

Research Design & Inference
Psyc 4295, Fall 2014

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Overview

This graduate level course examines research methods and inference in science and their specific application in psychology. We will cover the major issues in conducting psychological research, discussing how to formulate a research question, design a study, conduct the study, analyze data, interpret findings, make inferences, communicate the results, and critique research; these topics will be covered in readings and lectures. In addition, you will complete assignments that require the practical application of what you have learned through research consultation to a community partner.

In addition to offering you practical skills necessary for beginning your research and evaluating research you encounter (e.g., journal articles, conferences), this course endeavors to meet several additional goals. For example, this course is designed to help you continue to develop your inferential skills as well as logic and critical analysis skills. We will emphasize awareness of assumptions made at all stages of the research process, as well as the inferences possible (and not possible) given various design decisions. The course also integrates discussion and readings on how various dimensions of human diversity (e.g., gender, ethnicity) are considered in the research process. Course assignments emphasize your ability to use material to generate research ideas and propose designs, as well as your critical thinking skills.

The course also seeks to help you with several dimensions of professional development. For example, through a community-engaged research project (CRP), you will apply what you're learning about research design to research questions posed by a community partner. The CRP will provide opportunities to develop your oral presentation skills, including the ability to discuss content as required in research consultation and to develop a grant application.

Readings

Please see attached for reading assignments by due date. Articles are available as PDF files via CANVAS. The course text is Kazdin, A.E. (2003). *Research Design in Clinical Psychology* (4th Edition). Boston: Allyn and Bacon.

Course Website

You should be registered for the course website via CANVAS (registration should happen automatically). Through the course website, you will have access to PDF files and other course information. You can access CANVAS two ways: 1.) Via Pioneerweb (Use the "GO" button in the top right corner to find the CANVAS link) or 2.) Via the website <https://du.instructure.com/login> (use your DU ID and passcode). In your initial set-up of CANVAS, you can personalize a few selections. For more information on using CANVAS, visit <https://canvas.du.edu/courses/190>.

Class Participation:

Each student is expected to actively contribute to each discussion. **Note: The person who talks the most does not win.** In fact, a single well-reasoned and thoughtful comment will be appreciated more deeply than lots of less well-reasoned comments. Because class participation is facilitated (or inhibited) by larger class dynamics, I expect all communications to be professional and respectful. Further, I expect each student to be collaborative in facilitating your own and your classmates' full participation.

Coursework

Class participants will be expected to attend all classes and do all assigned reading. You are expected to **participate in class discussion**. All assignments are due in hard copy by the start of class on the date listed in the “Readings and Assignments” section of this syllabus.

Grades will be assigned based on the following point structure (I reserve the right to add points to the final grade based on in-class contributions):

	% of final grade
CRP:	40
Draft Proposal (10%)	
Review Panel (10%)	
Presentation (25%)	
Final Proposal (55%)	
Problem Sets	20
Exams	40

Community-engaged Research Projects (CRPs)

As psychologists-in-training, an important aspect of professional development is learning to consult on research matters. You will complete a community-engaged research project (CRP) to learn about research consultation. Additionally, this research consultation will offer opportunities to apply what you’re learning in class to a community-identified problem. The CRP will involve a community partner, The Blue Bench (<http://thebluebench.org/>). From their website, the Blue Bench is “metro Denver’s only comprehensive sexual support and prevention center. Since 1983, we have served over 450,000 individuals through first contact, counseling, case management, education and prevention programs. Through each step of healing, we listen, we support, we teach, and we serve.”

Our partner will help us learn about research design consultation from the perspective of allied professionals working on psychological-related issues in the Denver community. In return for helping us learn about research consultation, we will develop projects for our partner that highlight the research design concepts of this course. To that end, our partner has identified key research questions that they confront in their work (see topic below). We’ll talk with our partner about the role that research-based knowledge can play in their work as well as their specific research needs. We’ll focus on applying research design principles to the development of research proposals that address the consultation questions posed by our partners.

The Blue Bench seeks consultation around the development of research plans to assess the impact of Blue Bench services as on client outcomes. Students will be randomly assigned to a workgroup for the purposes of the CRP. Each group will be required to accomplish the following: Design a research approach to test the impact of the Blue Bench services on outcomes relevant to the agency.

The CRP will be divided into several steps:

1. Your group will prepare a draft proposal that will be submitted to your peers for review;
2. You will individually conduct a review of the other group’s proposal in a mock grant review panel;
3. Your group will present your grant proposal to a community panel, which will include our community partner. This will provide an opportunity for you to get feedback from your consultation client before finalizing your proposal. We will ask the panel to vote to fund one of the proposals (with pretend money).
4. Each group will submit a single, co-authored proposal. Assuming the quality of the final product is adequate, this proposal will be delivered to community partners. [Note: The community partner will not know the grade attained for the proposal.]

The collaborative assignments in the CRP require input from all group members. Individual grades for this assignment will be a combination of points from two sources: 1.) overall points for the assignment; 2.) individual contribution points. For the latter, each group member will submit a score sheet to the Instructor rating each group member's contributions to the project. The Instructor will use this information, combined with her own classroom observations, to assign individual contribution points.

Problem Sets

Problem sets will be distributed in class to provide opportunities to apply course concepts. Unless otherwise announced in class, problem sets are due at the start of the next class. Problem sets are relatively short assignments designed to be responsive to course content, discussions, and questions. For planning purposes, imagine you will have a problem set assigned after each class – and then enjoy the feeling of extra time when that is not the case. Unless otherwise noted, problem sets are graded as check-plus (excellent), check (acceptable), or check-minus (unacceptable), earning 5, 4, or 2 points respectively. Failure to submit a problem set results in 0 points. Late problem sets are docked one grading level (a check-plus becomes a check).

Exams

You will have two take-home exams that you are expected to complete without books, notes, or assistance from the Internet, computers, other people, or other sources not listed here. Exams are cumulative, but will emphasize more recent material.

Late Assignments

For every day that work is late, you will be docked 10% of the grade that you earned. Submitting work late on the day that it is due is considered 1 day late; submitting work the day after it is due is considered 2 days late; and so forth. **Late assignments for the Final Presentation or Final Proposal will receive zero points.**

Accommodations will be made for late work only in cases of excused absences. If you have a planned absence (e.g., for a religious holiday), you must make arrangements to complete work that is due during your absence with the Instructor in advance. For information about making up work following health-related absences, see Health-related Absences below.

Re-Grades

If you disagree with a grade, you may submit a request for a re-grade in writing. Your request should state the reason for which you believe the assignment was graded incorrectly. Following your request, I will re-grade the whole assignment (and not just the point you think was missed); thus, your score may go up or down.

Course Attendance:

You are expected to attend all class meetings. Three or more unexcused absences are grounds for automatic failure of the course. Excused absences include those for which you receive prior approval from the Instructor (e.g., related to religious holidays, participation in DU-sponsored athletic events) or those that are health-related (see Health-related Absences below).

Health-related Absences:

If you take a health-related absence, you are expected to complete all relevant assignments within 48 hours of the due date. If you cannot meet this deadline, you need to email the Instructor to request an extension within that 48 hour period. Your email must include the reasons that you need more than 48 hours to complete the assignment as well as a proposed, revised due date. It is your responsibility to arrange to get copies of class notes from someone in the class for the day(s) that you missed class. I would be happy to recommend supplemental readings related to the classes that you missed to help you catch up. If you are too ill to return to class and miss more than three course meetings, this may be sufficient grounds to assign a grade of

"I"/incomplete; the Instructor will discuss this with students on a case-by-case basis. Should you be absent for a prolonged period, you should familiarize yourself with DU policies regarding course withdrawals/incompletes, medical stop-outs, tuition refund policy/appeal, and academic exceptions.

You are not required to show a doctor's note to claim a health-related absence from class. Thus, you are on your honor not to abuse this policy. **Abuse of this policy will be taken seriously and may be treated as academic misconduct.**

I hold myself to the same standards for health-related absences. If I have to cancel class for health-related reasons, I will do three things to notify you: 1.) email your @du.edu email account through CANVAS; 2.) post an announcement on CANVAS; and 3.) request that a note be placed on the door to our classroom indicating that class is cancelled. You are expected to check your @du.edu email account regularly.

Academic Honesty

All work submitted in this course must be your own and produced exclusively for this course. The use of sources (ideas, quotations, paraphrases) must be properly acknowledged and documented. For the consequences of academic dishonesty, refer to the University of Denver website on Academic Integrity (<http://www.du.edu/honorcode/studentprocedure.htm>). Violations will be taken seriously. If you are in doubt regarding any aspect of these issues as they pertain to this course, please consult with the instructor before you complete any relevant requirements of the course.

Students with Disabilities

If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet with the instructor soon. Also please request that the Disability Services Program send a letter verifying your disability [contact the Disability Services Program (DSP) at 303-871-2372 or via <http://www.du.edu/car/uap/>].

Additional Notes:

Throughout this course, we will seek to engage in critical analysis of issues related to the study of psychology. In so doing, we will discuss topics that are intellectually challenging. All participants in this class will be expected to respect each other's opinions and be professional in all communications. We will be focusing especially on critical thinking and the evaluation of research design issues. Many psychology courses provide a time for students to reflect on their own thoughts, feelings and behavior as we examine theories about humans' thoughts, feelings and behavior more generally. If you find you need support or counseling during this course, please be sure to pursue that external support by seeking out a supportive friend, counselor, and/or a social service. The other class members and the instructor cannot fulfill that function in a class this size and with the mission of an academic experience.

This syllabus is subject to change. Changes will be announced in class and posted on CANVAS. It is your responsibility to keep up with changes to the syllabus.

Readings and Assignments

Date	Topic	Readings	Due/Activities
9/8	Course Introduction: Research and Public Good		<i>Problem Set 1 Assigned:</i> IRB webcourse and exam at http://www.du.edu/orsp/instructions.html .
9/10	History and Systems: Philosophy of Science	Ferguson & Heene, 2012 Miller, 2010 O'Meara, 2009	
9/15	Drawing Valid Inferences: Validity	Anderson, Lindsay, & Bushman, 1999 Sue, 1999 Mitchell, 2012	
9/17	Research Consultation: Meet your Community Partner Ethics	Belmont Report at http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.htm Newman & Kaloupek, 2009	<i>Problem Set 1 Due:</i> Complete IRB webcourse and exam at http://www.du.edu/orsp/instructions.html . Submit confirmation sheet as evidence successfully completed training.
9/22	Drawing Valid Inferences: Validity	Kazdin, Chapter 3 & 4	
9/24	Drawing Valid Inferences: Reliability	Rogler, 1999	
9/29	Measurement, Test Construction, Item Selection	Kazdin, Chapter 13 Schwarz, 1999	
10/1	Experimental Designs	Kazdin, Chapter 8 Gardner, 2000	
10/6	Quasi-experimental and Observational Designs	Shadish & Ragsdale, 1996 Kazdin, Chapter 9	
10/8	Single Case and Qualitative Designs	Kazdin, Chapter 12	
10/13	Sampling	Chadiha et al., 2011 Karney, Kreitz, Sweeney, & Ganong, 2004	
10/15	Bridging Method Decisions with Approaches to Data Analysis	Wampold et al., 1990 Loftus, 1996 Rodgers, 2010	Midterm Exam Distributed
10/20	Describing Data	Supplemental: Behrens, 1997	Midterm Exam Due
10/22	Statistical Significance	Kazdin, Chapter 15	
10/27	Relationships between Variables	Kazdin, Chapter 16	
10/29	Differences Across Groups	Cumming & Finch, 2005	
11/3	Effect Sizes and Beyond	Chan & Arvey, 2012 Ferguson & Heene, 2012	Proposal Drafts to Review Committee
11/5	Review Panel		Proposal Review Panel
11/10	Coming Full Circle: Contemporary Issues at Intersection of Design and Philosophy	Cohen, 1990 Rodgers, 2010 Bakker et al., 2012	

		Pashler & Harris, 2012	
11/12	Reporting to Consultation Partners		Presentation to Community Panel Final Exam Distributed
11/16	Final Proposal and Final Exam Due by 2 p.m.		

Articles

- Anderson, C. A., Lindsay, J. J., & Bushman, B. J. (1999). Research in the psychological laboratory: Truth or triviality? *Current Directions in Psychological Science*, 8(1), 3-9. doi: 10.1111/1467-8721.00002
- Behrens, J. T. (1997). Principles and procedures of exploratory data analysis. *Psychological Methods*, 2(2), 131-160. doi: 10.1037/1082-989X.2.2.131
- Chadiha, L. A., Washington, O. G. M., Lichtenberg, P. A., Green, C. R., Daniels, K. L., & Jackson, J. S. (2011). Building a registry of research volunteers among older urban african americans: Recruitment processes and outcomes from a community-based partnership. *The Gerontologist*, 51, 106-S115. doi: 10.1093/geront/gnr034
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- Cumming, G., & Finch, S. (2005). Inference by eye: Confidence intervals and how to read pictures of data. *American Psychologist*, 60(2), 170-180. doi: 10.1037/0003-066X.60.2.170
- Ferguson, C.J. & Heene, M. (2012). A vast graveyard of undead theories: Publication bias and psychological science's aversion to the null. *Perspectives on Psychological Science*, 7, 555-561. doi: 10.1177/1745691612459059.
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- Mitchell, G. (2012). Revisiting truth or triviality: The external validity of research in the psychological laboratory. *Perspectives on Psychological Science*, 7(2), 109-117. doi: 10.1177/1745691611432343
- Newman, E., & Kaloupek, D. (2009). Overview of research addressing ethical dimensions of participation in traumatic stress studies: Autonomy and beneficence. *Journal of Traumatic Stress*, 22(6), 595-602.
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- Pashler, H. & Harris, C.R. (2012). Is the reliability crisis overblown? Three arguments examined. *Perspectives on Psychological Science*, 7, 531-536. doi: 10.1177/1745691612463401.
- Rodgers, J. L. (2010). The epistemology of mathematical and statistical modeling: A quiet methodological revolution. *American Psychologist*, 65(1), 1-12. doi: 10.1037/a0018326
- Rogler, L. H. (1999). Methodological sources of cultural insensitivity in mental health research. *American Psychologist*, 54(6), 424-433. doi: 10.1037/0003-066X.54.6.424
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- Sue, S. (1999). Science, ethnicity, and bias: Where have we gone wrong? *American Psychologist*, 54(12), 1070-1077. doi: 10.1037/0003-066X.54.12.1070
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