

## PSYCH 212: Experimental Methods and Data Analysis II \* Fall , 2006

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**\*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:**

American Psychological Association. (2001). *Publication manual* (5th ed.). Washington, DC: Author.

Dunn, D. S. (2004). *A short guide to writing about Psychology*. N.Y., Pearson.  
[referred to in syllabus as DD]

Heiman, G. W. (2001). *Understanding research methods and statistics* (2<sup>nd</sup> ed.). N.Y.: Houghton Mifflin Company. [referred to in syllabus as H]

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

**Other requirements:**

- 1) Accessibility to your computer account file on the X drive and e-mail.
- 2) Register for the course on Blackboard.
- 3) A **RESEARCH FOLDER or BINDER** in which to organize: Research project notes, outlines, drafts, & final version of your individual paper. This should be a continuation from your PS211 research folder with all the materials from that semester as well.

**Course Graded Requirements:****Three EXAMS**

**(Both semester exams will be worth 15%. The cumulative final will be worth 20%):**

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.

**RESEARCH PROJECT (Manuscript and Poster) (24%):**

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 revisions to the Introduction and Methods sections (this should be ongoing), and the write up of the Abstract, Results, Discussion, References, and Appendices. This grade will also be reduced if you miss any of the research conferences that may be scheduled. *Lastly, you MUST consider presenting your research project at the LVAIC Undergraduate Psych Conference. Details will be forthcoming. This opportunity will be waived if the research project is inadequate in terms of sloppy design or materials, or inadequate sample size.*

**RESEARCH PROJECT PERFORMANCE (6%)**

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 handle the research PROCESS.

As part of this grade, to enrich your appreciation of science and methodology toward greater enlightenment about psychology, you will need to participate in TWO of your peers' research projects. These projects will be approved by the HSIRB Ethical Review Board. However, if you are unable to participate or prefer not to, an alternative assignment will be provided upon request.

## **SPSS LABS & ASSIGNMENTS (20%)**

The best way to ensure that you can interpret statistics and understand their relationship to research design is to do lab simulations for as many of the inferential statistical tools as possible. The labs will be introduced throughout the week that we cover that inferential statistic. The week will culminate in your independent analysis and write up of the lab data. Each lab will be formatted in APA style and use the following structure:

- I. APA Title Page
- II. Abstract
- III. Ending paragraph of an Introduction  
(a full intro is not required and you can use mock citations to set up your hypothesis)
- IV. Results section (no more than one page)
- V. Discussion section (no more than one page)
- VI. Tables and/or Figures are encouraged (never more than two)

Your grade will be the average of all lab grades. Be sure to carefully consider and make deliberate use of the Heiman sections on "APA Format for Statistical Notation" for these labs. Other assignments will be required and will be discussed during the semester.

## **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 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.

### **2) LATE ASSIGNMENTS:**

Assignments and projects may be handed in **up to three days (NOT classes) late** (5 points deducted from the grade each day late). **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 ( I )**. 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 use your file on the student X: drive and back up your work!

### 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. If you miss a day when we are meeting as research groups without a valid excuse, your final grade will be deducted by five points. 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 that are 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) SPECIAL ACCOMMODATIONS:

Should you require special accommodations for a disability, please arrange an appointment with the instructor at the beginning of the semester. Documentation of a disability will be required for special accommodations to be arranged in conjunction with the Learning Services Office. Students who wish to request accommodations in this class for support of learning disabilities and/or ADHD, should contact Mrs. Laurie Roth, Director of Learning Services, 1307 Main Street (ext. 1510).

Students who wish to request accommodations for support of other disabilities, should contact Dr. Ron Kline, Director of the Counseling Center, 1307 Main Street (ext. 1510).

Accommodations cannot be provided until authorization is received from the appropriate disability support provider on campus.

#### 8) SUMMARY OF GRADING SYSTEM:

EXAM 1	15%
EXAM 2	15%
FINAL EXAM	20%
RESEARCH PROJECT MANUSCRIPT / POSTER	24%
RESEARCH PROJECT PERFORMANCE	6%
SPSS LABS / ASSIGNMENTS	20%

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

Please see the Student Handbook for verbal descriptions of the criteria for letter grades.

#### 10) LEARNING SERVICES

The Learning Service Office “provides assistance to students who are experiencing academic difficulties” (Student Handbook). If you feel you need special services through this office, you may call 610-861-1510 or visit their office. Also, I can work with you to arrange to request assistance from former students from the course.

#### 11) EXTRA CREDIT:

Human Subject Participation:

Extra credit may be received for voluntarily participating in research conducted by fellow students

beyond the TWO study requirement (see research performance). More details will be provided in class. Two points for each hour of participation (up to three hours worth) will be added to your score on the FINAL EXAM (weighted at 20%).

12) **Minimum 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 #5.
- c) You must read before class or you will not fully comprehend the lectures. Your reading and studying goal should go beyond comprehending – you must eventually be able to speak the language of research.
- d) Try to form study groups and 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.
- 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:**

*There are three types of lies: lies, damn lies, and statistics.*

---Mark Twain

*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

## PSY212 Syllabus

Date	TOPIC	ASSINGMENTS & READINGS
Tuesday 8/29	Review of PS211 / PS212 Overview Multiple Regression	
Thursday 8/31	HSIRB Proposals - Revisited Methodology	H: pp. 291 – 304; REVIEW Chpt. 4 Bring drafts of HSIRB Proposal and Intro / Methods Manuscript READ SYLLABUS CAREFULLY!
Tuesday 9/5	Quasi Experiments and Single Subject Designs (cont'd)	H: Chpt. 20
Thursday 9/7		
Tuesday 9/12	STUDENT CONFERENCES on Research Projects (cont'd)	H: Appendix A – Quality Check of your research and working knowledge Assignment – Research articles
Thursday 9/14		
Tuesday 9/19	PROBABILITY & making decisions about CHANCE events. (cont'd)	H Chpt. 12
Thursday 9/21		
Tuesday 9/26	Hypothesis Testing and the z-test (cont'd) z-test lab	H: Chpt. 13
Thursday 9/28		
Tuesday 10/3	The Single Sample Study (Sample means / correlations) (cont'd) One sample t-test / correlation lab	H: Chpt. 14
Thursday 10/5		
Tuesday 10/10	<b><i>Fall Recess</i></b>	
Thursday 10/12	Review for Exam One and Discuss Data Collection	Dunn – Chpt. 8
Tuesday 10/17	<b>EXAM ONE</b>	

Thursday 10/19	Two Sample BETWEEN Subjects Experiment: The Independent Samples t-test	H: Chpt. 15
Tuesday 10/24 Thursday 10/26	Chpt. 15 continued (indep. Samples t-test lab) The Two Sample WITHIN Subjects Experiment: The Dependent Samples t-test	H: Chpt. 16
Tuesday 10/31 Thursday 11/2	Chpt. 16 continued (dep. Samples t-test lab) The One Way BETWEEN Subjects Experiment: The One-Way ANOVA <b><i>DATA COLLECTION COMPLETED BY NOW</i></b>	H: Chpt. 17 Dunn: Chpt. 6
Tuesday 11/7 Thursday 11/9	Chpt. 17 continued (One Way ANOVA lab) Review for Exam Two	
Tuesday 11/14 Thursday 11/16	<b>EXAM TWO</b> The TWO-Way BETWEEN Subjects Experiment: The Two-Way ANOVA	H: Chpt. 18
Tuesday 11/21 Thursday 11/23	Two Way ANOVA continued (Two Way ANOVA lab) <b><i>Thanksgiving Break</i></b>	
Tuesday 11/28	WITHIN Subject Factor Experiments and other Multifactor Designs Chi Square and other Nonparametric Statistics	H: Chpt. 19 H: Chpt. 21
Tuesday 12/5	Research Attitude: Future Directions	Dunn: Chpt. 10
Thursday 12/7	Last Class – Wrap up / Review for Final	

**Final Examinations, To be set by the Registrar**