PSYCHOLOGY 244B: MEASUREMENT, RESEARCH METHODS, AND STATISTICS
Spring 2009

INSTRUCTORS:	Dr. Constance Jones Dr. Ronald Yockey	
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OFFICE PHONES:	Jones:	278-5127
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OFFICE E-MAILS:	conniej@csufresno.edu ryockey@csufresno.edu	
OFFICE HOURS:	Jones:	Mondays and Wednesday 12:30-3:00 pm
	Yockey:	Odd weeks (1, 3,..): Wednesdays 10:00 am - 3:00 pm Even weeks (2, 4,..): Fridays 11:00 am - 1:00 pm; 2:00 pm – 5:00 pm
CLASS DAY AND TIME:	Tuesdays	2:00-3:50 pm S2 318 with Jones
	Thursdays:	On-line with Yockey
UNITS:	4	

COURSE DESCRIPTION:

Psychology 244A and Psychology 244B are a two-semester sequence of courses designed to allow graduate students to gain expertise with the most common measurement strategies, research methods, and statistical techniques used in psychological research.

The Psychology Department requires that Psychology graduate students earn a ~~"B~~" or higher in both Psychology 244A and Psychology 244B in order to proceed with graduate work. If they do not, they must repeat the course until such a grade is earned.

STUDENT LEARNING OUTCOMES:

Upon completion of Psychology 244A and Psychology 244B, students should be able to:

- assess the degree to which concepts are reliably and validly measured by indices,
- understand the strengths and weaknesses of the major forms of research design used by psychologists, and
- apply the most common statistical techniques to data obtained from application of such research designs.

Note: Psychology 244A and Psychology 244B meet the Methodology and Technology; Critical Thinking, Logic, and Problem Solving; and Communication Skills Goals for the California State University, Fresno Psychology Graduate Program.

NASP Standards Covered

2.9 Research and program evaluation
2.11 Information technology

REQUIRED READINGS:

Yockey, R. D. (2008). *SPSS demystified: A step-by-step guide to successful data analysis* (1st Ed). Upper Saddle River, NJ: Prentice Hall.

Pedhazur, E. J., and Schmelkin, L. P. (1991). *Measurement, design, and analysis: An integrated approach*. New York: Lawrence Erlbaum Associates.

Psychology 244B Jones Classroom Packet, available at the Kennel Bookstore.

Example student proposals, on e-reserve at Madden Library (password: science).

OPTIONAL READINGS:

Pyrczak, F. & Bruce, R. R. (2007). *Writing empirical reports* (6th ed.). Los Angeles: Pryczak Publishing.

Publication Manual of the American Psychological Association (5th ed.)

CLASS ATTENDANCE:

Students are expected but not required to attend class. Lecture material will not always be found in the textbook.

STUDENT ASSESSMENTS:
Students will be evaluated on the basis of three take-home examinations (30 points each), four homework assignments (10 points each), and a thesis proposal (10 points for Draft 1, 10 points for Draft 2, and 70 points for final thesis proposal).

Examinations: Examinations may be made up ONLY if the student contacts Dr. Jones or Dr. Yockey BEFORE the examination due date and receives his/her permission for a late examination. Examinations turned in late without faculty permission will not be accepted.

Homework, Drafts, and Proposal: Late assignments will be accepted late ONLY if the student contacts Dr. Jones or Dr. Yockey BEFORE the due date and receives his/her permission for a late assignment. Points per business day late (1 for homeworks and drafts, 5 for proposal) will be subtracted EVEN WITH permission of Dr. Jones or Dr. Yockey.

Course grades are based on total points received as follows:

Points received	Grade
198-220	A
176-197	B
154-175	C
132-153	D
0-131	F

DISRUPTIVE CLASSROOM BEHAVIOR:

The classroom is a special environment in which students and faculty come together to promote learning and growth. It is essential to this learning environment that respect for the rights of others seeking to learn, respect for the professionalism of the instructor, and the general goals of academic freedom are maintained. Student conduct which disrupts the learning process shall not be tolerated and may lead to disciplinary action and/or removal from class.

CHEATING AND PLAGIARISM POLICY:

Each student is expected to perform his or her own work throughout the semester. Cheating and plagiarism will not be tolerated and will be dealt with according to university policy. For more information on the University‘s policy regarding cheating and plagiarism, refer to the Class Schedule (Legal Notices on Cheating and Plagiarism) or the University Catalog (Policies and Regulations).

DISABILITY POLICY:

It is the responsibility of students with disabilities to identify themselves to the university and the instructor so reasonable accommodations can be made. For more information, contact Services to Students with Disabilities (559 278-2811).

HONOR CODE:

Members of the California State University, Fresno academic community adhere to principles of academic integrity and mutual respect while engaged in university work and related activities. As a student you should understand expectations for academic integrity in this course, neither give nor receive unauthorized aid on examinations or other course work that is used as the basis of grading, and take responsibility to monitor academic dishonesty in any form and to report it to the instructor or other appropriate official for action.

COMPUTERS:

At California State University, Fresno, computers and communications links to remote resources are recognized as being integral to the education and research experience. Every student is required to have his/her own computer or have other personal access to a workstation (including a modem and a

printer) with all the recommended software. The minimum and recommended standards for the workstations and software, which may vary by academic major, are updated periodically and are available from Information Technology Services (http://www.csufresno.edu/ITS/).

COPYRIGHT POLICY:

Copyright laws and fair use policies protect the rights of those who have produced the material. The copy in this course has been provided for private study, scholarship, or research. Other uses may require permission from the copyright holder.

FURLOUGH POLICY:

Due to the drastic budget cuts to the entire California State University system this year, this class will be impacted by staff and faculty furloughs as negotiated by the California State University system and California Faculty Association. As faculty members, we must take nine furlough days during the Spring 2010 semester. According to the furlough agreement, we cannot be on campus, answer e-mail, or take or make telephone calls related to any of my campus responsibilities, including teaching or grading assignments, on these days. *Dr. Jones' furlough days this semester are: January 15, January 19, February 4, February 16, March 11, March 22, April 5, April 22, and May 14. Dr. Yockey's furlough days this semester are: January 15, January 29, February 17, February 26, March 17, March 26, April 5, April 29, and May 14.*

Sessions	**Tuesday (Jones)**	**Thursday (Yockey)**	**Readings***	**Assignments due**
Session 1		Introduction		
Session 2	Introduction; Library tour	Review of Hypothesis Testing		
Session 3	The cycle of science; Populations and samples	One sample *t* test	Y – Ch5	
Session 4	Inferential statistics	Independent samples *t* test	Y – Ch6	Homework 1 out
Session 5	*Jones furlough*	Dependent samples *t* test	Y – Ch7	Homework 1 due Draft 1 due Exam 1 out
Session 6	The general linear model; t-test; One-way	One-way ANOVA	Y – Ch8	Exam 1 due

	ANOVA			
Session 7	Planned comparisons	Planned comparisons		Homework 2 out
Session 8	Two-way ANOVA	Two-way ANOVA	Y – Ch9	Homework 2 due
Session 9	Summary	Interactions and simple effects	Y – Ch9	Exam 2 out
Session 10	Regression	Simple regression	Y – Ch13	Exam 2 due
	Spring break	*Spring break*		
Session 11	Regression	Multiple regression	Y – Ch 14	Draft 2 due
Session 12	Regression	Hierarchical regression		Homework 3 out
Session 13	Chi-square	Chi-square	Y – Ch16	Homework 3 due
Session 14	Logistic regression	Logistic regression		Homework 4 out
Session 15	Measuring change	Furlough		Homework 4 due
Session 16	Summary			Final proposal due
				Exam 3 out

*Yockey texbook. All assignments will be passed out and due the Tuesday of the week. Exam 3 is due May 18 at noon.

THESIS PROPOSAL

	Total number of points possible
ABSTRACT	5
INTRODUCTION	
The Nature of the Topic	2
Why the Topic is Important	2
LITERATURE REVIEW	
Discussion of Previous Studies on the Topic, Including Information Relevant to Choice of Methods	8
Research Question	3
METHOD	
Participants	
Procedures for selecting sample	2
Sample type	2
Instruments	
Description of independent and dependent variables	4
Independent variable reliability and validity	4
Dependent variable reliability and validity	4
Design and Procedures	
Research design	2
Procedures	4
Research Hypothesis	3
STATISTICAL ANALYSES	
Proposed Descriptive Statistics	3
Proposed Inferential Statistics	7
REFERENCES AND APPENDICES	
References	2
Appendices (e.g., instruments)	3
WRITING QUALITY	
Spelling, Grammar, and APA style	5
Flow and Clarity of Thought	5
TOTAL:	70

Homework 1:

Upon successful completion of Psychology 244B, you will have a great sense of accomplishment and a complete thesis proposal document in hand.

To continue your speedy progress toward a graduate degree, your next steps should be to:

- Advance to candidacy
- Defend your thesis proposal
- Submit your final thesis proposal to the Department-level Human Subjects Committee
- Submit your final thesis proposal to the University-level Committee for the Protection of Human Subjects (possibly)

Examine the webpages for California State University, Fresno's Division of Graduate Studies and Committee for the Protection of Human Subjects and familiarize yourself with the material presented there. Print off and bring to class the following documents:

- Petition of Advancement to Candidacy for the Graduate Degree (be sure to locate the form appropriate to your particular option (e.g., ABA))
- Program Adjustment Request for a Graduate Degree
- Graduate Thesis (299) Committee Assignment & Thesis Committee Guidelines
- Departmental (Unit) Review Form
- Application Form for Unfunded Research

0 = not submitted, submitted late, or incomplete submission

10 = all materials submitted

Homework 2:

1. A researcher was interested in investigating the effectiveness of three different drugs on cholesterol levels. Fifteen participants were randomly assigned to one of three conditions, where they received one of three cholesterol drugs. One of the drugs had been on the market for several years (Drug A), while the other two drugs were recently released (Drugs B and C). Conduct the appropriate test in SPSS to assess whether there is a difference overall between the 3 drugs (that is, conduct the appropriate procedure that assesses, in a single test, whether there is a difference anywhere between the groups). Higher scores indicate worse cholesterol levels.

Type of pill		
Drug A - old	**Drug B - new**	**Drug C – new**
175, 156, 130,	110, 118, 135,	133, 140, 130,

170, 150	125, 135	157, 151

a. State the null and alternative hypotheses below (1 point).

b. What statistical procedure should be run on the data (be specific with the name of the test) (1 point)?

c. Report the effect size below (show your work). Using Cohen's standards, would you characterize the effect as small, medium, or large (2 points)?

d. Write a conclusion for the results of the study below. Include APA format as appropriate, and be sure to express the results in the context of the study. Conduct and describe the results of any post-hoc tests as needed to determine the nature of the differences between the groups. (3 points)

2. Using the data provided in #1, conduct a single linear contrast (i.e., planned comparison) in SPSS evaluating: (a) the old drug vs. the new drugs.

a. State the null and alternative hypotheses for the contrast below. Also, provide the weights (coefficients) for the contrast below, carefully labeling each group (so that I know which weight goes with which group) (1 point).

b. Write the results of the test of the contrast in APA format below (2 points).

Homework 3:

1. A researcher was interested in investigating whether high school GPA (**GPA_High_school**) and SAT scores (**SAT**) were predictive of first year GPA in college (**GPA_College**). After completing the first year of college, data on the three variables were obtained for 20 students and are reported in the table below.

GPA_High_school	SAT	GPA_College
3.12	550	3.50
2.88	480	2.55
3.90	670	3.70
3.10	580	3.23
3.20	620	3.10
2.55	385	3.55
3.90	770	4.00
3.25	620	3.23

4.00	720	3.85
3.00	660	3.00
2.10	440	2.55
3.55	380	3.82
3.67	770	3.90
2.65	410	1.52
2.15	340	2.99
3.65	740	3.76
2.43	410	2.53
2.34	380	2.56
3.21	610	3.54
2.12	350	1.75

Conduct the appropriate test in SPSS and answer the questions below.

a. State the null and alternative hypotheses below. Be sure to state all hypotheses that can be tested using this procedure (as is shown in your text) (2 points).

b. What statistical procedure should be run on the data (be specific with the name of the test) (1 point)?

c. Report the effect size below (show your work). Using Cohen's standards, would you characterize the effect as small, medium, or large? Also, interpret the effect size in terms of variance explained (2 points).

d. Write a conclusion for the results of the study below. Include APA format as appropriate, and be sure to express the results in the context of the study. Use $\alpha = .05$ for all tests (5 points).

Homework 4:

1. A researcher was interested in examining whether there was a relationship between college student status (college student/non-college student) and voting behavior (voted/didn't vote). Two-hundred and twenty participants (with 120 college students and 100 non-college students) were asked whether they voted in the last presidential election. The enrollment status and voting behavior of the two groups is presented in the table below (6 points total).

	Voted	didn't vote

Student	65	55	120
Non-student	30	70	100
	95	125	N = 220

Conduct the appropriate test in SPSS and answer the questions below.

a. State the null and alternative hypotheses (1 point).

b. What statistical procedure should be run on the data (be specific with the name of the test) (1 point)?

c. Write a conclusion for the results of the study below. Include APA format as appropriate, and be sure to express the results in the context of the study. Use $\alpha = .05$ (4 points).

2. A researcher conducted a hierarchical regression analysis, entering the predictor **importance** into the model first (model 1), followed by **advance** and **express** (these predictors were entered together in model 2). The criterion variable was **satisfaction**. Use $\alpha = .05$ for each test conducted (4 points total).

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	importance[a]	.	Enter
2	advance, express[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: satisfaction

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.681[a]	.464	.445	8.02877	.464	24.263	1	28	.000
2	.755[b]	.571	.521	7.46000	.106	3.216	2	26	.056

a. Predictors: (Constant), importance

b. Predictors: (Constant), importance, advance, express

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1564.053	1	1564.053	24.263	.000[a]
	Residual	1804.914	28	64.461		
	Total	3368.967	29			
2	Regression	1922.024	3	640.675	11.512	.000[b]
	Residual	1446.943	26	55.652		
	Total	3368.967	29			

a. Predictors: (Constant), importance

b. Predictors: (Constant), importance, advance, express

c. Dependent Variable: satisfaction

a. Is model 1 significant? Report the appropriate *F* and *p*-value to support your answer below (1 point).

b. Is model 2 significant? Report the appropriate *F* and *p*-value to support your answer below (1 point).

c. Is the change in R^2 from model 1 to model 2 significant? Report the appropriate *F* and *p*-value to support your answer below (2 points).