

PSYCH 220: RESEARCH DESIGN AND STATISTICS Winter 2016

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Time

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Lecture: MWF 9:00 – 9:50, SCC 147

Office: 155 Science Center

Lab: T 1:00 – 2:50, SCC 148

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Overview and Course Objectives

Welcome to research design! Although this appears to be a mild-mannered course designed to familiarize you with psychological science, it has a secret identity: it is ***The Employer's Dream Course!*** What skills do employers say they want in college graduates? Critical thinking, working in groups, project management, communication, quantitative analysis, and ethical reasoning. This course *can* give you all of those, but only if you put in the time and effort to own each one. As Morpheus said to Neo in *The Matrix*, "I can only show you the door. You're the one that has to walk through it."

Your mission in this course is to:

1. Obtain a broad knowledge base of research strategies and techniques.
2. Develop critical-thinking and research skills in the context of psychological questions.
3. Improve your ability to effectively communicate your ideas in writing and speaking.

It is my hope that this course will contribute to the mission of Hanover College by encouraging:

1. *Transformative inquiry*, by promoting a more scientific and skeptical way of approaching truth claims, especially in psychology.
 2. *Lifelong learning*, by showing you that you can answer empirical questions *yourself*, either by consulting primary sources or by conducting your own research.
- and
3. *Meaningful service*, by seeing how research can help to solve real-world problems.

Text

Readings for this course were written by me and can be downloaded from the course website. I also recommend (but do not require) the following text, which contains all of the standards for formatting a paper in APA style. If you are a psych major, this book is a good investment for

later course papers. You can also check out the book from the library and there are many helpful APA-style websites.

American Psychological Association. (2009). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.

Note: Ironically, the first printing of this book had many errors. Make sure you get the second printing.

Office Hours

Office hours are the great underutilized resource of the college experience. Looking back over his many years advising students, Richard Light (a Harvard professor) said that the greatest advice that he ever gave to his students was this: Every semester, get to know one faculty member. Please stop by to chat about the course, your plans for the future, or the mysteries of the universe. Talking with students is one of my favorite parts of this job.

This Document

This course description and syllabus describe the theme of the course as well as your responsibilities for the semester and how you will be evaluated. You should consider this document a contract between us – you the student and me the instructor. As with all contracts, you should examine this document carefully to be sure that you find it fair and reasonable. Your registration in this class beyond the drop deadline is your implied agreement to be held to the requirements stated in this document.

Grading

The table below shows the weight for each assignment toward the total grade.

Project	Assignments	
Brainstorm	1%	PsycINFO 2%
First hypothesis	1%	Citations & References 2%
Final hypothesis	1%	Main Effects & Interactions 2%
Human Subjects Application	1%	Career Strategies 1%
Pilot Study Report	1%	Stats 1 1%
Method Section	3%	Stats 2 2%
Intro Outline	2%	Stats 3 2%
Data Analysis Plan	1%	Stats 4 2%
Introduction Section	4%	Stats 5 3%
Poster Draft (emphasis on Abstract, Results, Discussion)	8%	Stats 6 3%
Poster	10%	Research Participation 3%
Oral Presentation	8%	
		First Exam 12%
Quizzes (drop lowest)	8%	Second Exam 16%
TOTAL		100%

Grades

Performance on assignments exists on a continuum from poor to outstanding. **Satisfactory** performance will result in a grade of 75%, **good** performance will receive a grade of 85%, and **truly exceptional** performance will receive a grade of 95% or above. Your final grade will be determined solely by the average you have earned by means of examinations, assignments, projects, and extra credit.

Cutoff values for letter grade interpretations are given below:

Grade	Cutoff	Grade	Cutoff
A	93.33%	C	73.33%
A-	90%	C-	70%
B+	86.67%	D+	66.67%
B	83.33%	D	63.33%
B-	80%	D-	60%
C+	76.67%	F	0%

Course Project

In this course, you will conduct a research project to test a hypothesis of your choice. You will develop the hypothesis, collect background readings, design the study, collect and analyze data, give an oral presentation, and present a poster describing your findings. Several days have been set aside for in-class project work. For each unexcused absence at these classes (one in which you do not notify me before the missed class), your final grade will be reduced by 1%. See the *Project Guidelines* handout for more details on the project.

Assignments

Throughout the semester you will be given several assignments, some to be completed in class and some to be turned in as homework. Those small-point assignments add up, so don't forget about them! Consult the schedule for deadlines.

Note: It will be common to consult with me during class on an assignment, especially a statistics assignment or the design of your oral presentation. When I tell you that an assignment "looks good," I am not implying that it is totally free from error nor that it cannot be improved. The quality of the work you submit is ultimately your responsibility – if I assume responsibility, then I am simply grading my own work.

Moodle

Almost all quizzes and assignments will be submitted electronically using Moodle, an online service available at moodle.hanover.edu. Moodle will have links to readings, online quizzes to take before you come to class (see the *Quizzes* section, below), and places to upload your presentation or word processing files when those deadlines approach.

Research Participation

Participation in the research process involves two activities: either participating in a study by Hanover psychology students or writing a brief report of a research article. To participate in a study, check the bulletin board outside of SC 147 for signup sheets. These sheets will list available times of studies and you can sign up for a time that fits your schedule. Bring a participation sheet (available on the course website) to the study and get the researcher's signature. After the study, complete the participation sheet and submit it to me in class. Some studies are available online, in which case you should print out the debriefing page in lieu of a signature and submit it with your participation sheet. If you opt for the brief report, choose an article from the journal *Current Directions in Psychological Science*, available in the library and through the library's website. At the beginning of each article is an Abstract, which provides a paragraph description of the article. Use the abstract to help you select an article that interests you. Read the article and write a 300-500 word (2-page) report on the article's main points and what you found interesting or personally relevant about the article. In your report, give the following information about the article: author(s), title, volume of journal, page numbers, and year. Your report must be completely in your own words, with no quotes or borrowed text from the article (especially not from the abstract). Keep in mind that I have electronic access to full-text versions of these articles. Please submit your extra credit report by emailing it to me. All extra credit is due on the last day of class. **Note: You cannot use participation in the same study or a report on the same article in more than one psychology class.** The credit you receive depends on the time commitment required:

Time Commitment	Credit
Online study: 0 to 15 minutes	0.25%
Brief in-person study (15-30 minutes)	0.5%
Long in-person study (31-60 minutes)	1%
Brief report of article	1%

So, you could receive the full 3% of research participation credit by:

- writing a brief report of 3 articles,
- participating in 3 45-minute studies, or
- writing a brief report of 1 article and participating in a combination of 4 online studies ($0.25 \times 4 = 1$) and 1 45-minute study.

Extra Credit

We will have an in-class review session before every exam. For each review session, you can receive extra credit by bringing in one question on a slip of paper with your name on it. For example, you might write “What is the difference between internal and external validity?”. If you bring in a question for the review session, it will make up for 1 incorrect answer on the next exam.

Late Penalties

Unless otherwise noted, assignments and quizzes due on a particular day must be completed on Moodle 5 minutes before the beginning of class on that day. This policy is designed to discourage students from being late to class to complete an assignment. Assignments turned in between the deadline and midnight of the due date will receive a –5% penalty. An additional –10% penalty will be added for each additional day (counted from the following midnights) late.

Plagiarism

Collaboration on assignments is encouraged. I want you to learn from each other. However, you must never simply copy another student’s work. One of the central goals of this course is for you to develop your *own* writing skills. On the assignments, *you must do your own writing*.

Plagiarism involves taking credit for someone else’s work. Typically, it occurs when someone copies another person’s writing and submits it as if it were his or her own. Plagiarism is one of the most serious breaches of trust in an academic environment. Evidence of plagiarism will result in a grade of 0 for the assignment, a lowering of your final grade by two letter grades, and a report to the Student Academic Assistance Committee. Make sure you give credit to your sources, placing direct quotes in quotation marks and providing a reference for quotes and ideas that are not your own. When in doubt, ask me.

Quizzes

Generally, you will have a quiz on the day we cover new material. They are designed to help you learn the material, are available on the course Moodle page, and are intended to be taken open-book. The quizzes are five questions in multiple-choice format. I will drop your lowest quiz grade in the calculation of your grade. The quizzes must be completed at least five minutes before the beginning of class on the day they are listed on the schedule. There are no make-up quizzes unless you have some kind of family or medical emergency or will be off-campus for a necessary college-sponsored event.

Exams

The first exam will include all the course content that we have covered up to the midterm. The second exam is cumulative and thus will include material from the first half of the semester. The exams are a combination of multiple choice and short answer/essay.

Special Arrangements

Students with physical or learning disabilities, who may require special arrangements for quizzes or exams, should contact me as early in the semester as possible so that I can make arrangements in advance.

Class Schedule

The following class schedule should be regarded as tentative and subject to change. Readings refer to articles that can be downloaded from the course website (e.g., "Ethics").

Date	Day	Topic	Deadlines	Read	Quiz
1/11/2016	M	Introduction			
1/12/2016	T	Lab: The scientific literature, PsycINFO		The Scientific Literature	1. The Scientific Literature
1/13/2016	W	Science & the Scientific Method		Science & the Scientific Method	2. Science
1/15/2016	F	Choosing a topic	Brainstorm assignment	Past projects on website	
1/18/2016	M	Qualitative and Quantitative Research	PsycINFO	Evaluating Research, Types of Research	3. Evaluating Research, Types of Research
1/19/2016	T	LAB: Stats 1 (entering & checking data)			
1/20/2016	W	Construct validity	First Hypothesis with 3 articles	Construct validity	4. Construct validity
1/22/2016	F	Internal validity	Stats 1	Internal validity	5. Internal Validity
1/25/2016	M	Measurement		Measurement	6. Measurement
1/26/2016	T	Lab: Stats 2 (Reliability)			
1/27/2016	W	Ethics	Final hypothesis with 5 articles	Ethics	7. Ethics
1/29/20	F	No class: Bill at SPSP			
2/1/20	M	No class: Bill at SPSP			
2/2/2016	T	Lab: Human Subjects Application			
2/3/2016	W	External Validity & Questionnaire Design	Stats 2 by end of class	1. External Validity, 2. Questionnaire Design	8. Ext val, ques
2/5/2016	F	Statistical inference	Human subjects application	Statistical Inference	
2/8/2016	M	Statistical inference			
2/9/2016	T	LAB: Stats 3 (2-group comparisons)^			9. Statistical Inference
2/10/2016	W	Writing the Method Section		Method Section	10. Method section
2/12/2016	F	Citations & References	Stats 3		
2/15/2016	M	Meet in lab: data analysis plan, outline of intro	(begin data collection)		
2/16/2016	T	LAB: Stats 4 (comparing more than 2 groups)^	Cites and Refs assignment		
2/17/2016	W	Career strategies		FAQ about Graduate School	
2/19/2016	F	Writing the Intro and Abstract	Method Section	Intro & Abstract Sections	11. Intro & Abstract
2/22/2016	M	Btw-Ss and W/in-Ss designs	Career strategies assignment	Btw-Ss and W/in-Ss designs	12. Btw and Within
2/23/2016	T	LAB: Stats 5 (correlation and dependent t-tests)	Data analysis plan		13. t-tests, ANOVA^
2/24/2016	W	Review for exam	Stats 4		

Date	Day	Topic	Deadlines	Read	Quiz
2/26/2016	F	First Exam	Outline of Intro		
2/29/20	M	Spring break			
3/1/2016	T	Spring break			
3/2/2016	W	Spring break			
3/4/2016	F	Spring break			
3/7/2016	M	Main effects & interactions		Main Effects & Interactions	14. Main effects and interactions
3/8/2016	T	LAB: Stats 6 (Factorial designs)			
3/9/2016	W	Main effects & interactions	Stats 5, (end data collection)		
3/11/2016	F	Writing the Results & Discussion sections		Results & Discussion Sections	15. Results & Discussion
3/14/2016	M	Threats to internal validity for repeated-measures designs	Main effects & Interactions assignment	Threats to internal validity for repeated-measures designs	16. Threats for repeated designs
3/15/2016	T	LAB: Introduction			
3/16/2	W	No class			
3/18/2016	F	Quasi-experimental designs	Stats 6	Quasi-experimental designs	17. Quasi-exp designs
3/21/2016	M	Review for exam	Introduction Section		
3/22/2016	T	LAB: Second Exam			
3/23/2016	W	How to give a good PowerPoint or Poster presentation			
3/25/2016	F	Meet in lab: work on poster			
3/28/2016	M	Meet in lab: work on poster			
3/29/2016	T	LAB: PPT draft	Poster draft		
3/30/2016	W	Meet in lab: PPT	End of class: PPT draft		
4/1/2016	F	Meet in lab: revise PPT			
4/4/2016	M	Practice oral presentations	Upload PPT to Moodle		
4/5/2016	T	Practice oral presentations			
4/6/2016	W	Meet in lab: Revise PPT, poster			
4/8/2	F	No class: Seniors at Butler URC			
4/11/2016	M	Meet in lab: Revise PPT, poster	Poster final draft		
4/12/2016	T	LAB: Oral Presentations	Upload final PPT		
4/13/2016	W	Oral Presentations			
4/15/2016	F	Poster Session			