PSYCHOLOGY 244A: MEASUREMENT, RESEARCH METHODS, AND STATISTICS

INSTRUCTORS:	Dr. Constance Jones Dr. Ronald Yockey	
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OFFICE E-MAIL:	conniej@csufresno.edu ryockey@csufresno.edu	
OFFICE HOURS:	Jones:	Mondays 10:00 am - 12:00 noon Wednesdays 10:00 am - 1:00 pm
	Yockey:	Odd weeks (1, 3,..): Wednesdays 10:00 am - 3:00 pm Even weeks (2, 4,..): Thursdays 9:00 am - 1:00 pm; 4:00 pm – 5:00 pm
CLASS DAY AND TIME:	Tuesdays and Thursdays 2:00-3:50 pm	
CLASS LOCATION:	Tuesdays:	S2 108 (lecture room) with Jones
	Thursdays:	S2 319 (computer lab) and online 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.

Psychology 244A allows students to meet the California State University, Fresno graduate writing requirement. In order to pass the graduate writing requirement, students must earn at least 24 of 30 points on the third of three journal article critiques assigned. The rubric that will be used to evaluate student writing is attached to this syllabus.

The Psychology Department requires that Psychology graduate students earn a ―B" or higher in both Psychology 244A and Psychology 244B. If they do not, they must repeat the course until such a grade is earned. If Psychology graduate students pass both Psychology 244A and 244B with an ―A" or ―B," but fail the graduate writing requirement (i.e., receive less than 24 of 30 on the article critique), their work must be further evaluated by the Psychology Department Graduate Committee.

STUDENT LEARNING OUTCOMES:

Upon completion of this 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 (ISBN 0132238853). (Options for purchasing the SPSS software will be discussed in the first class meeting with Dr. Yockey. You may want to hold off on purchasing the book until then.)

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

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

Illustrative scientific articles, 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 two journal article critiques (30 points each).

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 and Critiques: Late homework assignments and late critiques 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 homework assignment or critique. Points per business day late (1 for homeworks, 3 for critiques) 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
171-190	A
152-170	B
133-151	C
114-132	D
0-113	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.

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 Fall 2009 semester. According to the furlough agreement, we cannot be on campus, answer e-mail, or take or make telephone calls related to any campus responsibilities, including teaching or grading assignments, on these days. *Dr. Jones' furlough days this semester are: August 17, August 21, September 4, September 17, October 8, October 22, November 23, November 24, and December 11. Dr. Yockey's furlough days this semester are: August 26, September 4, September 9, September 17, October 15, November 12, November 18, December 3, and December 11.*

COURSE OUTLINE:

Week	Tuesday (Jones)	Thursday (Yockey)	Readings*	Assignments due
Session 1	Introduction	Introduction	P1; Lamott	
Session 2	Cycle of science	Introduction to SPSS	Y1	
Session 3	Models; theory; research questions	Basic descriptive statistics**	P7,9; Riger; Herek et al.; Schaie; Y2	Homework 1 out
Session 4	Literature search and review; ethics	*Furlough*	On Being a Scientist	Homework 1 due Online IRB training
Session 5	Conceptualization and operationalization; research hypotheses	Data quantification**	P2,8	Critique 1 due
Session 6	Research design	Data management	P6,11; Y Appendix A	Exam 1 out
Session 7	Research design	Exploring an archival data set**		Exam 1 due Homework 2 out
Session 8	Forms of data	*Furlough*		Homework 2 due
Session 9	Descriptive statistics	Correlation**	Y12	
Session 10	Correlation	Factor analysis and principal components	P22,23	Critique 2 due Exam 2 out
Session 11	Factor analysis and principal components	Factor analysis and principal components**	Jones & Nesselroade	Exam 2 due Homework 3 out
Session 12	Factor analysis and principal	*Furlough*	P24	Homework 3 due

	components			Homework 4 out
Session 13	Reliability and validity	Reliability and validity**	P3,4,5; Y4; Haan & Livson; Nesselroade et al.	Homework 4 due
Session 14	*Furlough*	*Thanksgiving Holiday*		
Session 15	Summary	*Furlough*		
Session 16	Summary			Exam 3 out

*P=Pedhazur et al.; Y=Yockey. **=lecture delivered online (no class meeting). Assignments/Exams passed out and/or due on **bolded** date. Exam 3 due December 15.

Graduate Writing Assessment Rubric

On December 10, all students will be given the same article to read. On December 17, from 3:30-5:30 pm, students will write a two- to three-page critique on a laptop computer or computer lab computer.

The critiques will be evaluated by at least two members of the Psychology Graduate Committee. Names will be removed from the document before assessment, faculty will be assigned to critiques using random assignment procedures, and faculty will do their assessments independently.

Critiques will be evaluated with respect to:

- Writing mechanics (i.e., grammar and spelling)
- Clarity and coherence
- Content

Each of the following will be scored from 1 (very poor) to 10 (excellent). The sum across the 3 criteria must be 24 or higher to pass the writing requirement.

Writing mechanics (i.e., grammar and spelling): Single score given

1 = Writing is completely incomprehensible

2-3 = Writing contains numerous errors in spelling, grammar, and/or sentence structure which interfere with comprehension.

4-5 = Writing contains numerous errors in spelling, grammar, and/or sentence structure, but is essentially comprehensible

6-7 = Writing contains a moderate number of errors in spelling, grammar, and/or sentence structure, but is essentially comprehensible

8-9 = Writing follows normal conventions of spelling and grammar throughout, but contains some minor errors

10 = Writing is error-free in terms of mechanics

Clarity and coherence: Single score given

1 = Writing is utterly incoherent

2-3 = Writing is so poor as to have very little clarity or coherence

4-5 = Sentence structure, word choice, lack of transitions and/or sequencing of ideas make reading and understanding difficult

6-7 = Sentence structure and/or word choice sometimes interfere with clarity

8-9 = Sentences are structured and words are chosen to communicate ideas with adequate clarity

10 = Writing flows perfectly smoothly and logically

Content: Sum of scores as indicated below

Briefly summarize the overall purpose, procedures, and results of the study

0 = incorrect

1 = correct

Research Question: Indicate the primary research question posed by the author(s)

0 = incorrect

1 = correct

Participants: Discuss the sample size, sample type, and adequacy of the sample as a whole

0 = error-ridden discussion

1 = adequate discussion

2 = excellent/good discussion

Instruments: Discuss the instruments used, and indicate the adequacy of those instruments

0 = error-ridden discussion

1 = adequate discussion

2 = excellent/good discussion

Research Design: Discuss the research design used, and the adequacy of that design

0 = error-ridden discussion

1 = adequate discussion

2 = excellent/good discussion

Results and Discussion: Discuss the primary results obtained, and how these results may or may not be of importance to the general literature

0 = error-ridden discussion

1 = adequate discussion

2 = excellent/good discussion

Homework 1:

Complete the National Institute of Health (NIH) on-line Human Subjects Training program.

Print out and bring to class your Human Subjects Training Certificate.

0 = not submitted or submitted late

10 = submitted on time

Homework 2:

Identify two potential concepts of focus in your thesis. Write a one paragraph "conceptualization" of each concept. Then, describe a potential operationalization for each concept. If you identify a published questionnaire as a potential operationalization, attach a copy of the instrument. If you suspect you will need to create your own operationalization (e.g., create your own questionnaire or coding scheme), attach a first draft of your creation.

0 = not submitted or submitted late

5-7 = poor to adequate operationalization

8-9 = good operationalization

10 = very complete operationalization

Homework 3:

FACTOR ANALYSIS/PRINCIPAL COMPONENTS ANALYSIS

Obtain the data file *Homework #3 data.sav* from Blackboard (in the course documents folder) and run a principal components analysis (PCA) in SPSS on the variables **death7** through **death38** to answer the questions below. Use varimax rotation (exclusively) for questions 1 through 5.

1. Is the correlation matrix significantly different from an identify matrix? Report the appropriate *p*-value below to support your decision. Based on the results, should a PCA be conducted? Why or why not - (1 point)

2. How many components are retained using an eigenvalue > 1 solution? Provide the percentage of variance that each component accounts for below (2 points).

3. What is the total percentage of variance explained or accounted for using the eigenvalue > 1 solution? – (1 point)

4. Compare the eigenvalue > 1 solution to the 5-component theorized structure provided by Wong et al. (your handout). Is there perfect agreement between the two? If not, identify how your solution differed from the theorized solution provided by Wong et al. Be specific (2 points).

5. Based on your knowledge of PCA, determine a component solution that you feel provides the best fit to the data (using various rules such as eigenvalue > 1, scree plot, orthogonal and oblique rotations, etc.). Provide loadings on the components below, name the components, identify the choices you made to arrive at your solution, and justify why your solution is a good one. (*Hint*: A good solution is one that is justifiable on empirical and/or substantive grounds. As is the case with PCA/Factor analysis, there is not necessarily a single correct answer.) Be sure to be enough detail so that a researcher would have the necessary information to reproduce your solution (4 points).

Homework 4:

Examine the measures listed below. Circle the form(s) of reliability that would be appropriate for each measure. If you circle test-retest reliability, give an appropriate test-retest interval.

TR = test-retest

E = equivalent forms

S = split-half

IC = internal consistency

IR = inter-rater

1. Single-item measure of self-reported marital satisfaction (1-10)	TR	E	S	IC	IR
2. Single-item measure of self-reported weight (0-500 pounds)	TR	E	S	IC	IR
3. Single-item measure of self-reported elated mood (1-10)	TR	E	S	IC	IR
4. Single-item measure of self-reported ever having left spouse (yes/no)	TR	E	S	IC	IR
5. Single-item measure of judge-rated enthusiasm for graduate school (1-3)	TR	E	S	IC	IR
6. Single-item measure of judge-rated state anxiety (1-5)	TR	E	S	IC	IR
7. Single-item measure of self-reported preferred breakfast cereal (brand listed)	TR	E	S	IC	IR
8. 2-item measure of self-reported motivation to graduate from high school (1-8)	TR	E	S	IC	IR
9. 40-item measure of self-reported negative affect (1-5)	TR	E	S	IC	IR
10. 40-item measure of self-reported positive affect (1-5)	TR	E	S	IC	IR
11. 40-item measure of self-reported neuroticism (1-5)	TR	E	S	IC	IR
12. 50-item measure of self-reported trait anger, with another					

50 parallel items available (1-7)	TR	E	S	IC	IR
13. 50-item measure of self-reported state anger, with another 50 parallel items available (1-7)	TR	E	S	IC	IR
14. 100-item measure of self-reported overall well-being (1-7)	TR	E	S	IC	IR
15. 100-item measure of 3 aspects of self-reported positive mood: enthusiasm, energy, and boldness (1-10)	TR	E	S	IC	IR
16. 100-item measure of self-reported preferred pets (yes/no for each of 100 possible pet types)	TR	E	S	IC	IR
17. 100-item measure of self-reported clinical depression (1-3)	TR	E	S	IC	IR
18. 100-item measure of judge-rated qualities of marital interaction (1-3)	TR	E	S	IC	IR
19. 100-item measure of judge-rated qualities of breadth and depth of personality overall (1-5)	TR	E	S	IC	IR
20. 100-item comprehensive examination (correct/incorrect)	TR	E	S	IC	IR

.5 point per correct answer