

## Scientific Thinking in Psychology (Psychology 301)

Winter 2017, University of Oregon

Mon Wed 2-3:20 PM

101 Living Learning Center South



### Professor:

Pranjal Mehta, Ph.D.

mehta@uoregon.edu

Office: 323 Straub

Office Hours: Mondays and Wednesdays from 11 AM-12 PM

or by (virtual) appt.

### Teaching Assistants:

Kathryn Denning

denning@uoregon.edu

Office: Straub 339

Office Hours: Wed. 10 AM to 12 PM

Jacqueline O'Brien

jackieo@uoregon.edu

Office: Straub 470

Office Hours: Tues. 10 AM to 12 PM

### Course Overview

*"Somewhere, something incredible is waiting to be known."* -Dr. Carl Sagan, astronomer, 1934-1996

Psychology is the scientific study of thoughts, feelings, and behaviors. In this course, you will learn the critical skills to evaluate others' research and learn the basic building blocks to conduct your own scientific research in psychology. In other psychology courses you may learn *what* different behaviors are or *why* they occur. This course is much more important because you will learn *how* psychologists conduct research about behavior and arrive at their conclusions, and how to think like a psychologist. This course is essential for becoming a wise *consumer* of information from sources such as the media, the government, and corporations. This course also provides the foundation for becoming a wise *producer* of research in psychology. However, all of the material covered in this course applies beyond psychology and the university setting, so the course will improve your ability to think critically and logically about any topic that you may encounter in other courses, in job settings, and in your daily life.

This course is the first course in the PSY 301-303 sequence for psychology majors. PSY 301 builds a foundation in psychology research methods, which provides critical thinking skills and an understanding of how knowledge is gained in psychology. PSY 301 is essential preparation for PSY 302, which teaches the nuts and bolts of statistics and data analysis in psychological science. In PSY 303, you will be using the skills you gained in PSY 301 and PSY 302 to conduct and write up your own scientific research study in psychology.

### Course Objectives

This course aims to help students improve their skills in scientific thinking, especially from the perspective of **consumer of research**. Although only a few of you may pursue a career as a research psychologist, all of you are consumers of research from psychology and other scientific disciplines. As such, a major goal of this course is to develop your capacity for critically evaluating "scientific evidence" that is communicated in academic journals, the popular press, and other outlets such as reports from government agencies, non-profit organizations, and corporations. This course will also sharpen your foundational skills to produce original research in psychology, which will happen in later courses (e.g., PSY 303).

Even if you do not plan to go on further in psychology or another related field of research, many of you will enter fields where your skills as a scientific thinker will be a huge asset, and you may very well find yourself drawing on the material from this course to evaluate original research.

### Course Points

#### **Exams: 300 points**

3 Exams (100 points each): 300 points\*

\*Optional comprehensive final exam can replace the lowest exam grade

#### **Assignments: 240 points**

5 Activity Assignments (30 points each)

Consumer of Research Assignment 1 (40 points)

Consumer of Research Assignment 2 (50 points)

#### **Participation/Exercises: 30 points**

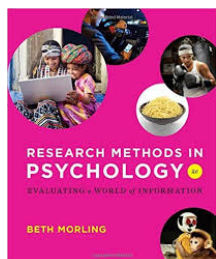
We'll do some short exercises mostly in class, and I'll collect some of them to give you participation points. You can miss up to one exercise without penalty. You cannot make up any in-class exercise under any circumstance.

#### **Total Points: 570**

See Course Components section below as well as the lab syllabus for details. Your final course grade will be derived by converting your total points out of 570 into a percentage score. See Grading section for information on how your percentage score will be converted to your final course grade.

## Readings

### Required Textbook:



Morling, B. (2014). *Research Methods in Psychology: Evaluating a World of Information*. (2<sup>nd</sup> ed.) New York: Norton & Company.

This textbook is truly excellent! It is fun, interesting, and informative. It offers many wonderful examples, and it teaches you to think about research methods from both the consumer and producer perspectives. We shall refer to it often in class, and the readings will make a thorough supplement to what we discuss in both lecture and lab. There will be material on exams that will be in the textbook but will not be discussed in lecture, so it is important that you do all of the readings. We shall set a very steady pace throughout the term, often covering multiple chapters a week, so please keep up with the readings as they will make our discussions in class much more lively and informed. In addition, the publisher of the text maintains a website to access digital products that accompany the textbook:

<https://digital.wwnorton.com/researchpsych2>

NOTE: I do not recommend the 1<sup>st</sup> edition of the textbook because there are substantive changes from the 1<sup>st</sup> to 2<sup>nd</sup> editions. The 1<sup>st</sup> edition may cause confusion, and you may have trouble with some assignments and exam questions.

**Additional Readings:** Some additional readings (some required, some recommended) will be distributed in class and/or on Canvas.

## Course Components

**Lecture:** One of the main goals of the lecture sessions is to develop your skills as a consumer of psychology research. The lecture sessions will include review and explanation of selected textbook material, active learning that will teach you how to critically evaluate others' research, elaboration of some topics with information not provided in the textbook, and some in-class exercises. You are expected to take responsibility for what is covered in class. The most important way to do this is to show up and be an active participant in lecture. I will use a combination of PowerPoint presentations, writing on the white board, discussion, illustrative examples, and in-class exercises to teach the main concepts. Whenever appropriate lectures slides and outlines will be posted on Canvas. Note that these documents serve to outline the lecture and are by no means comprehensive. You should not rely on these posted documents for your course notes; rather, you should use them to organize the notes that you take during class.

**Activity Assignments:** Five times throughout the term, I will ask you to complete an activity assignment to help you learn the course concepts. I will provide instructions for each activity assignment, including how to hand in the assignment and the due date for the assignment. A rough timeline for the activity assignments can be found on the last page of this syllabus. Each activity assignment is worth 30 points. We will start many of the activity assignments together in

class, so missing class will impair your ability to do well on these assignments. Late assignments will be penalized 50% regardless of when they are submitted, and no assignments will be accepted more than 1 week late.

**Consumer of Research Assignments:** A key objective of this course is to learn how to be a wise consumer of psychology research. Twice throughout the term, you will be asked to determine the scientific claim that a journalist or scientist is making and then evaluate the strengths and limitations of the research study in light of the claim. I will provide instructions for each consumer of research assignment, including how to hand in the assignment and the due date. Consumer of Research Assignment 1 is worth 40 points, and Consumer of Research Assignment 2 is worth 50 points. A rough timeline for these assignments can be found on the last page of this syllabus. Late consumer of research assignments will be penalized 50% regardless of when they are submitted, and no assignments will be accepted more than 1 week late.

**Exams:** There will be three mandatory exams throughout the term as well as an optional cumulative final exam during finals week (see Course Calendar for specific dates). Each exam will cover the textbook chapters listed in the course calendar in addition to the lecture material we covered in class. All exams will consist of 40 multiple-choice questions (2 points each) and a few short answer/essay questions (20 points total). If you take the optional comprehensive final exam, your lowest grade of all four exams will be dropped. There will be no makeup exams in case of illness or travel. **If you are sick or out of town and miss one of the exams, you must take the final exam to make up for the missed exam.** If you are traveling on a university-sanctioned trip (e.g., for athletics), documentation will be required for alternative arrangements.

### Grading

The final grade assigned for the course should reflect the student's overall performance in the course, as described by the following guidelines:

- A     *excellent* work, complete mastery of course material
- B     *good* work, grasps most of the important concepts
- C     *average* work, grasps many but not all aspects of course material
- D     *poor* work, insufficient understanding of material
- F     failing

Grades will be assigned based on your total percentage points in the course:

GRADE	PERCENTAGE	GRADE	PERCENTAGE
A+	99-100%	C	72-77%
A	92-98%	C-	70-71%
A-	90-91%	D+	68-69%
B+	88-89%	D	62-67%
B	82-87%	D-	60-61%
B-	80-81%	F	59% and Below
C+	78-79%		

### Course Philosophy and Expectations

**Attendance and Participation:** Attendance and participation are critical to earning a good grade for the course. I do not take attendance, but it is very important that you show up to class to participate. Further, 30 points out of the 570 total points in your course are based on participation exercises some of which will be completed in class. This class will be guided by University Policies that entails a standard of responsibility, honesty, and integrity for me, your classmates, and the work that you do. This also means that you should do your absolute best to attend every class meeting, and to come to class prepared and ready to participate in our discussions. We will follow the textbook closely, but most students find it very helpful to engage with the material in lecture. There will be some topics in lecture that are emphasized less in the textbook, and there will be exam questions based on lecture material and activity assignments.

**Active Learning and Work Outside of Class:** Doing well in this class requires an active involvement with the course content; merely reading the material and showing up for class are not enough. It is important to think about what you are reading, watching, and discussing, and relate it to experiences in your own life, rather than just remembering facts. As a 4-credit class, you are expected to spend **12 hours per week outside of class** working on relevant material.

**Canvas:** Canvas will be used in this course as an online resource for the syllabus, lecture materials, handouts, and assignments. Please note that while you may have access to the course materials, attending class will be crucial to doing well in the course. The materials alone will not teach you the core concepts required for this course. The Canvas site for this course can be found at: <http://canvas.uoregon.edu>.

**Preparation:** It is also expected that you will come prepared to class. This means keeping up with the readings, assignments, and exercises, as well as having spent some time reflecting on the readings. You will not do well on exams and assignments if you do not keep up with the reading. We also require that you check your UO email and the Canvas website often (a minimum of once a day during the week), as we will post important class information. This course has been designed to comply with the psychology department's guidelines for teaching and learning. Please review these guidelines at <http://psychology.uoregon.edu/undergraduate/academics/>

**Organization and communication:** Your success in this course will rely in large part on your ability to stay organized and stay on top of communication. You should expect to be in frequent communication with your class and TAs, as well as with your classmates. If you are not already in the habit of checking e-mail every day, start now.

**Classroom expectations include:**

- Arriving on time, prepared for class
- Attending for the duration of class and being an active learner

- Participating in class activities and discussions
- Respecting the diversity of cultures, opinions, viewpoints in the classroom
- Listening to fellow students, professors, and lecturers with respect
- Not reading other materials, books, newspapers, or using laptops for other activities
- Turning off cell phones and other electronic devices

**Diversity and Inclusion:** It is the policy of the University of Oregon to support and value diversity. Further, an important scientific value is that knowledge gained through the scientific method is a public good accessible to everyone. I strive to create a classroom environment consistent with these values of diversity, equity, and inclusion, one in which all students are respected and one in which all students feel safe to explore difficult topics and learn. If you have any suggestions or concerns regarding diversity and inclusion, I will always listen to you with great respect and a goal to provide you with the best educational environment possible.

**Academic Honesty:** All work submitted in this course must be your own and produced exclusively for this course. Although some aspects of the class may include group work, **the work you turn in on assignments and exams must be your own**. Otherwise, you will not adequately learn the material. We take academic integrity seriously and will not tolerate any instance of cheating or plagiarism.

Cheating is defined as providing information to, or receiving information from, another person. Plagiarism is defined as passing off the work of another as your own without properly giving credit. This includes, but is not limited to, directly copying others' writing (in whole or in part) or paraphrasing others' writing or ideas without citing properly. In these cases "others" can include other students in the class, other students or non-students not in the class, and authors of scholarly or mass media work (journal articles, chapters, newspaper articles, blogs, Wikipedia). Rely mostly on your own ideas and words, and support them with properly cited scholarly sources (journal articles, textbooks, book chapters) or popular press media (websites, newspapers). If you are unsure about what is appropriate or allowed, please ask! The UO library website has a helpful page that describes when you need to give credit:

<http://researchguides.uoregon.edu/citing-plagiarism>

All instances of cheating and plagiarism will have serious consequences. At a minimum, you will receive a zero on the assignment or exam and be reported to the university's student conduct coordinator, even if it is your first offense. If the offense is serious, you may also receive an "F" in the course. Repeat offenders will fail the course. Turning in work that is not your own is not acceptable. Copying or paraphrasing information from any source - print or electronic - without citation is plagiarism. The use of sources must therefore be properly acknowledged and documented. The consequences of academic dishonesty will be taken seriously and are noted on student disciplinary records. If you are in doubt regarding any aspect of these issues, please come and speak with me.

### Student Accommodations

**Students with Disabilities:** If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet with me. Also, please request that the Accessible Education Center (164 Oregon Hall, <http://aec.uoregon.edu/>) send me a letter

verifying your disability. The phone number for AEC is 541-346-1155 and the email address is [uoaec@uoregon.edu](mailto:uoaec@uoregon.edu)

**Students for Whom English is Not Their Native Language:** If you are a non-native English speaker and think you may have trouble in this course due to language difficulties, please see the instructor within the first two weeks.

**Tentative Course Calendar (subject to minor changes)**

<b>Week</b>	<b>Date</b>	<b>Lecture Topic</b>	<b>Chapter Readings</b>
<b>1</b>	<b>M ~ Jan. 9</b> <b>W ~ Jan. 11</b>	NO CLASS DUE TO WEATHER-RELATED DELAYS Course Overview; Scientific Thinking Introduction	<b>CH. 1</b>
<b>2</b>	<b>M ~ Jan. 16</b> <b>W ~ Jan. 18</b>	<b>MLK HOLIDAY: No class</b> Theories and Hypotheses	<b>CH. 2</b>
<b>3</b>	<b>M ~ Jan. 23</b> <b>W ~ Jan. 25</b>	Three Claims, Four Validities Framework Three Claims, Four Validities Framework (con't)	<b>CH. 3</b>
<b>4</b>	<b>M ~ Jan. 30</b> <b>W ~ Feb. 1</b>	<b>EXAM 1</b> Ethical Research and Good Measurement: (Construct) Validity and Reliability	<b>CH. 4 and CH. 5</b>
<b>5</b>	<b>M ~ Feb. 6</b> <b>W ~ Feb. 8</b>	Surveys and Observations Sampling/External Validity; Correlation	<b>CH. 6</b> <b>CH. 7 and CH. 8</b> <b>Statistics</b> <b>Review:</b> <b>Descriptive and</b> <b>Inferential</b> <b>Statistics</b>
<b>6</b>	<b>M ~ Feb. 13</b> <b>W ~ Feb. 15</b>	Correlation (con't); Evaluating Association Claims Multivariate Correlation	<b>CH. 9</b>
<b>7</b>	<b>M ~ Feb. 20</b> <b>W ~ Feb. 22</b>	<b>EXAM 2</b> Experiments; Threats to Internal Validity	<b>CH. 10</b>
<b>8</b>	<b>M ~ Feb. 27</b> <b>W ~ March 1</b>	Experimental Design (con't) Complex Experimental Designs	<b>CH. 11</b> <b>CH. 12</b>
<b>9</b>	<b>M ~ March 6</b> <b>W ~ March 8</b>	Complex Experimental Designs (con't) Quasi-Experimental Designs/Generalizing Results	<b>CH.'s 13 and 14</b>
<b>10</b>	<b>M ~ March 27</b> <b>W ~ March 29</b>	<b>EXAM 3</b> Review for Final Exam	
<b>FINALS WEEK</b>		<b>FINAL EXAM (Optional),</b> <b>Tuesday, March 21 at 2:45 PM in 101 LLCS</b>	

**Overview of Primary Course Points**  
(see above and the lab syllabus for more details on grading)

<b>Week</b>	<b>Exams</b>	<b>Assignments (dates may change slightly)</b>
<b>1</b>		
<b>2</b>		
<b>3</b>		<b>Activity Assignment 1:</b> 3 Claims, 4 Validities
<b>4</b>	<b>EXAM 1 (Mon)</b>	<b>Activity Assignment 2:</b> Measurement/Construct Validity
<b>5</b>		<b>Activity Assignment 3:</b> Association Studies
<b>6</b>		<b>Consumer of Research Assignment 1</b>
<b>7</b>	<b>EXAM 2 (Mon)</b>	
<b>8</b>		<b>Activity Assignment 4:</b> Factorial Design <b>Activity Assignment 5:</b> Factorial Design In-Class Study
<b>9</b>		<b>Consumer of Research Assignment 2</b>
<b>10</b>	<b>EXAM 3 (Mon)</b>	
<b>Finals Week</b>	<b>Optional Final Exam (Tuesday)</b>	