

**E63.2140**  
**MEASUREMENT: CLASSICAL TEST THEORY**

Professor Perry N. Halkitis, Ph.D., M.S.  
TA: James Pollock, MEd

Fall, 2009  
Wednesday 3:30PM –6:10PM

**CLASS LOCATION:** Silver 501

**COURSE OVERVIEW & OBJECTIVES:**

Students will examine the principles of psychological and educational measurement and testing, including the technical interpretation of test scores using the classical test model. Content of the course will consider individual measures of aptitude, personality, intelligence, and achievement as well as the standards for educational and psychological measurement. Students will examine and deconstruct principles and techniques used in psychometric studies to establish levels of reliability and validity and will utilize statistical software to conduct analyses.

By the conclusion of this course students will:

- Comprehend and apply the tenets of classical test theory
- Articulate major categories of psychological and educational tests and measures
- Analyze properties of tests and measures with regard to levels of reliability and validity
- Determine strategies for establishing test reliability and validity using the standards for test and measurement
- Apply statistical procedures of correlation and factor analysis in psychometric assessments
- Understand the ethical principles of tests and measures
- Read, analyze, and evaluate literature in measurement, psychometrics, and quantitative psychology

**REQUIRED READINGS:**

AERA, APA, & NCME, (1999). *Standards for educational and psychological testing*. Washington DC: AERA.  
Furr, M. R. & Bacharach, V.R.. (2008). *Psychometrics; an introduction*. Thousand Oaks, CA; Sage Publications.

Primary source journal readings (Online; listed by session)

**EVALUATION:**

Presentation of Test and Measures, Part I	15 points
Presentation of Tests and Measures, Part II	25 points
Data Analysis I-V	25 points
Final Examination	25 points
Class Participation	10 points

94-100: A 90-93: A- 88-89: B+ 84-87: B 80-83: B- 78-79: C+ 74-77: C 70-73: C- 65-69: D < 65: F

## TESTING, MEASUREMENT, AND CLASSICAL TEST THEORY

### Session 1: 9/9/09

#### Course Overview/ Introduction to Testing

##### Readings:

Furr, M. R. & Bacharach, V.R.. (2008). *Psychometrics; an introduction*. Thousand Oaks, CA; Sage Publications. Preface

Michell, J. (2003). Epistemology of measurement: the relevance of its history for quantification in the social sciences. *Social Science Information*, 42, 515-534.

### Session 2: 9/16/09

#### Survey of Tests and Measures

##### Readings:

Furr, M. R. & Bacharach, V.R.. (2008). *Psychometrics; an introduction*. Thousand Oaks, CA; Sage Publications. CH 1

### Session 3: 9/23/09

#### Foundations of Classical Test Theory

##### Readings:

Traub, R. E. (1997). Classical test theory in historical perspective. *Educational Measurement: Issues and Practice*, 16(4), 8-14

### Session 4: 9/30/09

#### Research on Tests and Measures

##### Assignment Due: Presentation Part I

### Session 5: 10/7/09

#### Presentation of Tests and Measures, Part I

##### Assignment Due: Presentation Part I

## FOUNDATIONS OF MEASUREMENT

### Session 6: 10/15/09

#### Scales of Measurement

##### Readings:

Furr, M. R. & Bacharach, V.R.. (2008). *Psychometrics; an introduction*. Thousand Oaks, CA; Sage Publications. CH 2

Stevens, S.S. (1946). On the theory of scales of measurement. *Science*, 103, 677-680.

### Session 7: 10/22/09

#### Individual Differences and Correlations

##### Readings:

Furr, M. R. & Bacharach, V.R.. (2008). *Psychometrics; an introduction*. Thousand Oaks, CA; Sage Publications. CH 3 (pp. 31-47)

Howard, G.S. & Maxwell, S.E. (1980). Correlation between student satisfaction and grades: A case of mistaken causation? *Journal of Educational Psychology*, 6, 810-820.

**Session 8: 10/29/09**

**Factor Analysis I**

**Readings:**

Furr, M. R. & Bacharach, V.R.. (2008). *Psychometrics; an introduction*. Thousand Oaks, CA; Sage Publications. CH 4

**Assignment Due:** Data Analysis I

**Session 9: 11/4/2009**

**Factor Analysis II**

**Readings:**

Brown, T.A., Cash, T.F., & Mikulka, P.J. Attitudinal body-image assessment: factor analysis of the body-self relations questionnaire. *Journal of Personality Assessment*, 55(1&2), 35-144.

Tschannen-Moran, M & Woolfolk Hoy, A. (2001). Teacher efficacy: capturing an elusive construct. *Teaching and Teacher Education* 17, 783–805.

**Assignment Due:** Data Analysis II

**PSYCHOMETRICS**

**Session 10: 11/11/09**

**Overview of Psychometric Analysis/ Standards for Testing and Measurement**

**Readings:**

AERA, APA, & NCME, (1999). *Standards for educational and psychological testing*. Washington DC: AERA. Introduction

Wise, L.L. (2006). Encouraging and supporting compliance with standards for educational tests. *Educational Measurement: Issues and Practice*, 25(3), 51-53.

Linn, R.L. (2006). Following the standards: is it time for another revision? *Educational Measurement: Issues and Practice*, 25(3), 54-56.

**Assignment Due:** Data Analysis III

**Session 11: 11/18/09**

**Test Reliability**

**Readings:**

AERA, APA, & NCME, (1999). *Standards for educational and psychological testing*. Washington DC: AERA. CH 1

Furr, M. R. & Bacharach, V.R.. (2008). *Psychometrics; an introduction*. Thousand Oaks, CA; Sage Publications. CH 5-7

Sellers, R.M., Rowley, S.A.J., Chavous, T.M., Shelton, N.J., & Smith, M.A. (1997). Multidimensional inventory of Black identity: a preliminary investigation of reliability and construct validity. *Journal of Personality and Social Psychology*, 73(4), 805-815.

Weinhardt, L.S., Forsyth, A.D., Carey, M.P., Jaworksi, B.C., & Durant, L.E. (1998). Reliability and validity of HIV-related sexual behavior: progress since 1990 and recommendations for research and practice. *Archives of Sexual Behavior*, 27(2), 155-180.

**Assignment Due:** Data Analysis IV

**Session 12: 11/25/09**

**Test Validity**

**Readings:**

AERA, APA, & NCME, (1999). *Standards for educational and psychological testing*. Washington DC: AERA. CH 2

Furr, M. R. & Bacharach, V.R.. (2008). *Psychometrics; an introduction*. Thousand Oaks, CA; Sage Publications. CH 8-9.

Boulet, S. & Boss, M.W. (1991) Reliability and validity of the Brief Symptom Inventory. *Psychological Assessment*, 3(3), 433-437.

Zwick, R. & Schlemmer, L. (2004). SAT validity for linguistic minorities at the University of California, Santa Barbara. *Educational Measurement: Issues and Practice*, 23(1), 6-16.

**Assignment Due:** Data Analysis V

**Session 13: 12/2/09**

**Presentation of Test and Measures, Part II**

**Assignment Due:** Presentation Part II

**Session 14: 12/9/09**

**Presentation of Test and Measures, Part II**

**Assignment Due:** Presentation Part II

**Session 15: 12/16/09**

**Assignment Due:** Final Examination

**ASSIGNMENTS**

**Presentation of Test and Measures, Part I**

For this assignment you are asked to identify a test or measure which is of interest to you. Such instruments can be identified in a variety of sources which we will discuss in class (e.g., *Tests in Print*, *Mental Measurements Yearbook*, *Test Critiques*, *Measures for Psychological Assessment*). For the first presentation you are to thoroughly research the measure you have selected using these volumes and a thorough review of the literature. Then you are to fashion a 15 minute presentation that includes the following elements: (1) description of the instrument and the construct or constructs it seeks to measure; (2) historical background on the development of the instrument; (3) utilization of the instrument in research and practice, including populations for which the instrument was intended to be used; and (4) description of items and scoring. The presentation should be formatted in *PowerPoint* or comparable software. You will be assessed on the extent to which you have successfully researched this measure and your ability to present this information thoroughly, concisely, and clearly. Your audience should have a full comprehension of this instrument by the conclusion of your talk. Please email me your presentation at [pnh1@nyu.edu](mailto:pnh1@nyu.edu) by noon on September 30<sup>th</sup>. On the day of the presentation (9/30 or 10/7) you are to provide me a hard copy of the talk. Late assignments will not be accepted. This assignment is worth 15 points.

**Presentation of Test and Measures, Part II:**

In this second presentation you are to fashion a talk of no more than 15 minutes that provides information on the psychometric properties of the instrument you described in the first presentation. You are to research psychometric studies (i.e., studies of reliability and validity) for the instrument. Your talks should include (1) a detailed description of the psychometric studies, (2) the associated finding of these studies, and (3) your own

assessment, based on all you have learned about this instrument, on the utility of this measure in research and practice, and across populations (e.g., race/ethnicity, SES, gender, sexual orientation) Please email me your presentation at pnh1@nyu.edu by noon on December 2<sup>nd</sup>. On the day of the presentation (12/2 or 12/9) you are to provide me a hard copy of the talk. Late assignments will not be accepted. This assignment is worth 25 points.

### **Data Analysis I-V:**

There will be five data analysis assignments. For each assignment you will be asked to answer a series of questions based on a data set, which is provided. You are to conduct your analysis in *SPSS* and then thoroughly provide the answers to the questions and append the *SPSS* output and syntax to the assignment. The assignment is due at the beginning of the class session. There will be 5 data analysis assignment and each will be worth 5 points. There is a 2 point deduction for each day late.

### **Final Examination**

You will be provided a take-home examination of Wednesday December 10<sup>th</sup>. The examination will cover all aspects of the class and the questions will ask you to apply the concepts that you have learned. You will have one week to complete the assignment. You must work on this assignment individually. Working on the assignment with a classmate or receiving help from a consultant is a violation of ethical standards. The assignment must be emailed to me at pnh1@nyu.edu by 9AM Wednesday December 17<sup>th</sup>. The final examination is worth 30 points. Examinations will not be accepted late.

### **Class Participation**

You are expected to attend all classes, complete all the readings, and be actively engaged in the classroom activities and discussions, and take part in the class recitations. Recitations are required. This course will rely heavily upon class participation. Class participation is worth 10 points.

Students are reminded free expression in an academic community is essential to the mission of providing the highest caliber of education possible. Provocative ideas respectfully presented are an expected result. An enlightened academic community, however, connects freedom with responsibility. New York University encourages civil discourse, reasoned thought, sustained discussion, and constructive engagement without degrading, abusing, harassing, or silencing others. The teachers for this course are committed to maintaining an environment that opens doors, opens hearts, and opens minds.
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