

# PSYCHOLOGY 6334: FOUNDATIONS OF RESEARCH

## FALL 2016 (CRN 16423)

**Meetings:** Mondays & Wednesdays, 10:30-11:50 a.m. Health Sciences & School of Nursing, Room 215

**Instructor:** Dr. James Wood  
Psychology 203  
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Office Hours: Mondays & Wednesdays 7:30-9:00 a.m. or by appointment

**Texts:** Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston: Houghton Mifflin.

Steven Johnson (2007). *The Ghost Map*  
(This book is not in the UTEP bookstore. Students can order it in paperback online.  
Used copies are fine.)

### COURSE SCHEDULE

Readings and assignments must be completed by dates listed below.

MONDAY, AUGUST 22. Course Introduction

WEDNESDAY, AUGUST 24 Historical Development of the Scientific Method Part 1:  
Scientific Contributions of Pre-Greek and Non-Western Cultures

MONDAY, AUGUST 29: Historical Development of the Scientific Method Part 2:  
Thales and the Beginnings of Natural Philosophy

Reading: Shadish et al., Chapter 1 "Experiments and Generalized Causal Inference"

WEDNESDAY, AUGUST 31 Historical Development of the Scientific Method Part 3:  
Natural Philosophy in the Greek Classical and Hellenistic Periods

MONDAY, SEPTEMBER 5 Labor Day. University is closed.

WEDNESDAY, SEPTEMBER 7 Historical Development of the Scientific Method Part 4:  
Heirs of the Greeks: India, Islamic Culture, and the Middle Ages

Reading: Shadish et al., Chapter 2: "Statistical Conclusion Validity and Internal Validity"

MONDAY, SEPTEMBER 12: External Validity: Discussion of "The weirdest people in the world?"

Reading: Shadish et al., Chapter 3: "Construct Validity and External Validity"

Reading: Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world?  
*Behavioral and Brain Sciences*, 33, 61-135. (read pages 61-83, then glance at the  
commentaries that follow and read at least one of the them)  
[This article is available in pdf on Blackboard for the class]

WEDNESDAY, SEPTEMBER 14 Historical Development of the Scientific Method Part 5:  
New Methodologies of the Scientific Revolution

MONDAY, SEPTEMBER 19: Historical Development of the Scientific Method Part 6:

## The Early Modern and Modern Periods

Reading: Shadish et al., Chapter 4: "Quasi-Experimental Designs That Lack a Control Group or Lack Pretest Observations on the Outcome."

WEDNESDAY, SEPTEMBER 21: The Meaning of Cause. Part 1

MONDAY, SEPTEMBER 26: The Meaning of Cause. Part 2

Reading: Shadish et al., Chapter 5: "Quasi-experimental Designs That Use Both Control Groups and Pretests"

ALSO ON SEPTEMBER 26: Instructor distributes instructions for first research design assignment.

WEDNESDAY, SEPTEMBER 28: The Meaning of Cause. Part 3

MONDAY, OCTOBER 3: The Four Kinds of Validity. Part 1

Reading: Shadish et al., Chapter 8: "Randomized Experiments: Rationale, Designs, and Conditions Conducive to Doing Them"

WEDNESDAY, OCTOBER 5: The Four Kinds of Validity. Part 2

SUNDAY, OCTOBER 9: A COPY OF YOUR FIRST RESEARCH DESIGN ASSIGNMENT MUST BE EMAILED AS AN ATTACHMENT TO THE INSTRUCTOR BY 11:00 P.M.

MONDAY, OCTOBER 10: The Four Kinds of Validity. Part 3

Reading: Shadish et al., Chapter 9: "Practical Problems 1: Ethics, Participant Recruitment, and Random Assignment"

ALSO ON OCTOBER 10: Instructor distributes instructions for second research design assignment.

WEDNESDAY, OCTOBER 12. The Four Kinds of Validity. Part 4

MONDAY, OCTOBER 17: STUDY SESSION FOR FIRST MIDTERM

Reading: Shadish et al., Chapter 10: "Practical Problems 2: Treatment Implementation and Attrition"  
[Note: No quiz today]

WEDNESDAY, OCTOBER 19: FIRST MIDTERM EXAMINATION  
(Examination will cover Shadish et al, Chapters 1-5, and lectures up through September 26)

MONDAY, OCTOBER 24: Class Discussion of *The Ghost Map*

Reading: *The Ghost Map*

WEDNESDAY, OCTOBER 26 Class Discussion of *The Ghost Map*

SUNDAY NIGHT, OCTOBER 30:

A COPY OF YOUR SECOND RESEARCH DESIGN ASSIGNMENT (10-15 PAGES)  
MUST BE E-MAILED TO THE INSTRUCTOR BY 11:00 P.M.

MONDAY, OCTOBER 31: The Scandal of Induction and Karl Popper: Part 1

WEDNESDAY, NOVEMBER 2 The Scandal of Induction and Karl Popper: Part 2

MONDAY, NOVEMBER 7: SECOND MIDTERM

(Examination will cover all readings and lectures not covered in the first midterm)

WEDNESDAY, NOVEMBER 9 Student Reflections on Ideas Introduced in the Course

FRIDAY, NOVEMBER 11

By 11:00 P.M., WRITTEN COPIES OF YOUR REVIEWS OF RESEARCH PROPOSALS  
MUST BE E-MAILED TO THE INSTRUCTOR AND THE TWO STUDENTS WHOSE  
PROPOSALS YOU REVIEWED

NOVEMBER 14, 16, 21, 28, AND POSSIBLY NOVEMBER 30: Student Presentations

(No class meeting Nov 23)

WEDNESDAY, NOVEMBER 30: Students Evaluate Course.

SUNDAY NIGHT, DECEMBER 4:

A FINAL REVISED COPY OF YOUR PROPOSED STUDY MUST BE  
E-MAILED TO INSTRUCTOR BY 11:00 P.M.

Note: The instructor may ask you to do other brief readings during the semester. Questions based on these readings may appear on the quizzes or midterm exam.

### **COURSE OBJECTIVES**

1. Students will be able to describe the most important elements of the scientific method and their historical and philosophical roots.
2. Students will be able to describe the philosophical foundations of causal inference and explain how these foundations are related to experimental and quasi-experimental methodology.
3. Students will be able to explain the four types of validity involved in causal inference, describe the threats to each of these types of validity, and identify these threats in actual studies.
4. Students will be able to describe the research designs most commonly used to explore causal relationships and their strengths and weaknesses. Students will be able to identify the most important elements of experimental design and explain how each element strengthens causal inference.
5. Students will be able to describe the problems commonly encountered by researchers using experiments and quasi-experiments, in both laboratory and field settings, and how these problems can be dealt with.
6. Students will be able to describe the ethical considerations that are relevant to experiments and quasi-experiments and be able to explain how researchers and institutions can ensure that research is carried out in an ethical manner.
7. Students will be able to design studies that are methodologically sound, practical, and ethical.
8. Students will be able to offer intelligent, helpful critique of studies designed by other researchers and be able to identify ways that these studies can be made more methodologically sound, practical, and ethical.
9. Students will increase their proficiency in making written and oral presentation of research proposals.

## **INSTRUCTIONAL APPROACH**

Class objectives will be achieved using the following instructional methods:

1. The instructor will lecture during most class meetings before Thanksgiving. In-class instructional exercises will occasionally be used.
2. Students will read eight chapters in the text by Shadish, Cook & Campbell before Thanksgiving. The pace of reading will be approximately one chapter per week.
3. Students will also read “The Ghost Map” as an example of the difficulty and the importance of discovering and studying causal connections in uncontrolled environments.
4. There will be eight quizzes on the readings.
5. There will be two non-cumulative midterm examinations on the readings and the lectures.
6. Students will write one short research proposal on a topic assigned by the instructor.
7. Students will write a longer research proposal on a topic of their own choosing, within guidelines set by the instructor.
8. Students will write reviews of each other's research proposals
9. Students will give PowerPoint presentations to the class on their research proposals.

## **GRADING AND COURSE REQUIREMENTS**

### **Quizzes**

There will be eight quizzes during the semester, one quiz for each chapter assigned in the book by Shadish et al (except when otherwise noted in the syllabus), and one quiz on *The Ghost Map*. Each quiz will be given on the day that a reading is assigned in the class syllabus and will cover only that reading.

Students' six best grades on the quizzes will be averaged to compute their "quiz grade". This grade will count toward 30% of students' course grade. Students who arrive more than 5 minutes after the beginning of the class will not be allowed to take the quiz. There are no make-ups for quizzes.

The purpose of quizzes is to ensure that students do the readings. Study questions for each chapter of the Shadish et al. book are listed on Blackboard for this course. All quiz and exam questions regarding Shadish et al. will be taken directly from these study questions.

On the days that readings are due and a quiz is scheduled, the instructor will spend about 10 minutes at the beginning of class answering students' questions about the readings. If students have questions they want the instructor to answer, they should submit the questions to him via email before 7.a.m. the day of the quiz. The instructor will try to answer as many of these questions as possible during the first 10 minutes of class but may not have time to answer them all.

Quizzes and exams often “recycle” questions that were used when this course was offered in earlier semesters. You should not use earlier quizzes or tests from previous years to prepare for this course. Any use of quizzes or tests from prior years constitutes academic dishonesty and, more importantly, will reduce the amount that you learn from this course.

## **The Ghost Map**

The book *The Ghost Map* is assigned because it provides an excellent and dramatic case study of the challenges and rewards of drawing causal inferences in uncontrolled environments. The UTEP bookstore does not carry this book, so you will have to order it online. Used paperback copies are available on Amazon.com for about \$7.00, plus \$4.00 shipping. *The Ghost Map* is fairly easy reading, but it is an entire book, and so it's recommended that you order it early in the semester and start reading it chapter by chapter long before it is assigned.

## **Midterm Examinations**

The first Midterm Examination will cover all lectures and readings up through September 26, including Chapters 1 to 5 of Shadish et al. The second Midterm Examination will cover all lectures and readings in the course not covered in the first midterm (in other words, the second midterm is non-cumulative). Each midterm will count toward 10% of your grade.

The Midterm Examinations will be very much like the quizzes, but will be longer and include questions from lectures. Questions that appeared on the quizzes may "re-appear" on the midterms.

There is no make-up exam for the Midterm Examinations without prior arrangement. If you must miss a Midterm, please make arrangements BEFORE it is given. If you miss it without making prior arrangements, you will receive a failing grade for the examination. Students who are more than 10 minutes late for the examination will be considered to have missed the exam and will receive a failing grade.

## **First Research Design Assignment**

On September 26, the instructor will hand out an assignment that describes a specific research question and asks you to design a study to address the question. You will have approximately two weeks to do this assignment, which must be 5-10 pages long and emailed to the instructor by 11 p.m. on Sunday, October 9. The purpose of this assignment is to give you practice designing a short and fairly simple study. This assignment will count for 10% of your grade. This assignment must be submitted as a double-spaced Word document.

## **Second Research Design Assignment and Reviews**

On October 10, the instructor will hand out a second, longer research design assignment. You will have approximately three weeks to do this assignment, which must be 10-15 pages long and emailed to the instructor by 11 p.m. on Sunday, October 30. The instructor will then post your assignment on Blackboard so that your classmates can read it. The purpose of this exercise is to give you additional practice in constructing workable experiments or quasi-experiments.

The second research design will require you to design a study on a topic of your own choosing, but with the following restrictions: It should be an experiment or a quasi-experiment. It should be something you think of and design *entirely yourself*. You should not use (a) a paper or idea that you are using or have used for another class, (b) an idea that someone else suggested to you, (c) an idea or design that you have ever discussed (even briefly) with another person. This should all be your idea, your thinking, without any feedback or input or ideas from other students or faculty. It should be unlike anything you or your research collaborators have ever done or talked about before. It must also be *practical* -- something you could reasonably and practically carry out on a budget of no more than \$80,000 for personnel costs and an additional \$40,000 for other expenses. You might want to start thinking now about what topic you want to explore in your second research design.

You will be assigned to review two of the proposals submitted by your classmates. You will have approximately two weeks to finish these reviews, which must be 2-5 pages long and emailed to the instructor and the authors of the proposals via email by 11 p.m. on Friday, November 11. The instructor will then post your reviews on Blackboard so your classmates can read them. In each review, you should

identify shortcomings in the original proposals, and suggest helpful ways of dealing with these shortcomings. The purpose of this exercise is to give you practice in writing reviews and providing helpful professional advice to your colleagues. Each review will count for 5% of your course grade (10% in all).

All research proposals and reviews will be presented by students during the last weeks of class. You will make a Power Point presentation of your study, no longer than 15 minutes, with a special emphasis on the Methods. You should modify your presentation in response to the reviews you have received from your fellow students. Following your presentation, the other students will have 10 minutes to ask questions and make suggestions. All students are expected to read all of their colleagues' research proposals *before* the Power Point presentations are made.

After you have received reviews and comments from your fellow students, you will need to revise your proposal (with the same page limits) and submit it via email by 11 p.m. on Sunday December 4. Your proposal (the first draft, Power Point presentation, and finished draft) together will count for 30% of your course grade. One factor in assigning your grade will be the degree to which you intelligently incorporated the suggestions from the reviews when you re-wrote the finished draft of your proposal.

More details about the research design assignments will be provided by the instructor during the semester.

### **Summary of Grading for course**

30%	Average of 6 best quiz grades
10%	First Midterm Examination
10%	Second Midterm Examination
10%	First Research Design Assignment
30%	Second Research Design Assignment (including PowerPoint presentation)
10%	Reviews