

Tuesdays 4:30pm – 7:15pm @ EDUC 130

Instructor: Rick A. Cruz Ph.D.

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Required Text:

Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed methods approaches* (4th ed.). Los Angeles: Sage.

Other Required Reading: Please see pages 11-13 of syllabus for required non-textbook readings on syllabus. These will be posted to Canvas.

Expectations: This syllabus is a contract between you (the student) and me (the professor). We are both expected to adhere to what is written in this document. In order to achieve the grade you want please be aware of what is expected of you. It is possible there might be changes to the syllabus and/or course schedule to create an adaptive and optimal learning experience, but I will give you advance notice of those changes.

Learning opportunities will occur via lectures, class activities and discussion, reading of the assigned texts, and the development of a research proposal portfolio. This class will be conducted in a mixed didactic/seminar format. Therefore, it will be less formal and you will be expected to assist in helping the class move forward. All students will be expected to have read all assigned material prior to class, have prepared questions and/or other topics to discuss prior to class, participate in class discussions and activities, and have all assignments completed on time. Additionally, students will be expected to work collaboratively in pairs/groups both in and outside of class. It is also expected that you will interact with your classmates and your instructor in a respectful and professional manner. That includes using technology (your laptop, tablet, smartphone) in a professional manner.

Course Description and Objectives: The goal of this class is to provide a graduate level introduction to methods and design in psychological and educational research. These goals map on to key learning objectives:

Key Learning Objective	IDEA Objective	Mechanisms to achieve objective
(1) Demonstrate knowledge of research design and key methodological issues (e.g., validity, randomization, causal inference)	#1: Gaining factual knowledge (terminology, classifications, methods, trends)	-readings --in-class discussions -class presentations -research method portfolio
(2) Gain familiarity with principles of research design, causal inference, research writing and scientific epistemology.	#2: Learning fundamental principles, generalizations, or theories	--readings --in-class discussions -class presentations -research method portfolio

(3) Develop scientific/critical thinking skills and perspective; develop competencies in synthesizing research literature and developing a research proposal.	#4: Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course	--readings --in-class discussions -class presentations -research method portfolio
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Specific Learning Outcomes

1. Critically read published empirical studies to:
 - a. Identify the authors’ research questions or objectives.
 - b. Describe the study’s design and methodology
 - c. Summarize the authors’ conclusions.
 - c. Identify the major threats to internal, external and construct validity and judge the appropriateness of the authors’ conclusions in light of those threats.
 - d. Suggest improvements in design of critiqued studies to remedy the perceived threats to validity

2. Begin a systematic review of the literature for the purposes of (a) identifying research questions related to a student selected topic, (b) describing the strengths and weaknesses in previous studies on the topic, and (c) delineating methodological issues to be resolved in designing a study in the area of the student’s topic. These skills will include the ability to:
 - a. Examine and critique previous studies.
 - b. Write an introduction for the review.
 - c. Write objectives for the review.
 - d. Obtain articles/studies to be reviewed.
 - e. Develop a framework and instrument for coding the studies.
 - f. Systematically read studies and synthesize information to inform problem statement.
 - g. Interpret and report results of review.
 - h. Write a problem/purpose statement based on your review, to inform your research proposal.

3. Construct a research proposal
 - a. Describe the elements of a research proposal.
 - b. Use APA or other professional Publication Guide when writing proposal.
 - c. Develop specific aims and hypothesis for your research proposal
 - d. Define and assess independent as well as dependent variables.
 - e. Demonstrate understanding of at least one research design/methodology as demonstrated from by your research proposal’s method section
 - f. Demonstrate understanding of the relationships among hypotheses, measures, and analysis procedures in a research proposal (quantitative)
 - g. Demonstrate understanding of qualitative data gathering methods, researcher reflexivity, and qualitative data analysis

4. Sampling and random assignment: Define target and accessible populations and explain the importance of both random sampling and random assignment for group experimental designs.

5. Understand the issues related to collecting research data using tests, questionnaires, interviews, observation, and content analyses.
6. Understand test/measurement validity and reliability and the importance of those concepts when conducting research.
7. Describe the methods and utility of:
 - a. Randomized experimental studies
 - b. Quasi-experimental studies
 - c. Time series designs
 - d. Regression discontinuity designs
 - e. Single case designs
 - f. Qualitative research
 - g. Mixed-methods research
9. Understand the differences between descriptive and inferential statistics.
10. Understand the difference between statistical and practical significance including:
 - a. The meaning of statistical significance
 - b. Measures of effect size
11. Understand the ethical, legal, and practical issues in educational/psychological research

Learning Activities

Participation (attendance, reading questions and answers, and in-class participation):

Participation probably does not need to be required in graduate school. You all are (or should be) interested in these topics. Nevertheless, to be fair and predictable, objective guidelines will be set so that you know how and why you receive the points that you do. It is possible to earn 60 points for participation for this course. You can earn **6 points** for each class period:

Reading and Discussion

You will receive three points each week for submitting **one to two questions** on the readings. The questions should be posted to Canvas discussion board and they are **due by 5pm on Monday each week**. These questions should facilitate discussion for the class.

You can receive one point for responding to at least one question posed on Canvas. (I will give extra points for those students going above and beyond in their responses- in terms of quality and frequency of responding). Your responses to your classmates' questions are **due by 2pm on Tuesday each week**. These responses should promote additional in-class discussion.

In-class participation

You can earn up to 2 points for contributing meaningfully to the class discussion and activities. If you are shy or having trouble speaking in class, please talk to me individually.

If you do not say anything or are not engaging in paired/group collaborative feedback process, you will not receive the in-class participation point.

In Class Presentations

Presentations represent an important part of communicating research findings and ideas. This presentation assignment is designed to give you practice with presenting and constructive feedback to help you develop your presentation skills.

1. **Research project proposal presentation:** Students will present their research project proposal in class towards the end of the semester, and answer questions posed by classmates. Students will be evaluated by their peers (and their instructor) on a rubric provided by the instructor.

Research Methods Portfolio

One of the main aims of this course is to provide students with an opportunity to develop their understanding of the research process and their critical thinking skills via the completion of a research project proposal. You will have the opportunity to generate a research portfolio that will break the initial parts of your research project proposal down into smaller, more manageable tasks, including your research question, literature review plan, coding sheet. You will combine those elements to form the background and purpose statement of your proposal. You will also propose a study in your topic area and generate a method section. You will have a chance to receive feedback from your classmates before submitting assignments, and you will receive peer evaluations on your proposal. You will integrate peer feedback before submitting a revised version- the instructor will evaluate the revised draft of your full proposal (due Week 12), and you will have a chance to revise your submission based on feedback (due Finals week). All of these materials (plus your proposal presentation) should be uploaded to your personalized Box research portfolio that I will share with you.

The following elements will make up your research methods portfolio:

1. Research Topic and Question: For this assignment, students are required to submit their initial proposed research topic and question. This should be submitted as a **one to two page word-document** that includes (a) the preliminary title of their research proposal, (b) 1-2 research questions, (c) a statement about the *significance* of the research, describing why the topic is important and relevant, and (d) references for 2 topic-related, peer-reviewed research articles. Assignment should be uploaded to Box portfolio on or before due-date.

2. Literature Review Plan/Method Section: The literature review plan is tied to your problem statement. Each student will write a 1-2 page introduction to their literature review that details the method for their literature search. This document will include at least 2-3 literature review objectives, the sources to be examined (e.g., PsycInfo, ERIC, PubMed, google scholar, etc.), specific keywords to be used, and inclusion/exclusion criteria for studies reviewed. The studies to be reviewed should all be from peer-reviewed academic journals. Assignment should be uploaded to Box portfolio on or before due-date.

3. Annotated Bibliography (2 articles): An annotated bibliography provides one way to systematically summarize studies that you are including in your literature review. You should complete an annotated bibliography for at least 2 articles that you are including in your literature review. Each entry should begin with the APA formatted reference for the article. The entries for each article should be 1-1.5 paragraphs long, and should summarize the problem/purpose, the method and design, key results, and the significance/implications of the study. The assignment should be uploaded to your Box portfolio by the due-date.

4. Coding sheet and Table: Students will develop a coding scheme to organize, analyze and synthesize information on relevant characteristics and variables in the articles for their literature review. These characteristics should include at least three major categories, including (a) sample characteristics, (b) research design characteristics, and (c) research outcomes/findings. Students will apply their coding scheme to at least 3 articles collected during their systematic literature search, and present the data from those articles in a coding table (landscape format). The coding table should be submitted as a word document or excel document. Assignment should be uploaded to your Box portfolio by the due-date.

5 & 6. Research project proposal paper: This document combines three sections (your lit review/introduction, purpose statement/“current study section”, and method section) into your full research project proposal. Your final document should be a **maximum** of 7 pages in length (double spaced, APA format, 1 in. margins, Times New Roman font). Your full proposal should also include references, figures, tables, and any appendices, which will not be counted in the 7 page limit. Final assignment should be uploaded to Canvas (and Box portfolio) by due-date.

a. literature review and purpose statement: The literature review introduces the students' proposed research topics, and provides a narrative summary and synthesis of the relevant literature. This literature review will then lead directly into the purpose statement for the proposed study. A well-developed literature review and proposal introduction does not simply regurgitate the method and findings from single studies in sequence, but is well-organized and offers a synthesis of the state of the literature/science in that given topic area. The literature review and purpose statement should be between 3-4 pages in length (double spaced, APA format, 1 in. margins, Times New Roman font). This will be combined with the method section, and should be uploaded to Canvas (and Box portfolio) by due-date.

b. method section: The method section should cover research design, including sampling and participant characteristics; study procedures, including description of your intervention/manipulation or qualitative design, measures used (questionnaires, performance measure, etc.), and proposed analytic procedure. Since some of you may not have had a graduate level statistics class at this point, you will work with your instructor to develop the analytic section. Please also include figures to illustrate your study design, or proposed analytic procedure (e.g., path analysis). Final assignment should be uploaded to Canvas (and Box portfolio) by due-date.

7. Science Writing Center: The USU Science Writing Center is designed to help students improve their writing skills. You are asked to schedule a meeting with the science writing center

to get feedback on your developing research proposal, and document your visit with a ½ page to full page reflection on what you covered, what you learned, and your goals for developing your writing skills.

8. Peer reviews: An important part of psychological and educational research is the peer review process. For the research proposal assignment, you will provide constructive critical feedback to two classmates to be uploaded to Canvas. Peer reviews should also be uploaded to Box portfolio at the time of final portfolio submission.

Formatting: All documents (including peer reviews) should be uploaded as word documents (.doc or .docx extensions) to Box and Canvas with the following document formatting: APA style, 1-inch margins, 11-12pt Times New Roman font, double spaced. The one exception is the coding table excel spreadsheet does not have specific formatting requirements.

Exams

There will be two exams that will be administered in class. The second exam is cumulative. Questions will be a mixture of multiple-choice, fill-in-the-blank, and short-answer. Makeup exams will only be offered in cases of documented emergencies.

Grades

Grade summary:

Your grade will be based off four areas: participation in class (attendance, discussion, and reading), presentations, your research portfolio, and exams.

Grading Areas	Points Possible
Participation (6 points per class period * 12 class periods)	72
Extra points for discussion questions and responses	8
Presentation	
1. Research proposal presentation	60
Research Methods Portfolio (final product)	
1. Research Topic and Question(s)	20
2. Literature Review Plan	20
3. Annotated Bibliographies (2 * 5 points apiece)	10
4. Coding sheet and Table	20
5. First draft of proposal for peer review	100
6. Final research project proposal paper	100
7. Science Writing Center visit	20
8. Peer reviews (25 pts * 2)	50
Exams	
1. Exam 1	60
2. Exam 2	60
Total	600

Scores will not be curved and the scores that you earn will result in your final grade. Your final grade is determined by summing your scores and dividing by the total points possible. All grades will be rounded to the nearest whole number. The following grading scale will be used in this class:

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

Late assignments: All assignments are due **prior to the beginning of the class period on the dates listed below** (either submitted to Box portfolio, or uploaded to Canvas). Both Box and Canvas uploads provide a timestamp, which is what I will use to determine whether the assignment is late. I will deduct 10% of the points (per day) for assignments turned in after the deadline. This policy applies except in the case of a properly-documented emergency. If you provide documentation of an emergency that precluded you turning in the assignment in on time and I approve you turning in your assignment late, you must contact me to make the necessary arrangements to submit at a later day/time.

USU Incomplete Policy (Executive Memorandum 79-15): A student who has been unable to complete the work of course assignments, examinations, or reports due to extenuating circumstances such as illness, death in the family, etc. - but not due to poor performance of his/her work - and who has completed most of the coursework, may petition the instructor of the course for time beyond the end of the quarter to finish the work. If the instructor agrees, the instructor will place two grades on the final grade list for the student, an "I" and a letter grade for the course computed as if the missing work were zero. The student is then required to complete the work in the manner and by the time agreed upon with the instructor, but, in any case, within 12 months of the end of the quarter in which the "I" was given. When the grade change is submitted by the instructor within the prescribed time, both the "I" and the grade submitted with the "I" will be removed from the student's record, the new grade placed on the record, and the GPA adjusted accordingly. If no change of grade is submitted by the instructor within the prescribed period, the "I" will be removed and the grade submitted with the "I" will remain as the permanent grade for the course. Research and thesis courses taken for graduate work are exempted from this policy

Academic Integrity: In accord with Article VI of the Student Code of Conduct for Utah State University, academic dishonesty, including cheating, falsification, and plagiarism, the use of second-hand materials retrieved via internet or other sources, or other dishonest practices, may result in failing grade for the course and other procedural responses. Please read the full policy at: <http://www.usu.edu/studentservices/studentcode/article6.cfm>

Disability Resource Center Statement

Students with Americans with Disabilities Act (ADA)-documented physical, sensory, emotional or medical impairments may be eligible for reasonable accommodations. Veterans may also be eligible for services. All accommodations are coordinated through the Disability Resource Center (DRC) in Room 101 of the University Inn, (435) 797-2444. Please contact the DRC as early in the semester as possible. Alternate format materials (Braille, large print, digital, or audio) are available with advance notice.

Inclusion Statement

No student is permitted to create a threatening, intimidating, or harassing environment in this course. Classroom civility is a part of the Student Code, and infractions will be pursued through the Student Conduct Coordinator. This course will be conducted in a safe and tolerant environment, and any person who detracts from that environment will be instructed to leave without the ability to make up coursework.

Assignments due in a given week are underlined. *Assignments that we may have the opportunity to work on in class are italicized.* See syllabus pp. 11-13 for required non-textbook readings.

Module	Topic	Assignment
1) Aug. 28	Introduction to Research Methods and Design: the research process;	In class: Instructor and student introductions; review syllabus;
2) Sep. 4	Research and ethics; question and hypothesis development	Reading: Glesne (2010). Paradigms of research. (25 pages) Stuchbury & Fox (2009). Ethics in educational research. (16 pages) Creswell Chapter 7. Question and hypothesis development. (15 pages) Read Section 8 of APA ethics code on Research and Publication http://www.apa.org/ethics/code/index.aspx In class: Discussion 1; <i>Draft and workshop research topic/questions.</i>
3) Sep. 11	Systematic review and meta-analysis: A focus on the literature review	Reading: Winkler et al. (2013). Treatment of internet addiction meta-analysis (12 pages); OR Sharma & Rush (2014). Mindfulness-Based Stress Reduction systematic review. (16 pages) AND Creswell Chapter 2. Literature Review. (26 pages) Due: research topic/question draft to workshop In class: Discussion 2; <i>workshop research topic/questions</i>
4) Sep. 18	Internal, external, and construct validity; Measurement considerations (psychometrics)	Reading: Onwuegbuzie, Bustamante, & Nelson (2010). Developing quantitative instruments. (22 pages) Borsboom, Mellenbergh, & Heerden (2004). The concept of validity. (11 pages) Due: <u>Research topic/questions</u> In class: Discussion 3; <i>Draft literature search plan</i>
5) Sep. 25	Sampling; Summarizing and Interpreting data; effect sizes	Reading: Robinson (2014). Sampling in qualitative research. (15 pages) Jackson et al. (2004). Random sampling methods. (9 pages) McBride Chapter 7. Summarizing and interpreting data. (22 pages) Due: <u>Literature Search Plan</u> In class: Discussion 4; <i>Draft annotated bibliography</i>
6) Oct. 2	Random assignment: Experimental and quasi experimental designs; causal reasoning and threats to validity	Reading: Kang, Ragan & Park (2008). An Overview of Randomization Techniques for Clinical Trials (7 pages). Creswell Chapter 8. Quantitative methods and threats to validity. (27 pages) Due: <u>Annotated bibliography (2 articles)</u> In class: Discussion 5; <i>Develop coding scheme for literature review</i>

7) Oct. 9	Time series designs; Regression discontinuity designs	Reading: Biglan (2000). Interrupted time series experiments. (18 pages). Lesik (2006). Regression-discontinuity example (19 pages). Due: <u>Coding scheme and coding table (at least 3 articles)</u> In class: Discussion 6; midterm overview
8) Oct. 16	Exam 1	In class: Exam 1
9) Oct. 23	Single Case designs	Reading: (Choose any two of the following readings)- Horner et al., 2005; Plavnic & Ferreri, 2013 Smith, 2012; Fallon et al., 2015 Due: <u>Draft of proposal to workshop (not graded)</u> In class: Discussion 7; <i>workshop research proposal</i>
10) Oct. 30	Qualitative research methods	Reading: Mertens Ch. 8. Qualitative methods (37 pages) Leech & Onwuegbuzie (2008). Qualitative data analysis methods. (17 pages) Due: <u>Science Writing Center visit and feedback</u> In class: Discussion 8
11) Nov. 6	Mixed methods research	Reading: Palnikas et al. (2011) Mixed method design in implementation research. (11 pages). Suldo et al. (2009). Mixed method investigation of teacher support and student well-being. (18 pages) Due: <u>Proposal Draft for peer review (graded)</u> In class: Discussion 9
12) Nov. 13	Emerging trends in research: Replication, open science	Reading: Ioannidis (2014) How to make more published research true Due: <u>Peer review of proposals</u> In class: Discussion 10 (We might also use this day for individual research presentations)
13) Nov. 20	Research Presentations	Instructor comments/evaluation returned for full proposals In class: Presentation Discussion 1
14) Nov. 27	Research Presentations	In class: Presentation Discussion 2
15) Dec. 4	Exam 2	In class: Exam 2
16) Dec. 11 by 9am	FINALS WEEK (Tuesday Dec. 11 by 9am)	Due: Proposal Final Draft and Full <u>Research Portfolio (graded)</u> (final products uploaded in Box)

References

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- Plavnick, J. B., & Ferreri, S. J. (2013). Single-case experimental designs in educational research: A methodology for causal analyses in teaching and learning. *Educational Psychology Review, 25*(4), 549-569.
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See also:

A Graduate Student's Guide to Determining Authorship Credit and Authorship Order APA Science Student Council 2006

<http://www.apa.org/science/leadership/students/authorship-paper.pdf>