enthusiastic to learn about how it is carried out. But we know that in real life, stuff happens. We always prefer to deal with any issues before they get so bad that they become overwhelming, or so bad that a student feels that depending on someone else's work is his or her best (or only) option. So **please let us know if you're feeling stressed out about the class workload** or if there's a concept you're just not getting based on how the readings and lectures explained it. If you have an issue that you'd rather not talk about with one of us, you could speak with your academic advisor or dean; with a Psychology Program Advisor (DUS); or with the counselors at Columbia's CPS.

**Posting of course materials: don't.** While you may share your own notes and written work both within and beyond our class, **you may not reproduce, distribute, or display (post/upload) any course materials, or allow others to do so.** "Course materials" includes lectures (slides and recordings), assignments, exams, quizzes, and all other material created by the instructor and/or TAs for this course. Distributing course materials to people not enrolled in the course is a violation of U.S. copyright law and Columbia's academic integrity rules, and posting lecture recordings is a serious violation of privacy.

Similarly, you own the copyright in your original papers and exam essays. If I am interested in sharing any of your answers or papers with other students (either anonymously or with attribution), I will ask for your written permission. If you would like to distribute or share your group presentation slides beyond the class, you will need permission from all of your group members.

## Wellness

All of us at some point experience challenges to our mental health and well-being. I have been inspired and awed at how much Columbia students have stepped up to support each other in the past couple of years, but I hope you will all remember to prioritize your own health and needs as well. There are many resources available to you both within our classroom community and throughout the university:

<https://health.columbia.edu/content/counseling-and-psychological-services>  
<http://blogs.cuit.columbia.edu/nightline/>  
<https://universitylife.columbia.edu/student-resources-directory#health>  
<https://columbiavirtualcampus.com/>

We are all in this together—within this class and in the Columbia community at large. Please reach out for help if you need it, and if you see others who are struggling, please point them toward these or other sources of help. If you don't know how best to do that, your TAs and I can help.

## Religious Observance

If you will need to miss more than one class and/or lab meeting this semester for religious reasons, please come talk with me before the end of the first week of class so we can make a plan to ensure that you don't fall behind. You won't lose participation points for missing class due to religious observances, but class and lab time both depend heavily on discussions and activities that cannot be recorded or reproduced in office hours. If you will be missing multiple classes, you'll need to be in touch with us so we can help make sure you're fully caught up.

## Diversity & Inclusion

Every learning environment should accommodate the wide range of opinions, backgrounds, and identities that students bring into the room. And as psychologists, we know of many specific and important ways in which groups (and the individuals within them) benefit from diversity of all kinds—nationality, sex and gender, sexuality, race, class, religion, ability, and many others. To help me make the course as inclusive as possible, please let me know if any of the following is true:

- You have a name and/or set of pronouns that differ from those that appear in SSOL or on Canvas;
- Something that was said in class made you feel uncomfortable or unwelcome;
- Your ability to take part in our class is being affected by events or experiences outside of our class. Even if I can't help you directly, I will try to connect you with resources or support on or off campus.

Like most people, I am still in the process of learning about and from diverse perspectives and identities. I'm very open to feedback; this is one of many areas where you can likely teach me as much as, if not more than, I could teach you.

### **Student-Specific Accommodations & Resources**

Students with special needs who may require classroom and/or test accommodations should make an appointment to see me as soon as possible. If you have not already done so, stop by the Office of Disability Services (ODS) on the 7<sup>th</sup> floor of Lerner Hall to register for support services. Students who are eligible for extra exam time will need to fill out paperwork with ODS—please also let me know via email so we can make sure we'll be ready to accommodate you. ODS requires a few weeks to process an application, so please contact them as soon as you can, even though we do not have an in-person exam for this course until the final. The procedures for registering with ODS can be found at <http://health.columbia.edu/services/ods> or by calling (212) 854-2388 (Voice/TTY).

## Readings

The readings listed here are a tentative guide—after the semester begins, please **keep an eye on Canvas for the most up-to-date reading lists**.

### Textbook

There is one required textbook for this class. A few copies of it are on reserve in the CU Science Library in the Northwest Corner Building.

It is [available directly from the publisher](#) as a rental (e-book and paperback), though it may be worth shopping around—at the time of finalizing this syllabus, Amazon had mostly more expensive options than the publisher, but other places like [Blackwell's](#) had paperback copies for purchase for around the same price as a rental from the publisher. (FWIW, we've had reports from students that the Kindle edition of this textbook is missing pages, but it's not clear if that applies to the 3<sup>rd</sup> edition or only the 2<sup>nd</sup>.)

Unless otherwise indicated, each chapter listed in the reading assignments below refers to the 3<sup>rd</sup> edition of this textbook.

Passer, M. W. (2021). *Research Methods: Concepts and Connections*, 3<sup>rd</sup> ed. New York: MacMillan.

**Paperback rental edition:** ISBN: 978-1-31918-451-3

**e-book rental edition:** ISBN: 978-1-31936-353-6

**It is okay to use an earlier edition** of the same book (e.g., 1/e: ISBN 978-0716776819 or 2/e: 978-1-31903-560-0). There are some differences between the editions, but they're mostly minor, and they are summarized in PDFs available on our Canvas site. The one crucial difference is that APA formatting rules changed between editions 2 and 3, so **if you have an old edition you should not rely on the APA formatting appendix in your book**.

Since we only meet once a week, **the readings for each class meeting will often be heavier than those for psychology lecture courses**. Most chapters are around 30-35 pages long, and **you'll be reading most of the textbook over the first half of the semester**. Plan on allowing yourself plenty of time to spend on each reading, because even the shorter chapters include a lot of information and many new concepts and definitions of terms. You'll benefit most from each lecture if you've allowed yourself time to work through each reading at a comfortable pace before we expand on these topics in class. If you try to skim the readings and then speed through the weekly quizzes on Monday mornings, you will be setting yourself up for a bad time.

### Other Required Reading

The other required readings for this class will consist mostly of empirical papers (published writeups of psychology studies), from which we'll be drawing the examples we use in class to discuss various aspects of study design, validity, reliability, etc. Each of these papers will be made available on Canvas as a PDF.

I recommend reading briefly through each of the assigned empirical articles before class, using the strategies we'll be discussing in our first lecture and lab meeting. Then, you'll benefit from going back to each paper to read it more carefully in light of what we've discussed in that week's class. Exam questions for this class can draw from these readings in two ways: some questions will be directly about the studies described in these papers, and other questions will ask you to provide examples for class concepts (e.g., specific types of experimental design), which these studies can provide.

## Supplemental Reading

In class, we'll discuss some examples that come from studies that aren't required reading, but which you may be curious to learn more about. Those relevant papers are always cited on the slides that reference them, and many of them are available in the Files section of Canvas—but if you can't find one that you're interested in, just let us know. These supplemental articles are always optional, and will not be tested on (except to the extent that they were discussed in class).

## Tentative List of Topics & Readings

The most current list of readings will always be found on Canvas.

<i>Week/Date</i>	<i>Topics</i>	<i>Tentative reading/viewing assignments (supplemental readings in italics)</i>
<p>Week 1</p> <p>Monday, Sept. 12</p>	<p><b>Lecture 1:</b> Introduction to the Course &amp; to Experimental Methods</p> <ul style="list-style-type: none"> <li>• the goals of research in cognitive psychology</li> <li>• psychology is science: the scientific method</li> </ul> <p><b>Lab 1:</b> Introduction to lab; exercise on asking good questions; introduction to R &amp; review of our class dataset (from the Intro Survey)</p> <p><b>Assigned:</b> R Assignment 1 (assigning variables, descriptive statistics)</p> <p><b>Due:</b> Intro Survey (due at noon on Monday, Sept. 12)</p>	<ul style="list-style-type: none"> <li>• Chapter 1</li> <li>• this syllabus!</li> <li>• Video mini-lectures for Week 1</li> <li>• <a href="https://www.nytimes.com/article/how-to-read-a-science-study-coronavirus.html">https://www.nytimes.com/article/how-to-read-a-science-study-coronavirus.html</a></li> </ul>
<p>Week 2</p> <p>Monday, Sept. 19</p>	<p><b>Lecture 2:</b> Hypothesis Testing</p> <ul style="list-style-type: none"> <li>• introduction of the QuALMRI structure</li> <li>• psychology as exploration: asking questions</li> <li>• psychology as science:               <ul style="list-style-type: none"> <li>○ theories vs. hypotheses</li> <li>○ confirming vs. disconfirming evidence</li> </ul> </li> </ul> <p><b>Lab 2:</b> How to read a scientific paper; analyzing our class dataset</p> <p><b>Assignments:</b> R Assignment 2 (correlations, <i>t</i>-tests)</p> <p><b>Due:</b> R Assignment 1 (assigning variables, cleaning data)</p>	<ul style="list-style-type: none"> <li>• Chapter 2</li> <li>• Festinger &amp; Carlsmith, 1959</li> <li>• Bem, 1974 (p. 2-21)</li> <li>• Video mini-lectures for Week 2</li> </ul>

<p>Week 3</p> <p>Monday, Sept. 26</p>	<p><b>Lecture 3:</b> Experimental Logic &amp; Measurement</p> <ul style="list-style-type: none"> <li>• moving from hypothesis to experimental logic</li> <li>• pieces of a study: IVs, DVs, and how they're defined</li> <li>• measurement scales &amp; reliability</li> </ul> <p><b>Lab 3:</b> Developing &amp; testing hypotheses using our class dataset</p> <p><b>Assigned:</b> Assignment 3 - Class Data Project Writeup (use your R analyses to write a mini research paper using our class dataset)</p> <p><b>Due:</b> R Assignment 2 (correlations, t-tests)</p>	<ul style="list-style-type: none"> <li>• Chapter 4</li> <li>• Fazio, Zanna &amp; Cooper, 1974</li> <li>• Iyengar &amp; Lepper, 2000</li> <li>• Video mini-lectures for Week 3</li> </ul>
<p>Week 4</p> <p>Monday, Oct. 3</p>	<p><b>Lecture 4:</b> Validity &amp; Sources of Error</p> <ul style="list-style-type: none"> <li>• test validity</li> <li>• survey research &amp; correlational designs</li> <li>• sources of error</li> </ul> <p><b>Lab 4:</b> How to find &amp; evaluate primary sources (literature search); APA format</p> <p><b>Assigned:</b> Assignment 4 - Literature Search Writeup</p> <p><b>Due:</b> Assignment 3 - Class Data Project Writeup</p>	<ul style="list-style-type: none"> <li>• Chapter 5</li> <li>• Chapter 7 (Section 7.3)</li> <li>• Chapter 10 (Sections 10.1, 10.2, and 10.4)</li> <li>• Complete the RFQ and self-score</li> <li>• Video mini-lectures for Week 4</li> </ul>
<p>Week 5</p> <p>Monday, Oct. 10</p>	<p><b>Lecture 5:</b> Experimental Design</p> <ul style="list-style-type: none"> <li>• experimental validity &amp; control</li> <li>• factorial designs, counterbalancing</li> <li>• designing a study</li> </ul> <p><b>Lab 5:</b> Going from literature review to motivating question to research methods</p> <p><b>Assigned:</b> Assignment 5 - Draft of written research project proposal</p> <p><b>Due:</b> Assignment 4 - Literature Search Writeup</p>	<ul style="list-style-type: none"> <li>• Chapter 8</li> <li>• Chapter 9 (Sections 9.1, 9.3, &amp; 9.4)</li> <li>• Chapter 10 (Sections 10.3 &amp; 10.5)</li> <li>• "The Lifespan of a Lie"</li> <li>• Lerner, Small, &amp; Loewenstein, 2004</li> <li>• Video mini-lectures for Week 5</li> </ul>

<p>Week 6</p> <p>Monday, Oct. 17</p>	<p><b>Lecture 6:</b> Samples, Participants, &amp; Populations</p> <ul style="list-style-type: none"> <li>• populations</li> <li>• sampling</li> <li>• participation</li> <li>• online samples</li> </ul> <p><b>Lab 6:</b> Going from research methods to projected results; how to create a good presentation; 60-second surprise slide presentation exercise</p> <p><b>Assigned:</b> Assignment 6 - Final draft of research project proposal</p> <p><b>Due:</b> Assignment 5 - Draft of written research project proposal</p>	<ul style="list-style-type: none"> <li>• Chapter 7 (Sections 7.1, 7.2, 7.4)</li> <li>• Deci, 1971</li> <li>• Khadjavi &amp; Lange, 2012 (skim)</li> <li>• Video mini-lectures for Week 6</li> </ul>
<p>Week 7</p> <p>Monday, Oct. 24</p>	<p><b>Lecture 7:</b> Ethics in Research</p> <ul style="list-style-type: none"> <li>• treating your participants ethically</li> <li>• vulnerable populations</li> <li>• peer review</li> <li>• mid-semester review</li> </ul> <p><b>Lab 7:</b> Presentation of research project proposal</p> <p><b>Assigned:</b> Submit at least one good question to the discussion board for the midterm review session.</p> <p><b>Due:</b> Assignment 6 - Research project proposal (written, via Canvas on Friday, Oct. 28; oral, to be presented in lab on Monday, Oct. 24)</p>	<ul style="list-style-type: none"> <li>• The Belmont Report</li> <li>• Chapter 3</li> <li>• <a href="#">Roediger, 2007</a></li> <li>• Video mini-lectures for Week 7</li> </ul>
<p>Week 8</p> <p>Monday, Oct. 31</p>	<p><b>Lecture 8:</b> Studying the Real World</p> <ul style="list-style-type: none"> <li>• field experiments</li> <li>• observational studies &amp; big data</li> <li>• case studies &amp; “anecdotal”</li> </ul> <p><b>Lab 8:</b> Group work on research project (finalizing study questions, starting work on study design &amp; instruments)</p> <p><b>Assigned:</b> Continue meeting with your group and/or TA as necessary to finalize your study materials by next lab</p> <p><b>Due:</b> Prepare for Midterm Assessment</p>	<ul style="list-style-type: none"> <li>• Chapter 6</li> <li>• Chapter 11</li> <li>• Schultz, et al., 2007</li> <li>• Video mini-lectures for Week 8</li> </ul>

<p>Fall Break</p> <p>Monday, Nov. 7</p>	<p style="text-align: center;"><b>No class or lab due to academic holiday</b></p> <p><b>Assigned:</b> Work with your group to finalize your study.</p> <p><b>Due:</b> Midterm Assessment &amp; Midterm Wrapper will be available on Canvas this week. It will not count directly toward your grade, but if you complete both you will earn points toward your final exam. See Exams section of syllabus for details.</p>	<ul style="list-style-type: none"> <li>• No readings or videos.</li> </ul>
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<p>Week 9</p> <p>Monday, Nov. 14</p>	<p><b>Lecture 9:</b> Interpreting Results I</p> <ul style="list-style-type: none"> <li>• error &amp; power</li> <li>• confounds and “non-founds,” noise vs. nuisance</li> <li>• main effects &amp; interactions</li> </ul> <p><b>Lab 9:</b> Mini IRB meeting</p> <p><b>Assigned:</b> Finalize your study materials by Wednesday, Nov. 16; participate in other sections’ studies by Friday, Nov. 18; clean your study’s data as necessary before next lab meeting.</p> <p><b>Due:</b> Working version of your study, &amp; graph of hypothesized results</p>	<ul style="list-style-type: none"> <li>• Chapter 9 (Section 9.2)</li> <li>• Hertwig &amp; Erev, 2009</li> <li>• Goodwin, et al., 1969</li> <li>• Video mini-lectures for Week 9</li> </ul>
<p>Week 10</p> <p>Monday, Nov. 21</p>	<p><b>Lecture 10:</b> Interpreting Results II</p> <ul style="list-style-type: none"> <li>• factor analysis</li> <li>• mediation &amp; moderation</li> <li>• meta-analysis</li> <li>• media accounts of research</li> </ul> <p><b>Lab 10:</b> Analyze data, work on outline for group presentation</p> <p><b>Assigned:</b> Finish analyzing your data before next lab meeting</p> <p><b>Due:</b> Bring a cleaned dataset to lab, ready for analysis</p>	<ul style="list-style-type: none"> <li>• Smith &amp; Vela, 2001</li> <li>• Hardisty, et al., 2010 (optional)</li> <li>• Nine Ways Scientists Demonstrate They Don't Understand Journalism</li> <li>• Video mini-lectures for Week 10</li> </ul>

<p>Week 11</p> <p>Monday, Nov. 28</p>	<p><b>Lecture 11:</b> Replicability &amp; Open Science</p> <ul style="list-style-type: none"> <li>• fraudulent science</li> <li>• sloppy science</li> <li>• the replication crisis</li> <li>• open science</li> </ul> <p><b>Lab 11:</b> Work with TA to interpret your study's results, work with your group on your presentation</p> <p><b>Assigned:</b> Assignment 7 - Final Group Presentation; Assignment 8 - Final Research Paper</p> <p><b>Due:</b> Bring your fully analyzed group study results to lab</p>	<ul style="list-style-type: none"> <li>• Nosek &amp; Errington, 2020</li> <li>• Dominus, 2017</li> <li>• Aschwanden, 2015</li> <li>• Inzlicht, 2020</li> <li>• Video mini-lectures for Week 11</li> <li>• Any 3 of the following 6 short blog posts from Data Colada: <ul style="list-style-type: none"> <li>○ <a href="http://datacolada.org/3">http://datacolada.org/3</a></li> <li>○ <a href="http://datacolada.org/4">http://datacolada.org/4</a></li> <li>○ <a href="http://datacolada.org/7">http://datacolada.org/7</a></li> <li>○ <a href="http://datacolada.org/11">http://datacolada.org/11</a></li> <li>○ <a href="http://datacolada.org/12">http://datacolada.org/12</a></li> <li>○ <a href="http://datacolada.org/13">http://datacolada.org/13</a></li> </ul> </li> </ul>
<p>Week 12</p> <p>Monday, Dec. 5</p>	<p><b>Lecture 12:</b> Communicating Your Results</p> <ul style="list-style-type: none"> <li>• communicating science honestly</li> <li>• communicating science effectively</li> </ul> <p><b>Lab 12:</b> Practicing presentations: feedback from your TA and peers</p> <p><b>Assigned:</b> Polish your presentation for next week's research showcase!</p> <p><b>Due:</b> Come to lab ready to present a near-final version of your group presentation to the rest of the lab section</p>	<ul style="list-style-type: none"> <li>• Appendix A</li> <li>• Chapter 3.5 (review)</li> <li>• Irizarry, 2019</li> <li>• Tufte, Chapter 1</li> <li>• Video mini-lectures for Week 12</li> </ul>
<p>Week 13</p> <p>Monday, Dec. 12</p>	<p><b>Lecture 13:</b> Presentations of group projects!</p> <p><b>Lab 13:</b> Presentations of group projects, continued!</p> <p><b>Assigned:</b> -</p> <p><b>Due:</b> Assignment 7 - Final Group Presentation</p>	
<p>Friday, Dec. 16</p>	<p><b>Due:</b> Assignment 8 - Final Research Paper (individual writeup of group project)</p>	
<p>Monday, Dec. 19</p>	<p><b>Final Exam (projected date/time) 1:10–4pm</b></p>	