PSYCH 212: Experimental Methods and Data Analysis II * Spring , 2016

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Office Hours: M & W 2:30 – 3:30pm and TU & TH 11:30 – 12:30
(or by appointment)

***NOTE: This syllabus is subject to change at the discretion of the instructor**

Course Overview:

This course is a direct continuation of PS211. This course focuses on scientific methodology as the means by which knowledge within the field of psychology (and others) is advanced. Students will learn about, and develop skills in employing principles of research methodology and statistical analyses, the main tools of the research psychologist. The course will be highlighted by the completion of the intensive individual independent research project begun in PS211 and a series of labs to introduce critical skills and knowledge regarding analysis and interpretation of data collected under a variety of experimental conditions and the use of various inferential statistics. We will continue to explore critical thinking and writing with major emphasis on scientific writing and American Psychological Association (APA) format.

Course Objectives:

1. To provide you with a thorough **knowledge base** in the scientific process, research methodology and the statistical tools used to summarize and interpret data, and the ability to use this knowledge to **make good decisions** regarding the choice and use of methodological and statistical principles.

2. To help you to understand the important **connection between research design and statistical analysis**, and the foundation they provide for real-world applications.

3. To appreciate the **critical, but limited role, of science** in helping us to understand our world.

4. To stimulate and challenge you to **think critically** and independently about the course material, and subsequently about information presented in studies and the media so that you will be educated consumers of knowledge. Specifically, to enable you to critique research studies.

5. To improve your **communication skills** (written, verbal, & listening) through various opportunities provided during the course. Particularly, you should develop greater skills in writing research reports in a "scientific" style, and in compliance with APA format.

6. To master the basics of **SPSS** (Statistical Package for Social Scientists) and **APA style writing**.

7. To foster the **abilities** to critique a piece of research, create a well developed research project independently, to write a proposal in APA format.

Required texts (SAME AS FOR PS211):

American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author. [REFERENCE: readings assigned as needed]

Dunn, D. S. (2004). *A short guide to writing about psychology* (3rd ed.). Boston, MA: Longman / Pearson Publishers. [referred to in syllabus as DUNN]

Jackson, S. J. (2009). *Research methods and statistics: A critical thinking approach* (4th ed.). Belmont, CA: Wadsworth Cengage Learning Publishers. [referred to in syllabus as RMS]

Additional readings from texts and handouts (beyond those listed in course schedule) will be required throughout the course.

Supplemental resource:

Cronk, B. (2014). *How to use SPSS* (7th ed.). Glendale, CA: Pyrczak Publishing

Other requirements:

1) Accessibility to your computer account personal storage space and e-mail.
2) Register for the course on Blackboard.
NOTE: Your final paper may be submitted to Blackboard's Plagiarism Tool.
3) Three FOLDERS / BINDERS with pockets:
A) **RESEARCH WRITING FOLDER** in which to organize: Research project notes, outlines, drafts, & final version of your individual proposal.
B) **RESEARCH MATERIALS FOLDER** – HSIRB proposal, materials for your study (e.g., surveys, measures, stimuli, etc.), articles used (unless storing articles electronically); consent forms and actual data collected (this latter component, can be kept in a manila envelope.
C) **WORK & ASSIGNMENTS** – to store your assignments (e.g., stat problems, lab reports, etc.)

The first two (A & B) are continuations from PS211.

Course Graded Requirements:

Three EXAMS (Each worth 14%):
The format for tests will be multiple choice, short answer, essays, and computational problems. Each exam may have a take-home component as well. Except for the final, the tests will cover all material covered in class and in the required readings for that specific testing period. However, you should realize that the material is cumulative by nature and so PS211 and other foundation material is critical and expected to be used if necessary. Therefore, DON'T fall behind! The final exam will be cumulative, and may have a take home portion.

STUDENT NAME: _____

SPSS LABS & HOMEWORK ASSIGNMENTS (25%) _____
In addition to assigned homework problems in the back of RMS chapters, you will also do lab simulations for as many of the inferential statistical tools as possible.

EMPIRICAL RESEARCH PROJECT
Research Materials, Conducting your Study, and Participation in Peer Studies (10%) _____
Since research is not just about the write-up, but also about the design of the research, the process of data collection, treatment of subjects and data analysis, this portion of the grade will focus on your ability to create valid and effective materials (measures & stimuli) and handle the overall research PROCESS, including navigating the HSIRB.
As part of this grade, you will be asked to participate in some of your peers' experiments in class. If you are unable to participate or prefer not to, an alternative assignment will be provided upon request. Failure to participate or complete the alternate assignment will reduce this grade by 10 points.

Revision to Introduction, Method, & Reference sections, HSIRB Proposal (8%) _____
Your draft for these two sections from your PS211 efforts will require ongoing attention, refinement and revision. Continue to monitor the research and create/refine your materials, your methodology may also change and require revision in the text of the Method section. This is your study and you are responsible to be sure that changes are translated into your manuscript. Also, this grade will be influenced by the level of success you have in successfully obtaining approval for your study by the HSIRB Committee. In addition, ***if your HSIRB proposal is not submitted by FRI 2/5, this grade will go down five points for every class that passes beyond that third week deadline***.

Results & Discussion Sections, Final Manuscript (15%): _____
This research project is the foundation of the course. It occupies a central role within the course schedule. The grade for this project can be influenced by the data collection and analysis processes; but primarily focuses upon your ability to conduct and interpret your results, as well as the write up of the Abstract, Results, Table, Discussion, References, and optional Appendices. If time permits, we will try to present our empirical research projects.

Course Policies:

1) **ACTIVE LEARNING:**
Active learning involves questioning the text and lecture material, contributing to discussion, sharing ideas and alternative perspectives. As a prerequisite to the active learning that will take place in the classroom, please arrive to class on time and prepared by having read the assigned chapter(s), and completing the assignments. Class participation is expected and highly encouraged. This is the best strategy for achieving many of the objectives laid out for the course. Those who commit themselves to such active learning are scholars. It is for this reasoning that excessive absences will be penalized as stated in policy #4 below.
Since mastery comes from practice, additional independent practice assignments (Fill-In Self Tests, Multiple Choice Self Tests, Self Test Problems in Jackson's chapters) are recommended. These I will leave to your mature decision-making, but encourage you to do the work you need to learn in order to master the material. For instance, we will have class time to discuss SOME of the problems in the back of the chapters, but the chapter questions are mainly to help you to reinforce the material and bolster your studying efforts; therefore, completion of additional problems may be warranted. Answers to many of the problems (odd numbered ones) are in the back of the text. Also, you can create your own examples and check them on SPSS to improve your mastery. INCLUDE ANY OF YOUR EXTRA WORK IN YOUR RESEARCH ASSIGNMENT FOLDER – CLEARLY LABELED.

2) **LATE ASSIGNMENTS:**
If you miss a lab that will be counted as the one that you will drop. Beyond that, missed labs will count as a zero.
Other assignments and projects may be handed in late to earn HALF credit. **When handing in an assignment late please indicate the amount of days late on the front cover along with your signature – without this late assignments will be considered incomplete and given no credit.**
Assignments may not be handed in after the third day late. Please, do not ask me to deviate from this policy. If you must miss class, drop off the assignment earlier, or send it with a classmate. **YOU MAY NOT E-MAIL ME ASSIGNMENTS** - as evidenced by past experience – too much can go wrong. I encourage you not to procrastinate, and be sure to back up your work via the student X: drive!

3) **MAKE-UP TESTS:**
In order to avoid receiving a zero on a missed test you must provide notification and verification. Notify me beforehand, or as soon as possible. Notification more than two days after the exam is **not** acceptable. Also, if you miss a test you MUST provide appropriate documentation (Drs.' note, court order, family note upon death of a family member, etc.). Due to the awkwardness, in some cases I will not ask for such documentation; however, realize **that if such documentation is not presented, the highest score that can be achieved on a test is a 70**. Make up tests will be different than those administered during the normal schedule. I reserve the right to schedule make-up tests for 7:30AM on a weekday or weekend and to use an oral exam format.

4) **ATTENDANCE:**
Class attendance is expected. Class lectures and demonstrations will supplement text material.

Excessive absences will impact directly on your final grade. After three missed classes, each class missed will reduce your final grade by two points. You are responsible for getting missed notes, assignments, and relevant in-class announcements in a timely manner. Contact Student services if you must miss multiple classes for extenuating circumstances.

5) **EXCUSES:** Given the nature of the course and its emphasis on mastery skills critical for upper level study in psychology, I can not pardon work or substitute with extra credit other than that which is relevant to the course and offered to all. In the spirit of fairness to ALL students I must be consistent with the policies laid out in this syllabus and ask you to be familiar with and respectful of them.

6) **ACADEMIC INTEGRITY:**
Academic integrity is a core value of the college and is expected. Cheating and plagiarism will not be tolerated. It is **my contractual agreement** with the college that I am to report all **suspected** cases of plagiarism and cheating. Plagiarism is the intentional misrepresentation of someone else's work as your own. This includes transcribing sentences or paragraphs belonging to another author directly from another written source and suggesting they are your own words, quoting directly from a published work without giving the author credit (i.e. proper citation), using or "borrowing" another student's work, buying a paper from a professional service, etc. The policy of the department is that the student must keep all note cards and rough drafts until given a grade for that course!!! Again, be sure to back up computer disks. Evidence of plagiarism and cheating will be dealt with in accordance with the college policy on academic honesty in the *Student Handbook* . One specific issue pertaining to this course is that **students may NOT use calculators that automatically solve for any of the statistical tests that we are learning this semester**. If you use any prohibited calculators for an exam, you will receive a zero for that exam. If you are unsure whether your calculator is appropriate, please have the calculator approved by the instructor.

7) **ACCOMMODATIONS:**
Students who wish to request accommodations in this class for a disability should contact the Academic Support Center, located in the lower level of Monocacy Hall, or by calling 610-861-1401.
Accommodations cannot be provided until authorization is received from the Academic Support Center.

8) **SUMMARY OF GRADING SYSTEM:**

EXAM 1	14%
EXAM 2	14%
FINAL EXAM	14%
SPSS LABS & HW ASSIGNMENTS	25%

RESEARCH PROJECT GRADE COMPONENTS:	
Research Materials, HSIRB Process, Conducting the Study, Analysis Plan, Being Resourceful	10%
Improvement in Intro & Method Sections, Script	8%
Results & Discussion Sections, Final Manuscript and Presentation	15%

9) The following **grading scale** will be used in the course:

A : 93-100	C : 73-76
A-: 90-92	C-: 70-72
B+: 88-89	D+: 68-69
B : 83-86	D : 63-66
B-: 80-82	D-: 60-62
C+: 78-79	F : Below 60

10) **EXTRA CREDIT:**
You will be required to participate in two research projects. This experience allows you to view the research process (a critical tool for the discipline of psychology) first-hand in various experimental contexts. All the research studies will have been reviewed and approved by a Human Subjects Institutional Review Board (HSIRB) Committee; however, if you have objections to participating in research, you may arrange to complete an alternative, written assignment, which will involve reading a psychological article. In order to do the alternative assignment, you must meet with me to arrange it **by Thursday March 3rd**. After that point, you may still have the opportunity to complete the research requirement by participating in experiment sessions, but you will not be able to do a written assignment to fulfill this requirement. More information about research participation (e.g., how to sign up) will be provided later in the semester, when experiment opportunities start to become available. Failure to complete the required participation (or the alternative assignment) will result in a **reduction of your class grade by 1/3rd letter grade** (e.g., from a B to a B-).

When you sign up for a research experiment, please be sure to record the time and location of the session, and all other relevant information on the pink sheet that will be provided. This information will need to be completed on the pink form and submitted toward the end of the semester. As many experiments require that students begin a task at the same time, please plan to show up on-time for your sessions. Showing up late may result in your not being able to participate in the experiment!

If you fail to attend an experiment session for which you signed up, you will need to complete an additional research activity (three) before you are eligible for extra credit participation. If you then fail to show up a second time for a scheduled experiment session, then you will forfeit all extra credit opportunities (including extra research hours you already completed for extra credit in the course) and will face a **reduction of your class grade by 1/3rd letter grade** (e.g., from a B to a B-).

Extra Credit via Research Participation:
Students may earn up to four hours of ***ADDITIONAL*** extra credit for participating in research beyond the requirements outlined above. Each <u>hour</u> of credit earned will increase your worst semester exam grade by 3 points (thus capped at 12 points).

NOTE: In-class experiments do <u>not</u> count to earning extra credit nor research participation requirement.

11) **<u>Minimum</u> expectations for student learning & study practices for PS212:**

a) As a prerequisite for upper level courses in psychology and due to its rigor of combining both statistics and methodology – this course should have a high priority for you in terms of your time

management.

b) You must allocate a time and place to study for this course. Studying cannot be done in snippets. I recommend **at least** five study sessions of **at least** one hour (take a break if working longer in a single session) per week. What is needed may vary from individual to individual. This is in addition to the assignments and independent research work, and any group study work recommend under (d) below.

c) You must read or at least carefully skim the assigned chapter material before class or you will not fully comprehend the lectures. Your reading and studying goal should go beyond rote memorization (which just won't work with this type of material) to comprehension; and even beyond - you must eventually be able to speak the language of research.

d) Form study groups and/or partnerships - meet on a regular basis in order to capitalize on different perspectives and examples.

e) I expect strong writing to be displayed in your assignments and projects. Spelling, grammar, and structure are always relevant, and will therefore be a large source of the grading of assignments and the research project.

f) USE THE WRITING CENTER & APA Manual as cherished & helpful resources!

g) Commit to the policies, procedures, and spirit of the syllabus. Please consult the relevant parts of the syllabus when necessary before discussing concerns with me.

Relevant Quotes:

Science is the belief in the ignorance of the experts.
--Richard Feynman, 1965 recipient of the Nobel Prize in Physics

It is not what the man of science believes that distinguishes him, but how and why he believes it. His beliefs are tentative, not dogmatic. They are based on evidence, not authority.
---Bertrand Russell, *The Impact of Science on Society*

Probability is like the cane that the blind man uses to feel his way. If he could see, he would not need the cane, and if I knew which horse was the fastest, I would not need probability theory.
---Stanislaw Lem

When I sat down to write a letter I didn't have time to write a short one, so I wrote a long one instead.
--Mark Twain

There are three kinds of lies: lies, damned lies, and statistics.
--Mark Twain (1906) who attributes it to Benjamin Disraeli

Course Schedule

DATE	TOPIC	ASSIGNMENTS & READINGS
Week 1 (1/19-23)		
Session 1	Organizational Meeting and Re-focusing on "Task Lists"	
Session 2	Independent Research Proposals Collaborative Efforts / Revisions	Read syllabus and look over sample script PS211 Final Exam Assignment Due
Session 3	Research Projects: Collaboration and Progress	Draft of Measures & Method Script
Week 2 (1/26-30)		
Session 1	Group Review of Studies & HSIRB Proposal Writing Subsequent Drafts	Revised Intro & Method sections Draft of HSIRB Proposal Form DUNN pp. 67 – 78
Session 2	Piloting Experiments	
Session 3	Method Script Review Results sections Sample Mean Comparison Demo	 DUNN: pp. 98- 102; Chpt. 6 ***DUE: Final Draft of Measures, Materials & HSIRB Proposal***
Week 3 (2/2-6)		
Session 1	Revisiting Inferential Statistics	RMS: Review Hypothesis testing in RMS Chpt. 7 RMS: Read Chpt. 8
Session 2	Continued (including Correlation Significance!)	Skim/Review SPSS: Cronk – pp. 57 - 61
Session 3	Set up for Lab 1	RMS Chpt problems (specified in class)
Week 4 (2/9-13)		

Session 1	**LAB #1** (z test / one sample t test / correlation)	
Session 2	Inferential statistics: Two-Group Designs t-tests for independent and correlated groups continued	RMS: Chpt. 10 (pp. 248 – 264) Skim/Review Cronk – pp. 62 - 68
Session 3	TBA	

Week 5 (2/16-20)

Session 1	Set up for Lab #2	RMS Chpt problems (specified in class)
Session 2	**LAB #2** (t-tests for independent and/or correlated groups)	
Session 3	**EXAM ONE**	

Week 6 (2/23-27)

Session 1	Experimental Designs with More Than Two Levels of an Independent Variable	RMS: Chpt. 11
Session 2	Continued	Review SPSS: Cronk – pp. 69 - 73 RMS Chpt problems (specified in class)
Session 3	Discuss Data Collection and Lab #3	

Week 7 (3/2-6)

Session 1	**LAB #3** (One Way ANOVA)	
Session 2	Complex Experimental Designs	RMS: Chpt. 12
Session 3	continued	RMS Chpt problems (specified in class)

WEEK 8 (3/9 – 13) ***SPRING BREAK***

Week 9 (3/16-20)

Session 1	Data Sets for Research Projects	
Session 2	Results / Discussion sections & Revisions of Intro/Method Two Way ANOVAs	DUNN pp. 44 – 50; 70 - 79 Review SPSS: Cronk: pp. 74 – 84 RMS Chpt problems (specified in class)
Session 3	continued	Data Sets should be configured Statistical Analysis Plan DUE

Week 10 (3/23-27)

Session 1	**LAB #4** (Factorial Designs → Two Way ANOVAs)	
Session 2	Discuss Experiments & APA Style Nuances Discuss Revisions of Intro and Method sections	
Session 3	Discussion of Experiments & Data Collection	

Week 11 (3/30- 4/3)

Session 1	Research Analyses & Reliability / Validity revisited	Review RMS: pp. 66-68; 71, 74
Session 2	Tables & Figures	DUNN – Chpt. 8; Bring APA Manual
Session 3	EASTER BREAK	

Week 12 (4/6-10)

Session 1	Tables & Figures continued – designing YOUR Tables and Figures for your research study
Session 2	TBA
Session 3	**EXAM TWO**

Week 13 (4/13-17)

Session 1	Beyond Writing: Presenting Psychological Research	DUNN – Chpt. 10
Session 2	Quasi Experimental Designs & Single Subject Designs	RMS: Chpt. 13
Session 3	continued	RMS Chpt problems (specified in class)

Week 14 (4/20-23)

Session 1	**FINAL RESEARCH PROJECTS DUE within folders/binders – must be submitted at start of class!** Quasi Experimental Designs continued	
Session 2	Nonparametic Statistics	Review RMS: pp. 216-218; 269-72
Session 3	Set up for Lab #5	Review SPSS – Cronk – Chpt. 7 RMS Chpt problems (specified in class)

Week 15 (4/27 – 5/1)

Session 1	**LAB #5** (Nonparametics – Chi-Square)
Session 2	Review for Final Exam / Take home portion discussed
Session 3	Closure, Wrap Up & Review for Final Exam

FINAL EXAM **M/W Section A:** WED. 5/6 at 1:30pm
T/TH Section B: TUES. 5/5 at 8:30am