

PSY 301 SCIENTIFIC THINKING WINTER 2019 SYLLABUS

Class meets T/Th 2:00-3:20p in LLC South 101

INSTRUCTOR

Dr. Caitlin Fausey
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TEACHING ASSISTANTS

| | |
|-----------------------------|---------------------------|
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COURSE OVERVIEW

How do we make sense of human behavior? In this course, we will develop an instinct for an empirical answer: "Follow the data". We will wrestle with how to create an informative empirical endeavor: from making observations, to 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.

COURSE MATERIALS

(1) Textbook (required)

Morling, B. (2018). Research methods in psychology: Evaluating a world of information (3rd ed.). New York: Norton.

(2) PDF files on Canvas (required)

Additional readings and materials will be posted on our Canvas site.

(3) iClicker (required)

You are required to have an iClicker and [register it on Canvas](#) by the end of Week 1.

LEARNING GOALS FOR THIS COURSE

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

- (1) 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.
- (2) 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.
- (3) 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.
- (4) 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.

INSTRUCTION PHILOSOPHY

Our motto in this course is: Follow the data. "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.

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 that knowledge is created in the field. The course emphasizes 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.

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.

EXPECTATIONS & GRADING

Your job is to come to class, do the readings and assignments, get involved in the material, and ask lots of questions. Grades will be based on activity assignments, research consumer papers, and exams.

Class. Students who regularly attend class outperform students who do not. This is because this course promotes active learning through discussion, in-class exercises, and activity assignments. Class sessions focus on developing your skills as consumers of psychological research and also provide you with tools necessary for being producers of research. Come prepared for class. Do the in-class exercises. Ask questions. Take notes. Your **iClicker participation in five classes** - randomly determined, to encourage your participation throughout the term - will be recorded and contribute to your grade (see below).

Readings. Expect to dedicate considerable time outside of class to the readings -- it will be both demanding and rewarding. You are expected to complete the assigned readings before the class and to take an active role in the class. Material from the readings is essential preparation for all exams. You will apply principles from the readings to your activity assignments, research consumer papers, and exams.

Activity assignments. You will build your skills consistently throughout the quarter. Four times during the term, you will complete an activity assignment to help learn the course concepts and to actively grapple with the empirical process. [See the lecture 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 student colleagues.

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 lecture schedule and assignment schedule for more details.](#) You will receive specific written instructions for each paper assignment.

In-class exams. Exams will consist of conceptual and applied multiple-choice and short-answer questions, similar to the exercises we work on in class. In-class exams will cover all material from class and the readings since the previous exam. Exams will be on **Tuesday January 22, 2019** and **Tuesday February 19, 2019**. **Make-up exams are not permitted except in documented emergency situations.**

Final exam. The final exam will cover material presented in lectures and in the readings. The final exam will be a cumulative exam covering the full quarter of material. According to the Final Exam Schedule from the Office of the Registrar, the final exam for this course will be given on **Monday March 18, 2019 at 12:30 PM**. **Make-up exams are not permitted except in documented emergency situations.**

FINAL LETTER GRADE

Final letter grades will be assigned according to the table on the right. "Percent" is calculated by a weighted average of the percent correct on all assignments, papers, and exams, adjusting for the percent that each counts toward your final grade. Decimals will be rounded to the nearest percent.

Final letter grades will be weighted like this:

| | |
|---------------------------|----------------------------|
| Class engagement: | 5% (each day 1%) |
| Activity assignments: | 20% (each assignment = 5%) |
| Research Consumer papers: | 30% (each paper = 15%) |
| Exams: | 45% (each exam = 15%) |

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

ACADEMIC HONESTY

The short version: Don't cheat. Don't plagiarize. If you are unsure, please ask me.

As a member of the university community you are expected to be honest and forthright in all of your academic endeavors. To falsify the results of one's research, to present the words, ideas, data, or work of another as one's own, or to cheat on an examination corrupts the essential process by which knowledge is advanced.

All work submitted in this course must be your own and produced exclusively for this course. It is considered cheating if you obtain any kind of information about answers and solutions to the work in this course from any non-intended source (including your peers) or if you transfer such information to others. You may not use notes, readings, or other aids during PSY 301 exams. You may study with other students in preparation for an exam, but your answers on an exam must be your own. It is also considered cheating if you lie to Dr. Fausey, Ms. Cuellar, or Ms. Owen about an absence relating to an iClicker exercise, assignment, paper, or exam.

Another form of academic misconduct is plagiarism, or using someone else's ideas and words without appropriate citation on a written assignment. The use of sources (ideas, quotations, paraphrases) must be properly acknowledged and documented. Do not copy from Wikipedia, other college students' papers, scholarly articles, websites, and a host of other sources. In this course, all submitted work will be checked by VeriCite. Do not attempt plagiarism because you will be caught. Plagiarism is academic misconduct and cases of plagiarism will be treated as such.

Please note that it is mandatory for instructors to report suspected academic misconduct to the Office of Student Conduct. Violations will be taken seriously and are noted on student disciplinary records. For more information about academic honesty, see the University Student Conduct Code at dos.uoregon.edu/conduct.

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 at: safe.uoregon.edu, respect.uoregon.edu, titleix.uoregon.edu, 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 hr.uoregon.edu/policies-leaves/general-information/mandatory-reporting-child-abuse-and-neglect/presidents-message.

SPECIAL ACCOMMODATIONS: ACCESSIBLE EDUCATION CENTER (AEC)

If you have a documented disability and anticipate needing accommodations in this course, please notify Dr. Fausey 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 aec.uoregon.edu.

FAQ

What if I miss an exam?

With the exception of extreme and unforeseen circumstances, contacting Dr. Fausey on the day of (or even worse, after) the exam will be considered an unexcused absence and will result in a 0 on the exam. If you have a scheduling conflict and cannot take an exam at its appointed date and time, you must tell Dr. Fausey as soon as possible. Your best strategy is to take exams on their scheduled date/time.

What if I turn in an assignment late?

Late assignments and papers will be penalized by 50% regardless of when they are submitted, and no assignments or papers will be accepted more than 1 week late without some documented medical or family emergency. Your best strategy is to submit assignments on time.

Do you grade on a curve? Offer extra credit?

No, I do not grade on a curve. No, I do not offer extra credit except for what is stated below. Your best strategy is to focus your energy on doing your best on all of your work.

Optional: psychology research extra credit

You may choose only one of the following options. You may choose one or the other, but cannot get credit for both, nor for any combination of the two. Extra credit is due by **Friday March 8, 2019, 5 PM**.

Extra Credit Option 1: You may participate in Psychology Department research through the Psychology Department Human Subjects Pool. For each credit of participation assigned to PSY 301, you earn a 1% improvement to your final grade, for up to 2%. No more than 2% extra credit points are permitted. Please note: A Psychology Department policy states that students may earn no more than 60% of their course-related credit by completing online studies. Thus, for this course, a maximum of 1 hour of online studies will count. For more information, go to the HSP website at uopsych.sona-systems.com and/or contact the human subjects coordinator by email at hscoord@uoregon.edu.

Extra Credit Option 2: Find a set of articles, blogs, and/or other media in the popular press about a psychology topic, as well as the original empirical articles on which they are based. Write a critique, in which you compare and contrast the scientific and media reports, emphasizing lessons learned throughout this course about sound scientific inference. You will earn up to 2% extra credit, depending on the quality of your critique. A terrific critique is approximately 3 double-spaced pages with concise summary and insightful comments based on your knowledge developed throughout this course. You must seek approval of your set of articles from Dr. Fausey before beginning your critique. To earn the extra credit, you must submit a copy of the set of articles and your critique.

Do you take attendance?

No, I do not take attendance. I expect you to make responsible decisions about managing your time. Please note that a lot of material and essential practice will be conducted during lectures. In addition, 5 class sessions - randomly determined - will contribute to your iClicker participation grade (see above). The majority of your learning will come through the opportunity to ask questions during lectures. Each session is designed with you in mind. Your best strategy is to show up and reap the benefits.

DISCLAIMER

This syllabus is an outline of the course and its policies, which may be changed for reasonable purposes during the quarter at the instructor's discretion. You will be notified in class and/or via email if any changes are made to this syllabus and an updated syllabus will be provided on Canvas.

LECTURE SCHEDULE

| Day | Date | Description | Read | Due |
|--------------------------------|--------|---|---------|---------|
| INTRODUCTION | | | | |
| T | Jan 8 | Course overview: Follow the data! | Ch. 1 | |
| THE DATA BASICS | | | | |
| TH | Jan 10 | What counts as data? | Ch. 2 | |
| | | How do I find existing data? | | |
| T | Jan 15 | How do I make an argument with data? | Ch. 3 | AA 1 |
| TH | Jan 17 | How do I make an even stronger argument with data? | Ch. 3 | |
| T | Jan 22 | IN-CLASS EXAM | | (exam) |
| HOW TO GATHER THE DATA? | | | | |
| TH | Jan 24 | What data should I collect? (measurement) | Ch. 5 | |
| T | Jan 29 | Are my data useful? (validity) | Ch. 5-6 | |
| TH | Jan 31 | Who contributes data? (sampling) | Ch. 7 | |
| DATA: ASSOCIATIONS | | | | |
| T | Feb 5 | So I measured two variables: Are they related? | Ch. 8 | AA 2 |
| TH | Feb 7 | So I measured lots of variables: Are they related? | Ch. 9 | |
| DATA: CAUSAL | | | | |
| T | Feb 12 | I have a hypothesis – how do I design an experiment? | Ch. 10 | PAPER 1 |
| TH | Feb 14 | How else could I test my hypothesis? | Ch. 10 | |
| T | Feb 19 | IN-CLASS EXAM | | (exam) |
| TH | Feb 21 | Do I believe the data? | Ch. 11 | |
| T | Feb 26 | Is the answer to my research question “It depends”? | Ch. 12 | AA 3 |
| LET’S GET REAL | | | | |
| TH | Feb 28 | How do I “follow the data” when it’s impossible to reach every research method ideal? | Ch. 13 | |
| T | Mar 5 | Are my data important to anyone besides me? | Ch. 14 | AA 4 |
| TH | Mar 7 | How do I share my data with others? | | |
| T | Mar 12 | How do I protect the people who provide the data? | Ch. 4 | Paper 2 |
| TH | Mar 14 | Course review: Putting it all together! | | |
| FINAL EXAM WEEK | | | | |
| MON | Mar 18 | 12:30 PM - 2:30 PM. CUMULATIVE FINAL EXAM. | | |

ASSIGNMENT SCHEDULE

Activity assignments ("AA") and Research consumer papers ("PAPER") must be submitted on Canvas **by 12 PM** on their due date.

| Week | Goals | Activity | Due |
|------|--|---|---|
| 1 | | | *register iClicker on Canvas* 10 Jan |
| 2 | Recognize and question empirical claims in the news and in scientific papers | Identify claims and variables in news articles and scientific articles Ask questions about validities | AA #1 15 Jan |
| 3 | | | |
| 4 | Assess measurement/construct validity | Think critically about how variables are operationalized and measured | optional self-assess |
| 5 | Interrogate association claims | Interrogate the validities of studies testing association hypotheses | AA #2 5 Feb |
| 6 | 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 | PAPER #1 12 Feb |
| 7 | | | |
| 8 | Interrogate causal claims | Identify the key variables in experimental designs Identify potential threats to internal validity and propose solutions | AA #3 26 Feb |
| 9 | Explore complex relationships | Identify and interpret main effects and interactions from a factorial design Describe interaction effects in everyday terms | AA #4 5 March |
| 10 | Evaluate published research | Read and summarize an empirical article, and interrogate the research using the three claims, four validities framework | PAPER #2 12 March |