



**GEORGE MASON UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT
EDUCATIONAL PSYCHOLOGY**

**EDRS 531 – 001 - 71946
Educational and Psychological Measurement**

3 credits
Fall 2016
Thursdays, 4:30-7:10
Thompson Hall, L013

PROFESSOR: Lori C. Bland, Ph.D.
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Prerequisites/Corequisites

Course Restrictions: Not Repeatable for Credit

Prerequisites: Appropriate methods and advanced methods courses.

Corequisites: Appropriate methods and advanced methods courses.

University Catalog Course Description

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.

Course Overview

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

“to develop professionals who:

- a. apply principles of learning, cognition and motivation to vital problems in the area of education in a variety of settings;
- b. develop a solid understanding of research, assessment, and evaluation methodologies; and
- c. develop an analytical and scholarly approach to critically assessing theoretical perspectives, research, and practice within and across content domains.”

Course Delivery Method

This course will be delivered using a lecture format.

Learner Outcomes or Objectives

This course is designed to enable students to do the following:

1. Apply the principles of educational measurement to relevant problems in testing
2. Understand basic technical characteristics of standardized tests
3. Interpret technical information presented in standardized test manuals
4. Interpret standardized test results
5. Evaluate published standardized tests and assessment instruments;
6. Knowledge of current professional practices and issues related to educational measurement and assessment;
7. Apply sound principles of measurement and assessment in multicultural settings.

Professional Standards

Upon completion of this course, students will have met the following professional standards:

Masters of Science (MS) Educational Psychology Program Standards

Standard 3: Knowledge of Educational Research and Assessment.

Candidates will demonstrate an understanding of the basic concepts, principles, techniques, approaches, and ethical issues involved in educational research.

Standard 4: Analysis, Critique, and Evaluation of Educational Research.

Candidates will use their knowledge of quantitative and qualitative research methodology to critically read and evaluate quantitative and qualitative research articles.

Standard 5: Planning and Implementation of Educational Research.

Candidates will use their knowledge of quantitative and qualitative research methodology to develop a research proposal and conduct research.

Standard 6: Communication and Dissemination of Educational Research.

Candidates will demonstrate critical thinking, oral presentation, technological, and writing skills as they are used in the profession. These include:

- a. Knowledge and use of APA style
- b. Oral presentations
- c. Poster presentations
- d. Article abstracts
- e. Research proposals
- f. Literature reviews
- g. Technological skills (including library/reference skills, interactive displays skills, data analysis skills)

Standards for Educational and Psychological Testing (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 2014)

The lens through which each topic will be viewed and understood are grounded in the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014); NCME's *Code of Professional Responsibilities in Educational Measurement* (NCME, 2015), [see:

https://www.ncme.org/ncme/NCME/NCME/Resource_Center/LibraryItem/Code_of_Professional_Responsibilities.aspx]; and

In addition, the learning objectives correspond to two additional sets of standards for teachers. The Joint Committee for Standards on Educational Evaluation address understanding the foundational assessment principles, appropriate use of test results, and assessment quality. The second set of competency standards were developed jointly by the American Federation of Teachers (AFT), NCME, and the National Education Association (NEA). [See *Standards for Teacher Competence in Educational Assessment of Students* (1990); <http://buos.org/standards-teacher-competence-educational-assessment-students>]. 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.

Required Texts

American Educational Research Association, American Psychological Association, and National Council on Measurement in Education. (2014). *Standards for Educational and Psychological Testing*. Washington, DC: Author.

American Psychological Association. (2009). *Publication manual of the American Psychological Association*. (6th Ed.). Washington, DC: Author.

Cohen, R. J., Swerdlik, M. E., & Sturman, E. D. (2013). *Psychological Testing and Assessment* (8th ed.). NY: McGraw-Hill.

Recommended Texts

Klinger, D.; McDivitt, P., Howard, B., Rogers, T., Munoz, M., & Wylie, C. (2015). *Classroom assessment standards for PreK-12 teachers*. Joint Committee on Standards for Educational Evaluation. Retrieved from:

https://www.amazon.com/dp/B00V6C9RVO/ref=nav_timeline_asin?encoding=UTF8&psc=1#nav-subnav (Note this text is available from Amazon on a Kindle e-reader.)

Course Performance Evaluation

Students are expected to submit all assignments on time via Blackboard.

A. Assignments and Examinations

1. **Measurement Project (60%):** You have one major project in this course, which is to develop and pilot test a psychological or educational measure. This project has six parts, each worth 10%. Parts are due throughout the course, with the final paper integrating all revised or updated project parts. This is a performance-based assessment.
 - a. **Overview/Introduction (10%):** Prepare a brief report about a current area of interest in educational psychology (6-10 pages). The report should address a current issue that has implications for developing a new measure. The report needs to include an overview of the issue, an introduction to pertinent literature related to the construct under investigation. For the introduction, you must include three (3) research studies discussing your construct. Based on this review, provide the conceptual definition of the construct you will measure. That is: (1) how did each of the researchers conceptually define your construct? (2) operationally define the construct? (3) How are the items in the measures similar to and different than each other? (4) How are the scales similar to or different than each other? In the introduction, you also need to provide a brief introduction to the existing measures, and discussion of the need for a new measure. The introduction should provide a context for the measure, including (but not limited to the population that will take the measure, how the measure can be used, and by whom. should indicate the population that will take the measure, how the measure can be used, and by whom. The literature review Ensure that you also include a reference list.
 - b. **Literature Review (10%):** Write a literature review extending the themes from the introduction. The literature review must expand the number of studies that you included about your construct. In addition, you need to have a section that examines a minimum of three (3) measurement studies or measurement reviews about existing measures (such as three studies for one measure or one study for each of three measures). You need to analyze critically the measures. The critical analysis should address: (1) the validity and reliability data for the existing measures; (2) problems with or gaps associated with the existing measures. A justification for your new measure needs to be provided. That is, what gaps or problems does your scale address? Ensure that you include an operational definition for your construct, so that it clearly leads to how you will develop your

measure. Ensure you identify whether your measure will include sub-constructs. The literature review should include a revised introduction in track changes.

- c. Development and Methods Plan (10%):** This section is the methods section for your final report, describing how you developed and validated your measure. It is also a planning document for development and pilot-testing of your measure. Develop a plan to write your items for your measure. You need to include a minimum of ten (10) items. If you are developing an educational assessment, you will need to develop a test blueprint. If you are developing a psychological measure, you will need to develop a plan identifying the number of items that you will include for each of the sub-constructs. You also need to describe the scale that you will develop. The plan should also include directions for administering the measure. Identify how you will select your sample for your two (2) pilot tests. You may NOT administer your measure to children. Indicate the methods that you will use to establish validity and reliability for your measure, including the types of analyses that you will conduct. The plan should include any revisions to your overview and literature review in track changes. Finally, you need to include a timeline and references.
 - d. Pilot Study 1 (10%):** Pilot test your measure with at least 10 people. Report out your results for descriptive statistics, reliability, and validity. Examine your findings and discuss whether you need to change your measure in any way and provide a rationale. Compare your results to those of the measures you examined in your literature review. Include an updated methods section and an updated measure in your report in track changes.
 - e. Pilot study 2 (10%):** Pilot test your measure with at least 25 people. Report out your results for descriptive statistics, reliability, and validity. Examine your findings and discuss whether, how, and why the changes improved (or did not improve) your results. Compare your results to those of the measures you examined in your literature review. Explain additional changes that you would make to the measure. Include updated sections in track changes.
 - f. Final Paper (10% points):** Write your measurement report. The report should include the introduction, a review of relevant literature, methods, findings, a discussion that interprets the findings in terms of the research and includes recommendations for how the new measure can be used and the information that can be learned from the data. Ensure this section includes specific implications for interpreting and using the data. Finally, discuss what you learned by doing this project and how you would improve your processes and products if you were to develop another measure. This report should include your final updates in both track changes and a clean copy.
- 2. Examinations (40%):** Two exams, a mid-term (20%) and a final exam (20%), will be given. The material will address readings, syllabus links, and class and homework materials. Both exams are cumulative. That is, the final exam will address all material in the course. Each exam is worth 20%.

B. Other Requirements

Students are expected to meet the requirements listed below. Up to a full letter grade may be deducted from the final grade for failure to meet one or more requirement. Exceptionally meeting requirements will add up to a half letter grade to the final grade.

1. Adhere to the educational psychology program standards and dispositions as stated in the *Educational Psychology Handbook*, the *Program Evaluation Standards*, and the CEHD core values while in class, doing course work, or representing Mason.
2. Attend all class sessions on time. Use your MASON e-mail account for all correspondence with the instructor. I will not respond to e-mails sent from another account.
3. Complete readings IN ADVANCE of the class and participate fully in discussions, group, or individual classwork.
4. Adhere to the spirit of the class and syllabus. In other words, don't look for loopholes.
5. Submit all assignments to the class blackboard on time.
6. Use the APA manual guidelines.
7. Assignments receiving a minimal or unsatisfactory must be resubmitted by the next class. Show improvements or changes to report sections in track changes or by highlighting, if resubmitting. If an entire section is changed, highlight the heading or sub-heading.

C. Course Performance Evaluation Weighting

Assignments and Examinations	Points	Percent of Grade
Project		60%
1. Introduction	40	10%
2. Literature Review	40	10%
3. Plan	40	10%
4. Pilot Test 1	40	10%
5. Pilot Test 2	40	10%
6. Final Paper	40	10%
Examinations		40%
Mid-Term Exam	80	20%
Final Exam	80	20%
Total	400	100%

D. Grading Policies

- E. There are 400 total points for the course assignments. Points are deducted based on the rubrics for each assignment or for failure to adhere to the other class requirements, as described. Students will receive feedback on all assignments within two weeks of submission. Feedback will be delivered electronically.

Grading	
Points/Percent	Letter Grade
98-100%	A+
93-97%	A
90-92%	A-
88-89%	B+
83-87%	B
80-82%	B-
70-79%	C
Below 70%	F

Professional Dispositions

Students are expected to exhibit professional behaviors and dispositions expected of a career educator and of an educational psychologist as defined in the Educational Psychology Handbook at all times. Students are expected to review these dispositions by the second class period. [See

https://cehd.gmu.edu/assets/docs/educational_psychology/EdPsy%20CV,%20PS,%20Disp,%20Sig.pdf].

Core Values Commitment

The College of Education and Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles: <http://cehd.gmu.edu/values/>.

GMU Policies and Resources for Students

Policies

- Students must adhere to the guidelines of the Mason Honor Code (see <http://oai.gmu.edu/the-mason-honor-code/>).
- Students must follow the university policy for Responsible Use of Computing (see <http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>).
- Students are responsible for the content of university communications sent to their Mason email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students **solely** through their Mason email account.
- Students with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor (see <http://ods.gmu.edu/>).

- Students must follow the university policy stating that all sound emitting devices shall be silenced during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to Tk20 should be directed to tk20help@gmu.edu or <https://cehd.gmu.edu/api/tk20>. Questions or concerns regarding use of Blackboard should be directed to <http://coursesupport.gmu.edu/>.
- The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing (see <http://writingcenter.gmu.edu/>).
- The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance (see <http://caps.gmu.edu/>).
- The George Mason University Office of Student Support staff helps students negotiate life situations by connecting them with appropriate campus and off-campus resources. Students in need of these services may contact the office by phone (703-993-5376). Concerned students, faculty and staff may also make a referral to express concern for the safety or well-being of a Mason student or the community by going to <http://studentsupport.gmu.edu/>, and the OSS staff will follow up with the student.

For additional information on the College of Education and Human Development, please visit our website <https://cehd.gmu.edu/>.

CLASS SCHEDULE

Class	Date	Topic	Readings	Assignment
1	9/1/16	Introduction to Educational and Psychological Measurement Ethical Considerations	Ch. 1, 2	
2	9/8/16	Statistics Refresher	Ch. 3 S: Intro, 8, 9	
3	9/15/16	Tests	Ch. 4 S. 13	Introduction
4	9/22/16	Reliability	Ch. 5 S. 2	
5	9/29/16	Validity, Utility, Fairness	Ch. 6, 7 S. 1, 3	
6	10/6/16	Test Development	Ch. 8	Literature Review
7	10/13/16	Mid-term Exam		Exam 1
8	10/20/16	Intelligence and Tests	Ch. 9, 10 S. 4, 5, 6, 7	
9	10/27/16	Educational Assessment	Ch. 11 S. 12	Plan
10	11/3/16	Analyzing Item Data		
11	11/10/16	Analyzing Measure Data		
12	11/17/16	Personality Assessment	Ch. 12, 13	Pilot Test 1
	11/24/16	Clinical Assessment	Ch. 14 S. 10	
13	12/1/16	Neuropsychological Assessment	Ch. 15	Pilot Test 2
14	12/6/16	Assessment Careers and Business	Ch. 16 S. 11	
15	12/8/16	Review for Final Exam		Final Paper
16	12/15/16	Final exam		Final exam
			Ch. = Text S = Standards	

Measurement Paper

Criteria	Outstanding (4)	Competent (3)	Minimal (2)	Unsatisfactory (1)
Introduction (10%) <ul style="list-style-type: none"> • a synthesis of the most important elements describing the measurement problem • at least three studies about the construct were included and analyzed • Clear conceptual definition of the construct 	<p>The introduction addresses all criteria fully. The text provides a clear and complete synthesis of the measurement problem, including the most important elements of the problem. At least three studies were included and analyzed in depth to create a well-developed justification for a new measure. A clear conceptual definition of the construct is included and adequately referenced. No extraneous text is included.</p>	<p>The introduction addresses all criteria. The introduction may have minor issues with clarity or extraneous text. The introduction is mostly complete, but may lack a piece of key information about the problem. At least three studies were included and analyzed. A justification for a new measure is included. A conceptual definition of the construct is included and referenced.</p>	<p>The introduction addresses the criteria, but neither are addressed sufficiently. The introduction has several issues with clarity and/or extraneous text. The introduction is incomplete, lacking more than one piece of key information about the problem. Less than three studies were included, or studies were not analyzed well. The justification for a new measure is faulty. The construct is inadequately defined or referenced.</p>	<p>The introduction is did not address one or more criteria. The introduction, study analysis, and justification is unclear and/or too brief to completely communicate information about the problem. Studies may also not have been included. The construct definition is missing or not grounded within the literature.</p>

Criteria	Outstanding (4)	Competent (3)	Minimal (2)	Unsatisfactory (1)
Literature Review (10%)	The themes from the introduction were extended well and completely throughout the literature review.	The themes from the introduction were extended throughout the literature review.	The themes from the introduction were extended throughout the literature review, either inadequately or a theme was missing.	Several themes from the introduction were not extended in the literature review.
Analysis of the Problem <ul style="list-style-type: none"> • a synthesis of the most important elements analyzing the measurement problem were presented • at least three studies about the extant measures were included and analyzed 	Analysis of the problem fully addresses the issues. Multiple examples from at least three studies clearly support the analysis. The analysis is accurate.	Analysis of the problem addresses the issues. Examples from three studies support the analysis. The analysis is may be have minor inaccuracies, or may be missing details that impact clarity.	Analysis is limited, and may only include two studies and examples. There may be many examples, but they lack many details impacting clarity. The analysis has several inaccuracies or misunderstandings.	Analysis is incomplete, includes less than two studies and examples. The analysis is inaccurate with major misunderstandings.
Argumentation <ul style="list-style-type: none"> • evidence of the need for the measure • Clear operational definition of the construct 	A clear, well-reasoned, comprehensive, and persuasive argument is provided for the importance of the measure. Evidence from the literature is provided.	The argument is persuasive, but has minor issues with the reasoning, or may be unclear. There are minor examples where evidence from the literature may not be complete, or may not directly relate to the problem.	The argument is general, and the reasoning is unclear. The argument includes information from the literature, but the writing lacks specific connections to the literature, or examples illustrating the points in the argument are missing.	An argument is missing. Examples from the literature may be provided, but without explanation. Or, explanation may be included, but without examples from the literature.

Criteria	Outstanding (4)	Competent (3)	Minimal (2)	Unsatisfactory (1)
Context for the measure	The description of the context is clear and complete with no extraneous text.	The description of the context may have minor issues with clarity or extraneous text. The context is mostly complete, but may lack key information.	The description of the context has several issues with clarity and/or extraneous text. The context is incomplete, lacking more than one piece of key information.	The description is unclear or too brief to completely communicate information about the context. Multiple key pieces of information are missing.
Development and Methods Plan (10%) <ul style="list-style-type: none"> • plan should be derived from introduction and literature review • full description of the measure • methods • timeline 	Plan fully addresses all criteria. Measure is clearly derived from the research. The construct has been operationally defined clearly in the plan. Methods are clearly and fully described. A complete and feasible timeline is included.	Plan addresses all criteria, but has minor errors. Measure is derived from the research. The construct has been operationally defined in the plan. Methods are described. A timeline is included.	Plan addresses most criteria, but one has a major error. The link to the research or the operational definition lacks clarity. A method has a missing section or is unclear. The timeline is missing sections or has issues with feasibility.	Plan does not address the criteria, or has major errors. The link to the research or the operational definition are missing. Methods may have a missing or unclear sections. The timeline is missing or not feasible.
Pilot Studies (20%)	Measure was pilot tested with more than the minimum N. Appropriate descriptive statistics and reliability indices were reported correctly and analyzed in detail. A validity study, appropriate to the measure, was conducted and reported accurately and analyzed in detail.	Measure was pilot tested with the minimum N. Appropriate descriptive statistics and reliability indices were reported. An appropriate validity study was conducted. There may be minor errors in analysis or reporting.	Measure was pilot tested with less than the minimum N. Some analyses and reporting are incorrect across the studies, or one study has a major error.	Measure was pilot tested with less than the minimum N. Some descriptive statistics or reliability indices are missing. The validity study was not conducted or incorrect. There are multiple major errors in analysis or reporting.

Criteria	Outstanding (4)	Competent (3)	Minimal (2)	Unsatisfactory (1)
Final Paper (10%) The report includes an introduction, literature review, methods, results and discussion	All elements of the report are included, complete, clear, and aligned throughout the report.	There are minor issues across elements of the report in terms of completeness, clarity, or alignment.	There is a major issue with one element of the report in terms of completeness, clarity, or alignment.	There are major issues with more than one element of the report in terms of completeness, clarity, and alignment.
Discussion and Interpretation of Results <ul style="list-style-type: none"> • Interpretation of results in relation to research • Identification of limitations • Discussion of learning 	Discussion fully addresses all criteria. Interpretations and conclusions are well grounded in the results and meaningfully connected to the literature. Limitations are thoughtfully addressed. The learning discussion is thoughtful and clear, identifying strengths and opportunities for growth which are explained well.	Discussion addresses all criteria. Interpretations and conclusions are grounded in the results and connected to the literature. Limitations are addressed. The learning discussion identifies strengths and areas for growth. However, there are minor issues with clarity or sophistication of thought about the learning.	Discussion does not address all criteria. Some interpretations and/or conclusions are not grounded in the results or connected to the literature. Limitations are not fully addressed. The learning discussion is unclear or does not discuss strengths or opportunities for growth. Explanation is sparse.	Discussion does not address the criteria. Interpretations and conclusions are not grounded in the results, are missing, or not connected to the literature. Limitations are missing. The learning discussion is incomplete and unclear.
APA Style Use APA writing style, formatting, including citations within text and references.	Writing is concise, coherent, well-organized, and with correct APA style. Citations and references are correct and complete.	Writing lacks clarity or has minor organizational problems affecting coherence. Some errors in APA style, citations, or references or small number of missing citations or references.	Writing has multiple problems with clarity, coherence, and organization. There are many errors in APA style, citations, and/or references. Multiple references are missing or incomplete.	Writing lacks clarity, coherence, many errors, and/or no use of APA style. Citations and references are minimal or absent.