

PSY 301: Scientific Thinking (4 credits)

Spring 2019

Tu/Th 8:30 – 9:50 AM in 145 Straub

Instructors

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Note: When you contact any of us by email, please use your official @uoregon.edu email address and put “PSY 301” at the start of the subject line.

Course Description

Psychology is the scientific study of the mind and behavior. But what does it mean to study something scientifically? In this course you will learn some of the foundational principles of how you can apply reasoning to empirical evidence in order to draw conclusions about people. We will discuss a range of topics that will help you do that. The topics will include: how science is supposed to work as a way of knowing and a social institution; how to measure things about human minds and behavior; different ways to design informative studies; identifying important patterns in data and drawing inferences from them; and when and how you can infer cause-and-effect from data. The goal will be to instill in you a habit to “follow the data” when people make claims about the human mind and behavior, and to give you a set of skills to do that more wisely and rigorously – whether you are reading media accounts of research, reading articles, or conducting scientific research yourself.

Materials

Textbook: Morling, B. (2018). *Research Methods in Psychology: Evaluating a World of Information* (3rd ed.). New York: Norton.

iClicker: If you do not own one already, you will need to purchase an iClicker for use in class. It will be used to track participation and to check in on your learning in class.

Canvas: Assignments and additional materials will be posted or linked on Canvas.

Learning Outcomes

You will develop many skills in this course. By the end of this course you should be able to:

- **Think.** Think like a scientist when you read science headlines – you will become a sharper consumer of scientific discoveries. Search for evidence, rather than just accepting claims you encounter.
- **Find.** Find key ideas and evidence in scientific literature and media reports. Identify research questions, hypotheses, research design, and evidence in scientific articles and news articles.
- **Show.** Show how evidence does or does not support an interesting hypothesis about human behavior. Critically evaluate research designs and the quality of evidence presented in scientific articles.
- **Tell.** Communicate clearly and effectively about psychological research, including methodological and ethical issues in psychology, based on an understanding of both the strengths and limitations of empirical evidence.

Workload

When you complete this course, you will earn 4 credits toward your degree. Four credits is the equivalent of 120 hours of work across the term, or 12 hours per week for 10 weeks. You will spend 3 hours in class each week. The other 9 hours will be spent completing readings (about 4 hours per week; 40 hours total), worksheets and research critiques (about 30 hours total), and studying for exams (at least 20 hours total, although more time may be needed for best results).

Requirements

Exams. There will be a total of 4 exams: 3 administered in class during the term, and a cumulative final during the university's scheduled final exam time. All exams will be in multiple-choice format. I will drop the lowest exam score, and your 3 best exam scores will each be worth 20% of your grade in the class. There are no make-up exams.

Worksheets. There will be 4 worksheets due during the term, which you will submit on Canvas. Worksheets are due before class begins. I will drop your lowest worksheet grade, and your 3 best worksheets scores will each be worth 5% of your grade in the class. We will go over the worksheet answers in class. Therefore, late worksheets will not be accepted and no make-ups will be offered.

Research critiques. You will write 2 research critiques. For each one, you will read an article and then answer questions about it. Each research critique is worth 10% of your grade. Both critiques are due on a Friday at 5pm. Late critiques will be penalized by 1 full letter grade for every day or part of a day past the deadline. You may activate a free 3-day extension on one critique (which will extend the deadline to the following Monday at 5pm); the late policy will apply to that extended deadline.

iClicker participation. By week 2 you must purchase and register an iClicker. I will record your participation in in-class activities beginning in week 2. Your iClicker participation grade will be based on how many classes you participate in. You may miss 2 classes without penalty.

Extra credit. There is none.

Missed or Late Assignments and Absences

All of the grading categories include ways you can miss things (dropping a lowest score on exams and worksheets, a free extension on one research critique, missing 2 iClicker participation days). I structured the class this way so that you have some flexibility if you get sick, have personal emergencies to deal with, etc. Additional exceptions will not be granted except in extraordinary circumstances.

Grading

Your grade in the course will be determined as a weighted average of the following elements:

60%	Exams (20% each, I will drop the lowest)
20%	Research critiques (10% each)
15%	Worksheets (5% each, I will drop the lowest)
5%	iClicker participation (you may miss 2 days)

Conversion to final letter grades: Cutoffs for a “plus” are at x7 and for a “minus” are at x3. I calculate exact grades with no rounding (not even a hundredth of a point!). For example, an 87.00 is a B+ but 86.99 is a B. I know it can be tough to just miss the next-higher grade, but there has to be a cutoff somewhere. If I round for you, I have to round for everybody, and then all I am doing is creating a new cutoff, and somebody else will be close to that one.

Accessibility

My goal is to create an accessible and inclusive learning environment. Please talk to me if there are aspects of this course that will create barriers for you, so that we can work together to remove them if possible. I also encourage you to contact the Accessible Education Center (AEC) for support (<http://aec.uoregon.edu>).

If you will need accommodations for any exams or assignments, please notify me during the first week of classes and provide documentation from the AEC.

Laptops, Tablets, and Phones in the Classroom

Please silence your phone and other devices before each class.

If you use a laptop, tablet, or other device in the classroom, you may use it **ONLY** for taking notes or other class-related activities. When you use it for other things, it can distract people

around and behind you. If your device becomes a disruption, you will no longer be permitted to use it in the classroom.

Academic Integrity

All in-class exams are “closed book” and must represent your own independent work. Every assignment must be done individually unless you are explicitly told that it is a group assignment. If you are unsure about what is appropriate or allowed, please ask.

You are responsible for knowing and adhering to all standards of academic integrity. Students who commit any form of academic dishonesty (cheating, plagiarism, fabrication, etc.) on any assignment will receive an “F” for the course. The university may impose additional sanctions, including expulsion. Further information about standards of academic conduct is available here:

<http://conduct.uoregon.edu>

Freedom from Harassment and Discrimination

You have a right to an education free from harassment and discrimination. I am personally committed to protecting and supporting that right for all students.

The University of Oregon categorizes me as a “student-directed employee.” Feel free to ask me what that means, how I can help and support you (or guide you to others who can do that), and what information I am allowed to keep confidential and what I have to report. For the official policy, please see [Employee Reporting Obligations](#).

Students experiencing any form of prohibited discrimination or harassment, including sex- or gender-based violence, may seek information on safe.uoregon.edu (hotline: 541-346-SAFE), respect.uoregon.edu, or investigations.uoregon.edu. For confidential support, certain people on campus are designated as [confidential employees](#). These include people at:

- The [University Health Center](#)
- The [University Counseling Center](#)
- The [Office of Crisis Intervention and Sexual Violence Support Services](#)
- The [University Ombudsperson](#), and
- [Student Survivor Legal Services](#).

Non-confidential offices where you can get information or report incidents include the Title IX office (541-346-8136), Office of Civil Rights Compliance (541-346-3123), and the Dean of Students office (541-346-3216).

I am a mandatory reporter of child abuse. Please find more information at [Mandatory Reporting of Child Abuse and Neglect](#).

Schedule

Reading assignments should be done before the class they are assigned for.

Week	Date	Topic	Reading	Due
1	Tu 4/2	Why scientific thinking?		
	Th 4/4	How should science work? part 1	Ch. 1-2	
2	Tu 4/9	How should science work? part 2	Watch: Naomi Oreskes video	Register your iClicker
	Th 4/11	Claims and validities	Ch. 3	
3	Tu 4/16	Ethics	Ch. 4	Worksheet 1 (due before class)
	Th 4/18	EXAM 1 (covers weeks 1-3)		
4	Tu 4/23	Measurement, part 1	Ch. 5	
	Th 4/25	Measurement, part 2		Worksheet 2 (due before class)
5	Tu 4/30	Survey and observational methods	Ch. 6	
	Th 5/2	Sampling and representativeness	Ch. 7	Research critique 1 (due Friday 5pm)
6	Tu 5/7	Bivariate associations, part 1	Ch. 8	
	Th 5/9	Bivariate associations, part 2		Worksheet 3 (due before class)
7	Tu 5/14	EXAM 2 (covers weeks 4-6)		
	Th 5/16	Multivariate research	Ch. 9	
8	Tu 5/21	Experiments	Ch. 10	
	Th 5/23	Threats to validity	Ch. 11	Worksheet 4 (due before class)
9	Tu 5/28	Factorial designs	Ch. 12	
	Th 5/30	Quasi-experiments	Ch. 13	Research critique 2 (due Friday 5pm)
10	Tu 6/4	Replicability and generalization	Ch. 14	
	Th 6/6	EXAM 3 (covers weeks 7-10)		
Finals week	M 6/10	8:00 AM Final Exam (cumulative) *** NOTE THE DAY AND TIME ***		