

Syllabus Fall 2017
Scientific Thinking (Psychology 301) CRN 15260, 282 LIL

Time: 16:00 - 17:20

Instructor: Theodore Bell, Ph.D.

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COURSE MATERIALS

- ◆ **Textbook:** Morling, B. (2015). *Research Methods in Psychology: Evaluating a World of Information* (2nd ed.). New York: Norton. The textbook has a website with supplemental materials that may be helpful for your studying:

<http://www.norton.com/college/psych/research-methods-in-psychology/>

- ◆ **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. Do the in-class exercises. Ask questions. Take notes. Go to office hours.

Come **prepared** to class. Read the assigned readings prior to class, think about what you read, and bring questions if you have them. You will not do well on assignments and exams if you do not keep up with the reading.

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

Reading Assignments

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. Material from the readings will be on the exams, and you will also apply principles from the readings to your activity assignments and papers.

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.**

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 Wednesday 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 Friday 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 3 required exams (on Oct 11, Nov 6, and Nov 27) and an optional cumulative final exam (Dec 4 at 2:45pm). Exams will consist of conceptual and applied multiple-choice questions 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. If you take the optional final exam, your lowest grade out of the four exams will be dropped. I use this policy so that poor performance on one exam or an absence does not negatively impact your class grade. Because of this, there are no make-up exams. **If, for whatever reason (aside from university sponsored excuses), you miss an exam, you must take the final exam to make up for the missed exam.**

GRADING

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

- ◆ Attendance/participation: 6% – up to 2 classes can be missed without penalty
- ◆ Activity assignments: 15% (3% each)
- ◆ Research consumer papers: 25% (Paper 1 = 10%; Paper 2 = 15%)
- ◆ Three exams: 54% (18% each) – optional final exam can replace lowest exam grade

Grades will be distributed as follows:

A+	97-100%	B+	87-89%	C+	77-79%	D+	67-69%
A	93-96%	B	83-86%	C	73-76%	D	63-66%
A-	90-92%	B-	80-82%	C-	70-72%	D-	60-62%
						F	0-59%

Please see the psychology department guidelines for a description of the type of achievement that each grade signifies: <http://psychology.uoregon.edu/courses/departement-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. Again, the maximum amount of extra credit that can be earned in the course is 2%.

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

Teaching Philosophy: A teacher is part coach, part actor, part bandit (lifting from anywhere that will help), and part student (still always learning). A student is open to new ideas, diligent in effort to master new things, eager to surpass him/herself, is an active partner in the process, and part cowboy (always willing to get back up on the horse that bucked him or her off).

Classroom interactions: We are all adults, and I would like to emphasize that all communications should be respectful of the participants. It is extremely important to me that we maintain a respectful environment while promoting a diversity of opinions and

ideas. Participants should feel free to offer up their ideas, and should expect that those ideas be the focus of any critical analysis rather than the person discussing them. In other words, ideas are fair game for criticism, but personalizing attacks will not be tolerated. Also, if you find yourself distracted by, or become a distraction with your cell-phone, please put it in airplane mode. Likewise for your laptops.

COURSE SCHEDULE

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

Week	Date	Topic	Reading	Quizzes/Assignments
1	M 9/25	Course overview: Thinking like a scientist	Ch. 1	
	W 9/27	Why do research, and where to find it	Ch. 2 Roediger & Gallo	Register i-clicker
2	M 10/2	Variables and claims	Ch. 3	
	W 10/04	Validities		AA 1
3	M 10/09	Research ethics	Ch. 4 Milgram	
	W 10/11	Exam 1		
4	M 10/16	Measurement reliability & validity	Ch. 5 Iacoboni et al. Response	
	W 10/18	Measurement reliability & validity		AA 2
5	M 10/23	Surveys and observations	Ch. 6	
	W 10/25	Sampling Bivariate correlation	Ch. 7 Ch. 8	
	F 10/27			Paper 1
6	M 10/30	Bivariate correlation Multivariate correlation	Ch. 9	
	W 11/01	Multivariate correlation		AA 3
7	M 11/06	Exam 2		
	W 11/08	Experimental designs	Ch. 10	
8	M 11/13	Threats to internal validity	Ch. 11	
	W 11/15	Complex experimental designs	Ch. 12	AA 4
9	M 11/20	Factorial variations		AA 5
	W 11/22	Factorial variation cont.		
	Sun			Paper 2

	11/26			
10	M 11/27	Exam 3		
	W 11/29	Review		
11	W 12/4	14:45pm Optional Final Exam		

ASSIGNMENT SCHEDULE

**All activity assignments are due on Canvas by the beginning of class on Wednesday.*

**Papers are due on Canvas by midnight on Friday.*

Week	Goals	Activity	Due
1			
2	Recognize and question empirical claims in the news & in scientific papers	<ul style="list-style-type: none"> Identify claims and variables in news articles and scientific articles Ask questions about validities 	Activity Assignment #1
3			
4	Assess measurement/construct validity	<ul style="list-style-type: none"> Think critically about how variables are operationalized and measured 	Activity Assignment #2
5	Evaluate media coverage of science	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Interrogate the validities of studies testing association hypotheses 	Activity Assignment #3
7			
8	Interrogate causal claims	<ul style="list-style-type: none"> Identify the key variables in experimental designs Identify potential threats to internal validity and propose solutions 	Activity Assignment #4
9	Explore complex relationships Evaluate published research	<ul style="list-style-type: none"> Identify and interpret main effects and interactions from a factorial design Describe interaction effects in everyday terms Read and summarize an empirical article, and interrogate the research using the three claims, four validities framework 	Activity Assignment #5 Research Consumer Paper #2
10			

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/1web14brain.html>

Milgram, S. (1965/1972). Some conditions of obedience and disobedience to authority. In Arthur G. Miller

(Ed.), *The Social Psychology of Psychological Research* (pp. 82-105). New York: Free Press.

Roediger, H. L., & Gallo, D. A. (2004). How to read a journal article in cognitive psychology. In D. A.

Balota & E. J. Marsh (Eds.), *Key readings in cognition: Cognitive psychology* (pp. 721-731). New

York: Psychology Press.