Psychology 5320

Principles of Measurement (Psychometrics)

Spring 2015

 **Instructor:** Paul Raffeld

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 **Office Hours**: I will be available for assistance to students from 12:30 pm until 1:30 pm on Mondays and Wednesdays. Please send email if you plan to come to my office so that I can be sure to be there. If you need to meet at other times, let me know and I will try to work with you.

The focus of this course is on ***Psychometrics***; the study of measurement instruments typically used in Psychological and Educational research including their development, analysis and proper use and interpretation. Measures of such constructs as ability, achievement, intelligence, attitude, opinion, behavior and social interactions will be discussed. We will cover such statistical topics as correlation, variance, covariance and factor analysis. Some hypothesis testing will also be covered in the context of test validity.

**By the end of this course you should be able to**:

1) Understand the nature and function of various psychological measures.

2) Know the procedures involved in determining the reliability and validity of various measurement instruments.

3) Know the various types of classical reliability and validity.

4) Be familiar with Generalizability and IRT Theories and procedures.

4) Know how to read and understand the technical manuals and reviews of most measurement scales in use today.

**NOTE:** This Syllabus is a guide and **not** a **Contract.** In all likelihood, dates and chapters will change as the semester progresses**.**

**Text, Materials and Assignments:**

**TEXT**:

Furr, Michael R. and Bacharach, Verne R.,(2014) Psychometrics an Introduction (2nd edition), Sage Publication. ISBN 978-1-4522-5680-1

**CALCULATOR**: Any calculator with a key for the mean and standard deviation. The TI 30XA is one example. Be sure that you can use it to obtain the mean and standard deviation. If you already have a calculator that meets the requirement, be sure you know how to use it. **Bring the calculator to every class!**

**EXAMS**: There will be 2 course exams. You will have the full class time to complete each exam. The course exams will contain short essay questions as well as computations. Your written response to the short essay items will give me information about the degree to which you understand the material. Most of the exam content will come from your text, handouts and lecture. **Be sure to bring your calculator to each exam**!

 \*\***Note:** During exams, you **cannot** use class notes, the text or class handouts. Formulas will be provided as needed.

**ASSIGNMENTS:** Develop, administer and analyze two short tests:

 1) A psychological construct such as anxiety, happiness, apprehension, etc. Make the construct very narrow so that you can obtain a meaningful score with as few as 5 or 6 items. You will need to choose a scale for the items and administer this test to at least 10 to 15 students. **Analyze the data and write a report.**

 2) An achievement test measuring a very narrow skill or knowledge construct such as descriptive statistics, basic algebra or fractions and proportions. Here you can use multiple choice, true/false, or matching formats. Again, keep the number of items to 5 or 6 and the number of students to 10 to 15.  **Analyze the data and write a report.**

More details about these assignments will be provided in class and as a handout.

**Grading:** Grades will be based upon the 2 course exams, class participation and the two test construction assignments. Each exam is worth 25% of your grade. Each test construction assignment is worth 25% . Class participation will be used to resolve borderline situations.

**Course Schedule:**

**Note: The following schedule of chapters, exam dates and assignments is tentative!**

Week 1 W (Jan 21) Chapter 1 Introduction

Week 2 MW (Jan 26, 28) Chapter 2 Scaling

Week 3 MW (Feb 2,4) Chapter 3 Variance and Covariance

Week 4 MW (Feb 9,11) Chapter 4 Dimensionality

Week 5 MW (Feb 16,18) Chapter 5 Reliability (Conceptual)

Week 6 MW (Feb 23,25) Chapter 6 Reliability-- Empirical Estimation

Week 7 MW (March 2) Midterm Exam: (March 4) Chapter 7 Importance of Reliability. **First Exam Construction, data analysis and report due** **March 4**

Week 8 MW (March 9,11) Chapter 8 Validity (Conceptual)

Week 9 MW (March 23, 25) Chapter 9 Convergent and Discriminant Validity

Week 10 MW (March 30, April 1) Chapter 10 Response Biases

Week 11 MW (April 6,8) Chapter 11 Test Bias **Second Exam Construction, data analysis and report due April 8**

Week 12 MW (April 11,15) Chapter 13 Generalizability Theory

Week 13 MW (April 20,22) Chapter 14 Item Response Theory (IRT)

Week 14 MW (April 27,29) Discussion of IRT and review for final exam

Week 15 Tuesday May 5 Final Exam

**Learning Outcomes:**

The Department of Psychology has adopted expected student learning outcomes for the undergraduate major, the graduate major, and for Psy 1300, a general education course meeting a requirement for the social and behavioral science component. These expected student learning outcomes are available for your review at the following website: <http://www.psych.txstate.edu/assessment/>

**Disability Statement:** (PPS 04.01)

“In accordance with university policy and federal law, all members of the university community are responsible for ensuring that students are not discriminated against because of a disability. To accomplish this goal, reasonable and appropriate academic accommodations may be necessary for qualified students with disabilities. The Office of Disability Services will coordinate with faculty members to facilitate necessary accommodations for students with disabilities.”

**Honor Statement:** Both the Department of Psychology and the university expect academic honesty. For more information see UPPS 07.10.01.