SCIENTIFIC THINKING IN PSYCHOLOGY (PSY 301)

University of Oregon

Winter 2019

MW 4:00-5:20 pm ♦ Lawrence 117 ♦ 4 credits ♦ CRN: 25927

http://canvas.uoregon.edu

Instructor
Jordan Pennefather, Ph.D.
Email: pennefat@uoregon.edu
Office: Straub 423
Office Hours: Monday and Wednesday 1-1:50pm

Teaching Assistants

COURSE MATERIALS

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

♦ **PDF files on Canvas:** Additional readings and materials will be posted on our Canvas site.

♦ **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 attendance and to do regular learning assessments.

COURSE DESCRIPTION

"Follow the data" is a core principle in all sciences. In this course, you will learn how to "follow the data" to make sense of human behavior and think like a psychologist. You will acquire the fundamentals of how to evaluate new knowledge about human behavior by carefully considering the properties of data collected from human beings. We will consider all aspects of an empirical endeavor, from formulating a testable scientific hypothesis, to collecting relevant and valid data, to analyzing and communicating these data, to asking what's next. Making sense of how and why people feel, think and act the way they do is something we all do everyday -- in this course, we will learn how to give ourselves the best shot at making conclusions that are true. Whether we read about others' discoveries or make our own, we should follow the data.

PSY 301 meets the criteria of a Group-Satisfying Science (SC) course by introducing you to the fundamental methods that are used in psychological science and demonstrating the way knowledge is created in the field. The course emphasizes the critical thinking skills that are essential for informative scientific endeavors. The course addresses upper division science group criteria by encouraging the specific application of general scientific principles and skills; for example, by requiring you to evaluate claims about human behavior that appear in scientific articles as well as in the media. The evaluation methods used in this course will measure a high level of understanding by expecting you to continually practice and apply sophisticated empirical thinking skills.

This course is the first course in the PSY 301-303 sequence for psychology majors. Majors will be building critical thinking skills and an understanding of how knowledge is generated in psychological research in preparation for acquiring data analysis skills in PSY 302. In PSY 303 you will be using the skills you gained in PSY 301 and PSY 302 to design, implement, analyze, draw conclusions from, write up, and present scientific research in psychology.

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.

COURSE EXPECTATIONS

Class attendance is essential to your success in this course. Attendance will be tracked using iClickers. Class sessions will focus on developing your skills as consumers of psychological research, but they will also provide you with tools necessary for being producers of research. This course promotes active learning through discussion, in-class exercises and activity assignments. When in class, you should stay engaged with the material rather than just going through the motions. Come prepared for class. Do the in-class exercises. Ask questions. Take notes. Go to office hours.

STUDENT 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), activity assignments and papers (about 40 hours total), and studying for exams (at least 10 hours total, although more time may be needed for best results). The workload will be relatively steady throughout the term, as we build skills through regular assignments and consolidate knowledge through regular exams.

COURSE REQUIREMENTS

Attendance/Participation

You must participate in *ungraded* class exercises using your iClicker to get credit for each day you attend lecture. While you get 2 "free" miss days, you shouldn't use them unless absolutely necessary; if you skip class, you will miss important information. **You are required to have an iClicker and register it on Canvas *by the start of Week 2*, or you will begin to lose attendance points.**

Reading Quizzes

You should complete the assigned reading ***before*** coming to class. The textbook is accessible and engaging. Although the reading load will be relatively demanding, it should be fun and rewarding to do. To encourage you to keep up with the reading, **short quizzes will be given at the beginning of some classes** (see the course schedule for details) via iClicker. Quizzes will consist of 3 multiple-choice questions drawn from the day's reading assignment. These questions should be easily answered if you have read the material.

Of the seven quizzes, the lowest score will be dropped, with the average score of the remaining six yielding 6% of the final grade. ***No make-up quizzes will be offered***; if you miss a quiz, that grade will be the one that is dropped.

Activity Assignments

You will be expected to build your skills consistently throughout the quarter. Five times during the term, I will ask you to complete an activity assignment to help learn the course concepts and to actively grapple with the empirical process. *See the course schedule and assignment schedule for more details.* You will receive specific

written instructions for each activity assignment. Your best bet for doing well on these assignments is to attend class regularly and build skills with your instructor and fellow student colleagues.
Activity assignments must be submitted on Canvas by the beginning of class on the days they are due. Late assignments will be penalized by 50% regardless of when they are submitted, and no assignments will be accepted more than 1 week late without some documented medical or family emergency.

Research Consumer Papers

A key objective of this course is to learn how to be an informed consumer of psychological research. You will gain practice critically evaluating empirical claims, connecting these claims to data, and communicating about psychological research by completing two paper assignments. The first paper assignment will require you to read and summarize empirical research, identify the claim the scientists are trying to make, and critically evaluate media coverage of that research. For the second paper assignment, you will critically evaluate empirical research using the skills and knowledge you have acquired in the course. *See the course schedule and assignment schedule for more details.* You will receive specific written instructions for each paper assignment.
Research consumer papers must be submitted on Canvas by midnight on the Sunday they are due. Late papers will be penalized by 50% regardless of when they are submitted, and no papers will be accepted more than 1 week late without some documented medical or family emergency.

Exams

There will be two in-class midterm exams (Wednesday, January 30th and Wednesday, February 22nd) and a final exam (Monday, December 3rd at 8:00am). Exams will consist of conceptual and applied multiple-choice and short-answer questions, similar to the exercises we work on in class. Exams will cover all material from class and the readings since the previous exam. The final exam will be cumulative but will emphasize course material covered since the second midterm exam. The final exam must be taken at the university-scheduled time. **Make-up exams are not permitted except in documented emergency situations.**

GRADING

Final grades in this course will be determined by the following:

- Attendance/participation: 5% – up to 2 classes can be missed without penalty
- Reading quizzes: 6% - lowest quiz score is dropped
- Activity assignments: 10% (2% each)
- Research consumer papers: 25% (Paper 1 = 10%; Paper 2 = 15%)
- Three exams: 54% (18% each)

Grades will be distributed as follows:

		B+	87-89%	C+	77-79%	D+	67-69%	F	0-59%
A	93-100%	B	83-86%	C	73-76%	D	63-66%		
A-	90-92%	B-	80-82%	C-	70-72%	D-	60-62%		

Please see the psychology department guidelines for a description of the type of achievement that each grade signifies: http://psychology.uoregon.edu/courses/department-grading-standards/

Extra Credit

You can earn extra credit in this course by serving as a participant in the Psychology Human Subjects Pool. If you decide to participate in psychological research, you will earn 1% of extra credit toward your *final grade in the course* for each hour you participate, up to a maximum of 2% (credits beyond the maximum of 2 will not be

counted). For example, 2 hours of credit would increase a final grade of 79% up to an 81%, giving you a B- for the course instead of a C+. To participate, follow the guidelines for the Human Subject Pool posted at https://psychology.uoregon.edu/research/human-subjects-pool/. Students who prefer not to participate in the Psychology Human Subjects Pool can instead collect extra credit by writing a short paper**.** If this is your preference, please see me to discuss the details of the requirement. **All extra credit work must be completed by Friday, March 15th.**

SPECIAL ACCOMMODATIONS

Accessible Education Center (AEC)

If you have a documented disability and anticipate needing accommodations in this course, please notify me as soon as possible. Also, please request that a counselor at the Accessible Education Center (uoaec@uoregon.edu, 541-346-1155) send a letter verifying the type of accommodation that is appropriate. For a list of resources provided by the Accessible Education Center, please see http://aec.uoregon.edu.

Students for Whom English is a Second Language

If you are a non-native English speaker and think you may have trouble in this course due to language difficulties, please see me as soon as possible to make any necessary special arrangements.

ACADEMIC INTEGRITY

We take academic integrity seriously. **All work submitted in this course must be your own.** Cheating includes providing or accepting information on an exam or assignment, or allowing someone else to copy your work. In addition, lying to try to get points (e.g., lying about having turned in an assignment on time) is considered academic dishonesty and will be treated as cheating. Plagiarism means copying someone's written work without proper citation (this includes your classmate's work, scholarly articles, Wikipedia, or other websites).

All instances of cheating and plagiarism will have serious consequences. You will receive a zero on the assignment and be reported to UO's student conduct coordinator. If the offense is serious, you will receive an F in the course.

Simply put: Don't cheat and don't plagiarize. You will be mad at me, and (hopefully) disappointed in yourself. It's not worth it. If you have any questions about what constitutes academic dishonesty, please ask me.

For more information about academic misconduct, see the University Student Conduct Code at http://dos.uoregon.edu/conduct. Additional information about plagiarism is available at http://researchguides.uoregon.edu/citing-plagiarism.

CLASSROOM ETIQUETTE

As a courtesy to your instructor and to your fellow classmates, please arrive on time for class and stay for the duration of the class period. Getting up in the middle of class is very disruptive. Please turn off phones and any electronic devices that might be distracting to others at the beginning of class. Be attentive (i.e., no texting, watching videos, web-surfing, etc.). It is the policy of the University of Oregon to support and value diversity, and I expect you to treat your fellow students and your instructor with respect.

TITLE IX

I am a student-directed employee. For information about my reporting obligations as an employee, please see titleix-uoregon.edu. Students experiencing any form of prohibited discrimination or harassment, including sex or gender based violence, may seek information on

http://safe.uoregon.edu, https://respect.uoregon.edu, https://titleix.uoregon.edu or https://aaeo.uoregon.edu, contact the non-confidential Title IX office (541-346-8136), AAEO office (541-346-3123) or Dean of Students offices (541-346-3216), or call the 24-7 hotline 541-346-SAFE for help.
I am a mandatory reporter of child abuse. Please find more information at https://hr.uoregon.edu/policies-leaves/general-information/mandatory-reporting-child-abuse-and-neglect/presidents-message

UO DREAMERS

I support all students regardless of immigration status or country of origin. In January I participated in Dreamer Ally training. As a Dreamer Ally, I support Dreamer students and seek to promote their sense of their sense of belonging and safety as they pursue their higher education goals. For more information and resources, please visit the UO Dreamers page (https://blogs.uoregon.edu/dreamers/) and the Immigration FAQs page (https://international.uoregon.edu/immigration_faq). I commit to not sharing your status with anyone if you reveal it to me, but also remind you that **when interacting with faculty, staff, and offices around campus, you are never required to reveal your immigration status.**

COURSE SCHEDULE

**The course schedule may change, but exam dates will not change unless absolutely necessary.*

Week	Date	Topic	Reading	Due
1	M 1/7	Course overview: Thinking like a scientist	Ch. 1	
	W 1/9	Why do research, and where to find it	Ch. 2 Jordan & Zanna	**Register i-clicker**
2	M 1/14	Variables, claims, & validities	Ch. 3	**Reading Quiz 1**
	W 1/16	Validities		**AA 1 – due @ 10am**
3	M 1/21	**Martin Luther King Jr Day**		
	W 1/23	Research ethics	Ch. 4 Kramer et al.	**Reading Quiz 2**
4	**M 1/28**	Measurement reliability & validity	Ch. 5 Iacoboni et al. Response	**Reading Quiz 3**
	W 1/30	**Exam 1**		
5	M 2/4	Measurement reliability & validity		**AA 2 – due @ 10am**
	W 2/6	Surveys and observations	Ch. 6	**Reading Quiz 4**
	Su 2/10			**Paper 1 due @ midnight**
6	M 2/11	Sampling Bivariate correlation	Ch. 7 Ch. 8	**Reading Quiz 5**
	W 2/13	Bivariate correlation Multivariate correlation	Ch. 9	
7	M 2/18	Multivariate correlation		**AA 3 – due @ 10am**
	W 2/20	**Exam 2**		
8	M 2/25	Experimental designs	Ch. 10	**Reading Quiz 6**
	W 2/27	Threats to internal validity	Ch. 11	**AA 4 – due @ 10am**
9	M 3/4	Complex experimental designs	Ch. 12 Yeh et al.	**Reading Quiz 7**
	W 3/6	Factorial variations		
	Su 3/10			**Paper 2 due @ midnight**
10	M 3/11	Replicability and generalization	Ch. 14	**AA 5 – due @ 10am**
	W 3/13			
11	**M 3/18**	**2:45 PM - Final Exam**		

ASSIGNMENT SCHEDULE

**All activity assignments are due on Canvas by the beginning of class on their due date.*
**Papers are due on Canvas by midnight on Sunday.*

Week	Goals	Activity	Due
1			
2	Recognize and question empirical claims in the news & in scientific papers	• Identify claims and variables in news articles and scientific articles • Ask questions about validities	Activity Assignment #1
3			
4	Assess measurement/construct validity	• Think critically about how variables are operationalized and measured	Activity Assignment #2
5	Evaluate media coverage of science	• Read and summarize an empirical article, identify the claim(s) the scientists are trying to make, and critically evaluate coverage of the research in the media	Research Consumer Paper #1
6	Interrogate association claims	• Interrogate the validities of studies testing association hypotheses	Activity Assignment #3
7			
8	Interrogate causal claims	• Identify the key variables in experimental designs Identify potential threats to internal validity and propose solutions	Activity Assignment #4
9	Evaluate published research	• Read and summarize an empirical article, and interrogate the research using the three claims, four validities framework	Research Consumer Paper #2
10	Explore complex relationships	• Identify and interpret main effects and interactions from a factorial design • Describe interaction effects in everyday terms	Activity Assignment #5

ADDITIONAL READING LIST

***These are required readings.** *Each reading is posted on Canvas and is assigned to a particular class session.*

Iacoboni, M., Freedman, J., & Kaplan, J. (2007, November 11). Op-Ed; This is your brain on politics. *The New York Times*, p. 414.
http://www.nytimes.com/2007/11/11/opinion/11freedman.html?ex=1352437200&en=e0ca987ad4bd515f&ei=5090&partner=rssuserland&emc=rss

Response: Politics and the Brain. (2007, November 14). *The New York Times.*
http://www.nytimes.com/2007/11/14/opinion/lweb14brain.html

Jordan, C. H., & Zanna, M. P. (1999). How to read a journal article in social psychology. *The self in social psychology*, 461-470.

Kramer, A. D. I., Guillory, J. E., & Hancock, J. T. (2014). Experimental evidence of massive-scale emotional contagion through social networks. *Proceedings of the National Academy of Sciences of the United States of America, 111*(29), 8788-8790.

Yeh, R. W., Valsdottir, L. R., Yeh, M. W., Shen, C., Kramer, D. B., Strom, J. B., ... & Nallamothu, B. K. (2018). Parachute use to prevent death and major trauma when jumping from aircraft: randomized controlled trial. *BMJ*, *363*, k5094.