

Psyc 220: Research Design and Statistics Part I

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 Email: prose Office hour for this class: Wed 11-12 (and by appointment)

Please put “psyc 220” in the subject line of all emails.

TA: Office hours:
 Email: Office:

Learning Objectives:

1. Understand the advantages and disadvantages of various types of research designs well enough to use your knowledge to critique various research situations.
2. Develop an accurate vocabulary for talking about research.
3. Develop an appreciation for why research psychologists should use scientific methods.
4. Develop an understanding of how you learn complex, abstract information like the material that will be covered in this course.

Student Job Description:

The sole function of grading in this course is to provide you with feedback on how well you are meeting the learning objectives. Although students often adopt a “make the grade” goal as their primary objective, you need to be aware that this goal will sometimes be at odds with what your professor is trying to do for you. Your professor’s paramount concern is helping you learn.

So what are you expected to do? You are expected to carefully study (not just read) the assigned readings for at least six hours per week. In class I will explain the difference between studying and reading to you. You are expected to come to class alert and often enough that you can ask questions, hear concepts explained in different ways, apply your knowledge to problems presented in class, and receive feedback from your professor and classmates about whether you’re really “getting it”. Exams are written to reward students who attend frequently and study the assigned readings carefully. You are expected to take exams and quizzes on time and turn in projects on time. You are expected to seek help when you need it from the help sources that will be highlighted in class. You are expected to read, understand, and use the information provided in this syllabus.

Required Materials (rent the books from Textbook Services):

Gravetter, F. J., & Wallnau, L. B. (2002). *Essentials of statistics for the behavioral sciences* (6th ed.). Pacific Grove, CA: Wadsworth-Thompson Learning.

Cozby, P. C. (2009). *Methods in Behavioral Research* (10th Ed.). Boston, MA: McGraw-Hill.

Publication Manual of the American Psychological Association (5th ed.). (2001). Washington, DC: American Psychological Association.

Calculator: Students must acquire a statistics calculator for both PSYC 220 and 221. This calculator must be capable of computing squares, square roots, sums of scores (Σx), sums of squares (Σx^2), and standard deviations (σ). The professors teaching these courses are strongly recommending the Texas Instruments TI-30Xa calculator. We have chosen this calculator due to its affordability, functionality, and user-friendliness. Also, depending on the professor, demonstrations of the TI-30Xa may be given in class. Please note that a graphing calculator is not permitted in either Psyc 220 or Psyc 221. It is your responsibility to understand how your calculator works.

Professors of this course used to recommend guidebooks to help you learn SPSS (the statistical software we will be using in Psyc 220 and Psyc 221), but a careful Google search will almost always get you the answer to any question you might have about using SPSS. If you still want to buy a book, please ask your professor for suggestions.

Grading:

Exam 1 = ()/45 points	A = 90 – 100%
Exam 2 = ()/50 points	B = 80 – 89.9999%
Exam 3 = ()/50 points – Exam 3 will contain fourteen comprehensive questions covering basic class concepts	C = 70 – 79.9999%
CITI Training ()/5 points	D = 60 – 69.9999%
Quiz 1 = ()/20 points	F = 0 – 59.9999%
Quiz 2 = ()/20 points	
Quiz 3 = ()/15 points	
Quiz 4 = ()/20 points	
Big Paper = ()/60 points	
Total = ()/285 points	

The exams, quizzes, and paper will be described on handouts that I will give you later.

Other Policies:

YOU ARE RESPONSIBLE FOR UNDERSTANDING THE FOLLOWING POLICIES AND THE OTHER CONTENTS OF THIS SYLLABUS. NO EXCEPTIONS WILL BE MADE.

Assignment Due Dates: If any part of an assignment/paper is turned in after the class session in which it is due without a pre-approved excuse, the grade for the entire assignment will be reduced by 25% for each solar day that it is late. To get preapproval for turning in an assignment late, tell your professor before the due date if, for example, you have surgery scheduled. You are responsible for computer failures, just as you would be if you were a working professional. It is your responsibility to back up all of your work so that none of it is lost, to store your files in safe places, to print your paper well in advance of the class in which it is due, and to get your paper done on time. Computers and printers let everyone down at inconvenient times, so if you want to be successful, anticipate and prepare for these problems.

Accommodations for Disabilities: Notify the professor immediately of any needed accommodations for documented disabilities at the beginning of the course. If you are expecting accommodations at any time in this class, you must speak Disability Support Services in Rendleman 1218 before you need accommodations. According to SIUE safety and procedures policies, students with disabilities have the option of developing a written plan for evacuation in the unlikely event of an emergency that requires evacuation. If any student with a disability would like to develop a written evacuation plan for this class, please contact the instructor.

Attendance Policy: I don't normally take attendance, but exams and quizzes are written in a way that rewards students who attend regularly; past students of this course can vouch for this. If you ever miss a class, please do not expect your professor to teach you everything you missed. (I can't adequately go over a whole class in one meeting or email.) It is your responsibility to find out what you need to catch up on by talking to a classmate.

The Psychology Department's Policy on Incomplete Grades: It is the student's responsibility to officially withdraw from a course by the dates set by the University if the student is not intending to complete the course. Students who do not withdraw and have not completed the course will receive an F. Only under special circumstances a faculty member may agree to give a student an Incomplete (INC) grade in order to allow the student to complete the remaining work for the course not later than the end of the following semester. An INC is never automatic but must be approved by the professor. If a professor agrees to give a student an INC grade, the professor and the student will fill out a form (Memorandum of Incomplete Grade) indicating why an INC is being given. One copy of the completed form will be given to the student, one copy will be given to the professor, and the Department of Psychology secretary will keep one copy. If the work is not completed by the time specified on the Memorandum of Incomplete Grade form, the grade will be changed from INC to F.

The Psychology Department's Policy on Plagiarism: Plagiarism includes either presenting someone else's words without quotation marks (even if you cite the source) or presenting someone else's ideas without citing that source. If you plagiarize, your instructor cannot evaluate your understanding of the topic. When paraphrasing from another source, at the very least the student should change the wording, sentence syntax, and order of ideas presented in the paper. Ideally, the student will integrate ideas from multiple sources while providing critical commentary on the topic in a way that clearly identifies whether words and ideas are those of the student or are from another source. Plagiarism is one type of academic misconduct described in SIUE's Student Academic Code (<http://www.siue.edu/policies/3c2.shtml>). University

policy states that “Normally a student who plagiarizes shall receive a grade of F in the course in which the act occurs. The offense shall also be reported to the Provost.” (<http://www.siue.edu/policies/1i6.shtml>). The University policy discusses additional academic sanctions including suspension and expulsion from the University. To insure that you understand how to avoid plagiarism, we encourage you to review the information on plagiarism provided on the Department of Psychology web page at <http://www.siue.edu/education/psychology/plagiarism.shtml>.

Exams: You will receive a handout prior to each exam that describes the exam format, general tips about how to study, and warnings about a few topics that could appear on the exam even though they were only briefly discussed in the textbook or in class. (You can safely assume that all topics that are extensively discussed might be tested.)

If you miss an exam, your opportunity to make up the missed exam will be during the final exam session at the end of the semester (immediately after you complete the last exam). However, you must inform your professor in advance if you intend to make up an exam during the final exam period. If you miss the last exam for any reason not previously approved by your professor, you will earn a zero on the final. Please note that the last exam will be given on the date scheduled by the university for final exams, and you may not take the last exam at any other time without a pre-approved excuse.

Exams and assignments are designed to assess your independent performance in meeting the course objectives. Students who do not work independently on an exam or assignment (i.e., who copy work from a classmate, published material or some cheat material) will receive an F in the course. Students who help another student cheat/copy/plagiarize on any graded work will also receive an F in this course.

Schedule of Classes and Reading Assignments

Notes: *COZ* refers to the Cozby text; *GW* refers to the Gravetter & Wallnau text. When an assignment is due on a particular day, it is due at the class start time. Also, quizzes and exams begin at the class start time.

<i>WEEK</i>	<i>TOPIC</i>	<i>BEFORE CLASS STUDY...</i>
Week 1	What Science Can Accomplish	Syllabus, COZ Chs. 1 and 2
Week 2	What Statistics Can Accomplish	GW Ch. 1
Week 3	Basic Methods and Ethics of Psychological Science **QUIZ #1 (on statistical notation) on Tuesday	COZ Chs. 3 and 4
Week 4	Measurement, Reliability and Validity in Psychological Research	COZ Ch. 5
Week 5	**EXAM #1 on Tuesday; On Thursday: Discussion of APA Style Research Reports and distribution of “Big Paper” Handout ^a	COZ Appendix A (which is not tested on Exam #1)
Week 6	Distributions and Central Tendency **CITI Training DUE on Tuesday	GW Chs. 2, 3
Week 7	Variability and SPSS Basics **QUIZ #2 (on APA format) on Tuesday	GW Ch. 4
Week 8	Correlation and Regression	GW Ch. 15 (skip 15.4-15.6)
Week 9	Survey Methods **QUIZ #3 (on variability, correlation, and SPSS) on Tuesday	COZ Ch. 7
Week 10	**EXAM #2 on Tuesday; on Thursday: discussion of paper issues (SPSS, APA format, etc.)	
Week 11	z-Scores and Standardized Distributions	GW Ch. 5
Week 12	Probability	GW Ch. 6
Week 13	Online class and quiz (#4) covering crucial material (see Blackboard)--**QUIZ #4 must be completed by midnight Tuesday; on Thursday: The Distribution of Sample Means	GW Ch. 7 (for Thursday)
Week 14	Continue with The Distribution of Sample Means on Tuesday; On Thursday: time to discuss rough drafts of papers	
Week 15	Hypothesis Testing covered on Tuesday and Thursday; **PAPER DUE on Thursday	GW Ch. 8
Finals	**EXAM #3 at time designated by the university	

^aNote that you will have a very long time to work on the paper before it is due.

Your professor may need to make minor changes to this syllabus. Changes (if any) will be announced in class and you will be responsible for adhering to those changes whether you have been attending class regularly or not.

A Realistic Preview of the Course

This information is provided to you so that you can make wise decisions about whether to take this course and how to approach it. Most students do just fine in this course, but you deserve to know in advance that you probably can not do well in this course by just doing the same thing you do in all your other courses.

- Psyc majors are only allowed to try to pass this course twice. If they can't pass the second time, they have to find a new major. *Give this class 100% effort the first time, because you never know what might happen the second.*
- The average course grade is a C.
- About 15% of students who take the course receive a failing grade (D or F) and about 20% receive an A.
- Many students who consider themselves “math-challenged” are surprised at how well they do in this course after putting in a strong effort.
- I am glad to report that plagiarism cases are on the decline, but you should know that Psyc 220 seems to produce more plagiarism cases than other psychology courses.
- Previous students have said the information in the textbook is complex; it takes a long time to read.
 - Sample formulas from textbook:

SUM OF SQUARES

Definitional: $SS = \sum(X - \mu)^2$

Computational: $SS = \sum X^2 - \frac{(\sum X)^2}{N}$

VARIANCE

Population: $\sigma^2 = \frac{SS}{N}$ Sample: $s^2 = \frac{SS}{n-1}$

STANDARD DEVIATION

Population: $\sigma = \sqrt{\frac{SS}{N}}$ Sample: $s = \sqrt{\frac{SS}{n-1}}$

PEARSON CORRELATION

$$r = \frac{SP}{\sqrt{SS_x SS_y}}$$

where $SP = \sum(X - \bar{X})(Y - \bar{Y}) = \sum XY - \frac{(\sum X)(\sum Y)}{n}$

SPEARMAN CORRELATION

$$r_s = 1 - \frac{6\sum D^2}{n(n^2 - 1)}$$

REGRESSION

$$\hat{Y} = bX + a \quad \text{where } b = \frac{SP}{SS_x} \quad \text{and } a = \bar{Y} - b\bar{X}$$

- What makes the information in this course so abstract and complex? Your lack of familiarity with it. In all likelihood, you haven't spent much (if any) time doing research studies, collecting data, analyzing data, writing in APA format, etc.
 - Also remember that if you are taking this course in the summer, you are choosing to learn this information at *double the pace* that students in the fall and spring learn it. (A regular semester is about 16 weeks, a summer term is half that.)
 - Speaking of how intense summer courses are... If you missed a week of a statistics class during the fall semester, would you be concerned about how much information you missed? Of course. Well in the summer, we cover in *one class* the same amount of material as would normally be covered in one week of a regular semester.
- One thing that has frustrated students in the past is the importance of little details in this course. For example, if you perform one step incorrectly during computations, you get the wrong answer. If you don't format your citation in perfect APA format, you lose points on the paper. The *details* are very important in this class.
- Remember that Psyc 220 is the first part of a two-part sequence. If it seems like I am expecting a lot from you, just remember that part of my job is to prepare you for Psyc 221. You might think an easy Psyc 220 class is in your best interest. But if a professor doesn't hold students to a high learning standard in Psyc 220, those students are likely to get very frustrated, and to perform poorly, in Psyc 221.

Advice (verbatim) from former Psyc 220 Students

- Study, study, study. Work problems from the book, look up terms, and know all of the symbols. Use Dr. Rose's study guides. They are very helpful. On an exam if you get stuck, don't panic. The answer is usually easier than you may think. You might be trying to overwork a problem.
- My advice would be to keep on top of the formulas as they evolve in the chapters. If you do not understand the formula for SD you will not understand the formula for standard error. My only other recommendation would be to not take a condensed summer version of this course at 8:00 am.

- The best advice I could give student who take this class is to read your book before class, it truly helps. Also, make sure you go over things you have learned often, it fades quickly if you don't keep on it. Lastly, look for other sources to get more information. There are tons of places on the internet that talk about stats.
- On the 1st day of class I was presented with the best idea ever. Dr. Rose said, "Challenge yourself to learn something new." This stuck with me though the whole semester because I was at first so afraid that I was not going to be able to do it because of all the math. The math was simple! It's so exciting that I feel confident in my work in stats and its all because I changed my attitude and challenged myself to learn something new. To all the new students who have their doubts, I say don't be scared! Enjoy the challenge and excitement of learning something new!!
- Pay attention to class-the lectures are absolutely necessary! Print the notes off blackboard for review of this material. Read the book and make sure to notice (write out) terms and definitions as you go along. Practice computations.
- Study Hard
- Read all the assigned chapters and take a lot of notes. It will help keep you focused.
- Try to do the readings because the material will make more sense and you will more likely remember it. Start studying for quizzes and tests before the night before. Study examples given in class and in the text. Don't blow off class.
- Keep up on reading, especially for the quizzes.
- Play around with SPSS to better understand the concepts discussed in class. If your research subject seems too messy to correlate, it probably is.
- Future students should read the assigned material, since half of the test questions come from the book. This class is not hard when you come to class and pay attention.
- Memorization is pointless. Understand concepts backwards and forwards studying them before being tested on them. It will increase your overall understanding along with your class GPA.
- Read the text book, it will help you to better understand the material in class. Also, don't fall behind because it is difficult to catch up.
- My advice to future students of this class would be to do the practice problems in the book! The book is great and has TONS of practice problems with answers. Especially if you're studying for a quiz or exam, just do a few every night. My method was: for every one question I got wrong, I did two extra practice problems to make sure I understood it. Also, (and obviously) you need to do the reading! I can't believe I actually have a shot at getting and A in statistics!