

Spring 2-1-2018

# PSYX 521.01: Advanced Psychological Statistics II

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# PSYX 523 – Research Design

## Spring 2018

Skaggs Room, 303; Monday/Wednesday 9:30-10:50 am

## Contact Information

**Instructor:** Nathan Insel, Ph.D.

**Email:** nathan.insel@umontana.edu

**Office Hours:** Skaggs Rm 362, Mon. & Tues. 2:15-3:30 and by appointment

## Course Description

This course concerns the logic of causal inference in social science research. We can gain knowledge about the world by applying the scientific method, but there are many pitfalls in how we use experiments and observation to make inferences about cause and effect relationships. This class will primarily focus on those pitfalls, and how experiments can be designed to minimize errors in our inference. Although this class may cover some basic principles of using statistics and how to decide on experimental sample sizes (power analyses), it is not intended to be a statistics or data analysis course. Instead, the aim is to convey the logic behind research methods, and the different problems that can limit conclusions when using these tools.

More than anything else, ***this class is designed to help prepare you for your own research projects.*** While we will be covering the ideas presented in the textbook, the primary emphasis will be to make progress on preparing you for your own specific research projects. Many of you will be starting this course without a concrete research plan, but now is the time to develop one. By the end of the class you will be expected to have drafted a written proposal of your research (for many of you, this will be your Master's project) and to present these to your classmates.

## Reading Material

- Research Design in Clinical Psychology, fifth edition (Kazdin)
- Selected readings on Moodle (see reading schedule for full citations)

## Course Evaluation

In this class you will be learning from the readings, the presentations you give to one another, your research report, and the discussions that you participate in. The breakdown of your final grade will be as follows:

- Presentation/discussion leader of reading materials (15% of final grade)
- Participation (25% of final grade)
- Written reports (30% of final grade)
- Oral presentation of hypotheses & plan for design (15% of final grade)
- Oral presentations of hypothesis (15% of final grade)

## Presentation of reading materials

Each student will be responsible for briefly (~30 min) summarizing the main points of the chapter they are assigned to, and also leading, with the help of the instructor, a class discussion about the topics of that chapter. The summaries do not have to be creative or exciting, but they should clearly

explain the most important ideas and terms from the chapter. You can use Powerpoint slides but this is not required.

### **Participation**

Each class will include discussion on the readings. This can, and often should, include how the material from the readings applies to your own proposed research projects. Participation in this discussion can take many forms. Ideally, I would like you to send one or two questions (or comments) about the reading before the start of class. These can be sent to me as well as the presenter for the week. It is not necessary to send questions or comments; however, if you do not send questions/comments that substantively address the concepts of the chapter, then you will very likely be called-upon to explain or discuss these concepts during class.

Participation during a given class period will not receive a letter grade, it will instead be marked as "credit" or "no credit" and credits will be tabulated at the end as a percentage.

### **Research Proposal & Presentation**

The research proposal will consist of a literature review, statement of hypothesis with justification, proposed research design and methods (including subjects, apparatus/materials, and procedure), proposed statistical analysis, and interpretation of hypothesized and alternative results. The proposal **MUST** adhere to APA format. The process for writing the paper will be formally scripted in 7 steps (see class schedule below for due dates):

- 1) Choose a topic and present rationale for your interest
- 2) Preliminary literature search: Generate brief (~3-5 sentence) summaries of 6 critical articles and hand-in the summaries and a copy of the abstract for each article to the instructor
- 3) Submit rough draft of literature review. This should be at least several pages in length.
- 4) Present for discussion your hypothesis and proposed research design & analysis
- 5) Submit rough draft of hypothesis, methods and results
- 6) Present entire proposal in class
- 7) Hand in final paper to the instructor (20 page maximum plus references)

## **Course Policies**

### **General**

Success in this class will depend on your attendance. I understand there will be circumstances beyond your control that, on occasion, will require you to leave class early or be absent. Please plan accordingly by notifying the instructor before class. You should always feel free to ask any questions in class. Also, please feel free to see the instructor about any classroom issue during office hours.

### **Drop Date**

Policies on dropping can be found online on the [Registrar's webpage](#). Beginning the 46<sup>th</sup> instructional day of the semester through the last day of instruction before scheduled examinations, students must petition to drop.

### **Academic Misconduct**

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the [Student Conduct Code](#).

## Disability Modifications

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and [Disability Services for Students](#) . If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or call 406.243.2243. I will work you and Disability Services to provide an appropriate modification.

## Course Outline

Date	Topics	Assigned reading	Presenter
Jan 22 <sup>nd</sup> & 24 <sup>th</sup>	Overview of course, research design, replication crisis	Kazdin Chapter 1  Open Science Collaboration (2015). Estimating the reproducibility for psychological science. <i>Science</i> , 349, 1-7.	Nathan Insel
Jan 29 <sup>th</sup> & 31 <sup>st</sup>	Threats to validity	Kazdin Chapters 2 & 3	Nathan Insel
Feb 5 <sup>th</sup>	Beginning the research process	Kazdin Chapter 4 <b>Deadline: choose proposal topic and present rationale for interest</b>	1
Feb 7 <sup>th</sup>	Experiments using group designs	Kazdin Chapter 5	2
Feb 12 <sup>th</sup>	Control groups	Kazdin Chapter 6	3
Feb 14 <sup>th</sup>	Case-control and cohort designs	Kazdin Chapter 7 <b>Preliminary literature search assignment due</b>	4
Feb 19 <sup>th</sup>	Single-case research designs	Kazdin Chapter 8	5
Feb 21 <sup>st</sup>	Qualitative research methods	Kazdin Chapter 9	6
Feb 26 <sup>th</sup>	Measures part 1	Kazdin Chapter 10	7
Feb 28 <sup>th</sup>	Measures part 2	Kazdin Chapter 11 <b>Draft of lit. review due</b>	8
Mar 5 <sup>th</sup>	Special topics in assessment	Kazdin Chapter 12	9
Mar 7 <sup>th</sup>	Data evaluation part 1: null hypothesis significant testing	Kazdin Chapter 13	Nathan Insel
Mar 8 <sup>th</sup>	Data evaluation part 2: presenting and analyzing data	Kazdin Chapter 14	10
Mar 14 <sup>th</sup>	Data evaluation part 3: cautions, negative effects, and replication	Kazdin Chapter 15	11

Date	Topics	Assigned reading	Presenter
Mar 19 <sup>th</sup>	In-class presentations of hypothesis & proposed research design & analysis	<b>In-class presentations of hypothesis &amp; proposed research design &amp; analysis</b>	----
Mar 21 <sup>st</sup>	In-class presentations of hypothesis & proposed research design & analysis	<b>In-class presentations of hypothesis &amp; proposed research design &amp; analysis</b>	----
Mar 26 <sup>th</sup> & 28 <sup>th</sup>	<b>SPRING BREAK: NO CLASS</b>		
Apr 2 <sup>nd</sup>	Ethics	Kazdin Chapter 16	Guest lecture: Laura Kirsch
Apr 4 <sup>th</sup>	Scientific Integrity	Kazdin Chapter 17	Guest lecture: Allen Szalda- Petree
Apr 9 <sup>th</sup>	Communication of research findings	Kazdin Chapter 18	Nathan Insel
Apr 11 <sup>th</sup>	New methodology	Kazdin Chapter 19 <b>Apr 15: Rough draft of hypothesis, methods, &amp; results due</b>	Nathan Insel
Apr 16 <sup>th</sup>	TBD	TBD	TBD
Apr 18 <sup>th</sup>	Formal paper presentations	<b>Formal paper presentations</b>	---
Apr 23 <sup>rd</sup>	Formal paper presentations	<b>Formal paper presentations</b>	---
Apr 25 <sup>th</sup>	Formal paper presentations	<b>Formal paper presentations</b>	---
Apr 30 <sup>th</sup>	Formal paper presentations	<b>Formal paper presentations</b>	---
May 2 <sup>nd</sup>		<b>Research paper due</b>	---