

COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT

George Mason University

COURSE SYLLABUS

EDRS 531: Educational & Psychological Measurement

Spring 2009

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Instructor

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Overall Goal and Course Objectives

Catalog Description: EDRS 531 Educational and Psychological Measurements (3:3:0). Emphasizes techniques and principles used in the construction, administration, and quantification of measuring devices for evaluation purposes. Discusses interpretation of standardized tests of ability, aptitude, achievement, interest, and personality.

This course is designed to facilitate students acquiring the fundamental measurement concepts, principles, theories, used in psychological and educational testing. Current models for test construction and the evaluation of standardized and standards-based tests will be examined.

Attainment of the overall goal will be demonstrated by students providing evidence of the ability to:

- apply the principles of educational measurement to relevant problems in testing
- understand basic technical characteristics of standardized tests
- interpret technical information presented in standardized test manuals
- interpret standardized test results
- evaluate published standardized tests and assessment instruments;
- knowledge of current professional practices and issues related to educational measurement and assessment;
- apply sound principles of measurement and assessment in multicultural settings

These learning objectives correspond to the competency standards advanced by three major educational organizations, namely, the National Council on Measurement in Education (NCME), American Federation of Teachers (AFT), and the National Education Association (NEA). In *Standards for Teacher Competence in Educational Assessment of Students* (1990), these professional associations asserted that educators should be skilled in:

- *Choosing* assessment methods appropriate for instructional decisions.
- *Developing* assessment methods appropriate for instructional decisions.
- *Administering*, scoring and interpreting the results of both externally- produced and teacher-produced assessment methods.
- *Using* assessment results when making decisions about individual students, planning teaching, developing curriculum, and school improvement.
- *Developing* valid pupil grading procedures which use pupil assessments.
- *Communicating* assessment results to students, parents, other lay audiences, and other educators.
- *Recognizing* unethical, illegal, and otherwise inappropriate assessment methods and uses of assessment information

In addition NCME's Code of *Professional Responsibilities in Educational Measurement* (NCME, 1999) as well as *Standards for Educational and Psychological Testing* (AERA, 1999) serve as lenses through which each topic will be viewed and understood.

Course Description

Organization

The course is organized as a seminar/workshop format. Class periods are devoted to a number of different activities, including small group and whole-class discussions, video presentations, and mini-lectures. These activities are organized around the content of the required textbook and a variety of additional resources such as the Students' Learning Resource Manual (*SLRM*). You must check **Blackboard** each week as new materials will be posted to the course for your review and completion prior to class.

While the mini-lectures are relevant to specific chapters in the required textbook, they are not taken exclusively from this source. The general purpose of the lectures is to clarify, amplify, and supplement your textbook, not to duplicate it. Therefore, it is important that you attend class regularly and read the relevant chapters prior to a given lecture in order that you may raise questions if your concerns are not covered in class.

Appendix A provides the *Class Calendar* that lists the instructional units, pertinent assignment due dates, and the chapters related to each instructional unit. Blackboard will be updated weekly with additional information associated with each unit and homework.

Course Requirements

Besides active class participation, there are several written assignments and a major project that are part of the course requirements. **Appendix B** lists *General Guidelines* for all written assignments.

(NOTE: Specific guidelines for the completion of each required assignment will be posted in Blackboard. It is expected that all assignments will be received as noted in Appendix A. If you cannot meet a deadline, please notify me in advance via email.)

We will be using the **Interactive Herrmann Brain Dominance Indicator (iHBDI)** instrument as an exemplar throughout the course. You will be engaged with the instrument as both a test taker and a test evaluator. This is a new interactive instrument that is currently in beta test, and is slated to launch worldwide in 2009.

According to Ann Herrmann (2008) the origin of the HBDI is as follows:

In 1976, while researching the brain as the source of creativity, Ned Herrmann learned of the pioneering brain research of Roger Sperry, Paul MacLean, Joseph Bogen and Michael Gazzanaga. From their work it is clear that the brain has four distinct and specialized structures. Inspired by this research, Herrmann worked with EEG scans and, later, paper-and-pencil questionnaires to identify four distinct types of thinking, each roughly corresponding to one of the brain structures. The result of this research is the Herrmann Whole Brain® Model.

In August 1979, after many tests, in-depth research, and mountains of data, Herrmann had developed a valid self-assessment that enables individuals to understand their own thinking style preferences—the HBDI®.

Inclusion of the iHBDI into the course provides you an opportunity to experience and evaluate the merits and limits of computer-assisted psychological assessment (CAPA). iHBDI instructions will be provided as the course progresses and relevant topics are discussed.

Action Research (20%)

This requirement involves inquiry-based learning that requires students to investigate current issues and practices in standardized testing in a professional area.

Review of Standardized Tests (20%)

Students are required to review two (2) standardized instruments --- one cognitive test and one personality instrument (affective traits such as interest, adjustment, etc.).

Midterm Exam (20%)

A selected-response exam will be given covering basic understanding of the concepts listed in the self-assessment section of chapters 2-6 of the Cohen and Swerdlik textbook. *High probability concepts selected for the exam will be those that were not only covered in the textbook but also found in the homework exercises.* The exam will contain about 60 items and be given during the first segment of the instructional period.

e-Portfolio of Learning Engagement (40%)

The e-Portfolio is a collection of exhibits of (1) completed homework, and (2) a summary and reflection brief based on your selection of two researched articles. The basis of your research will be a topic from *Benchmarking for success: Ensuring U.S. students receive a world-class education* or *Call to action health reform 2009*. Topics should be related to testing in the context of one of the three following areas: (a) *social justice*, (b) *promoting personal excellence in academic achievement*, or (c) *diversity* (ethnic, racial, gender, special needs, or language).

The review/reflective paper should be no longer than six pages. All e-Portfolio exhibits will be submitted on a CD-RW disk on Final Exam Night. You will provide a brief oral presentation of your review/reflective paper on Final Exam Night.

Summary of Course Requirements

The course requirements are listed below along with their relative weights.

Table 1. Relative Weights of Course Requirements

Course Requirements	Relative Weights
Action Research Report (Appendix C)	20%
Review of Standardized Tests (2)	20%
Midterm Exam	20%
E-Portfolio (selected work & paper)	40%
Total	100%

Required Textbook and Web-Based Sources

- Baucus, U. S. S. M. (2008). *Call to action health reform 2009* (Senate Report). Washington DC: U.S. Senate Finance Committee. Blackboard.
- Cohen, R. J. and Swerdlik, M.E. (2005). *Psychological testing and assessment*. 6th Ed. New York: McGraw Hill.
- GMU Blackboard Learning System. Requires enrollment by the instructor. Access at: www.gmu.edu (scroll to Sites of Interest – select Blackboard Learning System)
- iHBDI instrument. Requires enrollment by the student. Specific instructions will be provided.
- NGA. (2008). *Benchmarking for success: Ensuring U.S. students receive a world-class education* (Report). Washington DC: National Governors Association. Blackboard.
- Thomas, C. L. (2006). *Students' learning resource manual (SLRM)*. Fairfax, VA: George Mason University. Access assigned pages through Blackboard.

Other Web-based Resources:

- Buros Institute of Mental Measurements. Retrieved January 8, 2009 at: <http://buros.unl.edu/buros/jsp/search.jsp>
(Includes a directory of tests with descriptions)
- Educational Testing Service. Retrieved January 8, 2009 at: <http://www.ets.org/portal/site/ets/menuitem.1488512ecfd5b8849a77b13bc3921509/?vnextoid=ed462d3631df4010VgnVCM10000022f95190RCRD&vnextchannel=85af197a484f4010VgnVCM10000022f95190RCRD>
(Includes a directory of tests with descriptions)
- Illinois State Board of Education. ISAT 7th Grade Science Sample Book. Retrieved January 9, 2009 at: http://www.isbe.net/assessment/pdfs/2007_ISAT_Sample_Book_Gr_7_s.pdf

(The Illinois State Assessment Test (ISAT) and the Prairie State Achievement Examination (PSAE) measure individual student achievement and show how well students and schools are performing relative to the Illinois Learning Standards. The tests measure student progress in meeting the Illinois Learning Standards. The tests are given at specific times in a student's educational career, however they are not grade specific. The test results identify areas of strength and weakness for students and schools. The information helps educators and parents assist students to meet the Standards.)

- NCME Ad Hoc Committee on the Development of a Code of Ethics (1995). Code of Professional Responsibilities in Educational Measurement. Retrieved January 9, 2009 at http://www.natd.org/Code_of_Professional_Responsibilities.html
- Virginia Department of Education. Division of Assessment and Reporting. Retrieved January 9, 2009 at: <http://www.pen.k12.va.us/VDOE/Assessment/home.shtml>
- Virginia Department of Education. Standards of learning test blueprints. Retrieved January 9, 2009 at <http://www.pen.k12.va.us/VDOE/Assessment/soltests/>
- Virginia Department of Education. (2004).Standards of learning technical report. Retrieved January 9, 2009 at <http://www.pen.k12.va.us/VDOE/Assessment/VA03-04TechnicalReport.pdf>
- StatSoft. (2007). An electronic textbook on statistical concepts. Retrieved January 10, 2009 at: <http://www.statsoft.com/textbook/stathome.html>

Recommended Resources:

- American Psychological Association. (2002). Publication manual of the American Psychological Association. (5th Ed.). Washington, DC: Author.
- Baron and J. J. Sternsberg (Eds.) Teaching thinking skills: Theory and practice. New York: W. H. Freeman.
- Bloom, B. S. (Ed.). (1956). Taxonomy of educational objectives, handbook I: Cognitive domain. New York: McKay
- Bruning, R. H., Schraw, G. J., Norby, M. M., & Ronning, R. R. (2004). *Cognitive psychology and instruction* (4th ed.). Upper Saddle River: Pearson Prentice Hall.
- Ennis, R. H. (1987). A taxonomy of critical thinking dispositions and abilities. In J.B.
- Marzano, R. J., Pickering, D., & McTighe, J. (1993). Assessing student outcomes. Performance assessment using the dimensions of learning model. Alexandria, VA: Association for Supervision and Curriculum Development.
- Fink, A., & Kosecoff, J. (1998). *How to conduct surveys: A step-by-step guide* (2nd ed.). Thousand Oaks: SAGE Publications.
- Gronlund, N. E. (1998). *Assessment of student achievement* (6th ed.). Needham Heights: Allyn & Bacon.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: an expanded sourcebook* (2nd ed.). Thousand Oaks: SAGE Publications.
- Nitko, A. J. (2001). *Educational assessment of students* (3rd ed.). Upper Saddle River: Prentice-Hall.
- Quellmalz, E. S. (1987). Developing reasoning skills. In J.B. Baron and J. J. Sternsberg (Eds.) Teaching thinking skills: Theory and practice. New York: W. H. Freeman.
- Starbird, M. (2006). Meaning from data: Statistics made clear (Version Part 1) [DVD]. Chantilly: The Teaching Company.
- Urduan, T. C. (2005). *Statistics in plain English*. Mahwah: Lawrence Erlbaum Associates.

References

- American Educational Research Association, American Psychological Association, and National Council on Measurement in Education. (1999). Standards for educational and psychological testing. Washington, DC: American Educational Research Association
- American Federation of Teachers, National Council on Measurement in Education & National Education Association. (1990). Standards for teacher competence in educational assessment of students. Retrieved January 10, 2009 at: <http://www.unl.edu/buros/bimm/html/article3.html>
- National Council on Measurement in Education. (1995). Code of professional responsibilities in educational measurement. Retrieved January 10, 2009 at: http://www.natd.org/Code_of_Professional_Responsibilities.html

APPENDIX A

CLASS SCHEDULE: SPRING 2009

DATES

LECTURE & READING TOPICS

Classes Cancelled January 20th – Inauguration Day!

JAN 27	Orientation to the course and introduction to the study of educational testing and assessment: Basic definitions and survey of types of standardized tests. Readings for this week: Cohen & Swerdlik (C&S), Chapters 1-2 Homework Exercises: <i>iHBDI</i> & Class 1 Assignments
FEB 3 & FEB 10	Review of Basic Statistical Concepts Required for Understanding and Interpreting Standardized Tests. Readings for this week: C&S, Chapter 3, & pp 114-125 In-Class: <i>Mean & Median; Percentile Ranks; Correlation Cumulative Frequency; Frequency Polygon</i>
FEB 17 FEB 24 MAR 3	Basic Assumptions About Psychological Measurement and Testing & Essential Qualities of a Good Test. Readings for this week: C&S, Chapters 4-6 In-Class: <i>Discuss Previous Work; New: Grade Equiv; Stanines; Test-Retest</i> Action Research Report Due Feb 24.
MAR 17	Midterm exam covering self-assessment concepts from chapters 2-6. Spring Break MAR 9 - 15
MAR 24	Principles of Test Development. Readings for this week: C&S, Chapter 7 In-Class Exercises: <i>Standard Errors of Measurement, Internal-Consistency, Item Analysis</i>
MAR 31	Understanding Standardized Cognitive Tests : Aptitude. Readings for this week: C&S, Chapters 8-9 Whole Class: Previous week's exercises In-Class Exercises: <i>Construct Validity; Content Validity</i>
APR 7	Understanding Standardized Cognitive Tests : Achievement. Readings for this week: C&S, Chapter 10 Whole Class: Results of in-class exercises
APR 14	Personality Assessment. Readings for this week: C&S, Chapters 11-12 In-Class Exercises: <i>Concurrent Validity</i>
APR 21	Clinical and Counseling Assessment. Readings for this week: C&S, Chapter 13
APR 28	The Assessment of People with Disabilities: Readings for this week: C&S, Chapter 15
MAY 5	Assessment for Careers, and Business: Readings for this week: C&S, Chapter 16 Test Reviews Report Due
MAY 12	Oral Report on Article Reviews and e-Portfolio Submitted

Homework- Class 1

The following exercises should familiarize you with online testing resources available to you. These are resources that can be used to identify your cognitive and affective test reviews.

Site 1: Go to <http://buros.unl.edu/buros/jsp/search.jsp>

Click on CATEGORY SEARCH

Select a CATEGORY OF INTEREST

Select an ASSESSMENT from the list in your category

Note the information included about the test. This is similar to the information available at the Johnson Library, **Mental Measurements Yearbook online**. Access through the Johnson Library is free. As you can note from the Buros site, other institutions will charge you to access the information.

Site 2: ETS (Educational Testing Service)

Go to

<http://www.ets.org/portal/site/ets/menuitem.1488512ecfd5b8849a77b13bc3921509/?vgnextoid=ed462d3631df4010VgnVCM10000022f95190RCRD&vgnextchannel=85af197a484f4010VgnVCM10000022f95190RCRD>

Select Find a Test

Select SEARCH

Test out the search test feature

Note the differences in the information provided compared to the Buros test search system.

Site 3: Complete the iHBDI instructions for Class 1. See instruction sheet for sign-in details.

APPENDIX B

GENERAL GUIDELINES TO WRITTEN ASSIGNMENTS

All course projects should be typed, double-spaced, and include a cover page. In addition, **the text of the papers should be preceded by an abstract of no more than 250 words** that provides a synopsis of the content, such as purpose, procedures, findings and conclusions. In terms of general style, the format provided in the fifth edition of **Publication Manual of the American Psychological Association** (American Psychological Association, 2001) should be followed.. The features that should be given close attention are:

-Margins -Headings -Citations in the Text -Reference Page

The *cover page* should include the title of the assignment, your name, date, and institutional affiliation information.

You should make a copy of your projects before submitting it to the instructor. **The instructor will keep the original copy of the major paper, but will provide feedback in terms of a performance rubric.** You are welcomed, of course, to make an appointment to see the instructor concerning the evaluation of the project.

ACTION RESEARCH – DUE 2/24/09

Guidelines to Action Research Reports

Confer with me if you wish to substitute a topic of your personal interest.

Topic: *Researching Testing Practices in Your Professional Area*

1. Interview someone in your profession who is involved in standardized testing. Examples include individuals working in a personnel office who administer qualification tests to applicants; counselors who give test to gain insight into their clients' needs and interests; teachers who administer Standards of Learning Tests (SOLs) to comply with district and state standards-based requirements.
2. The focus of the interview should be:
 - a. generally speaking, what role do the instrument(s) play in your work? (Example: *"They provide concrete information that hopefully reduces the errors we could make in our hiring practices."*)
 - b. What are the specific purpose(s) in the instrument(s)? (Example, *"The XYZ test is given to identify if the applicant's typing speed is sufficient to qualify for the position."*)
 - c. What are the strengths and limitations of the currently used assessments?
 - d. What recommendations would you make for future assessments if such impediments as time and expenses did not exist?
 - e. Additional feedback that emerges from the interview.
3. Summarize your findings in a narrative report. The narrative should include a description of how the individual was "recruited" for the interview and the setting. Also briefly describe the interview process (e.g., the use in audio taping, telephone interview, etc.). Attach a copy of the interview "raw data" to the narrative.