

George Mason University
College of Education and Human Development
Educational Psychology

EDRS 531.001 – Educational and Psychological Measurement
3 Credits, Spring 2022
Thursdays, 4:30pm-7:10pm, Music/Theater Building 1002 (Fairfax Campus)

Faculty

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Prerequisites/Corequisites

Recommended Prerequisites: EDRS 620, EDRS 621. Appropriate methods and advanced methods courses. Concurrent enrollment is also permitted.

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.

Course Delivery Method

This course will be delivered using a combination of lecture, class discussion, and applied class activities in an in-person 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 (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); 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): Standards for Teacher Competence in Educational Assessment of Students (1990).

These professional associations assert 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.

Program Standards

Standard 2. Candidates will apply their knowledge of quantitative and qualitative research methods, including basic concepts, principles, techniques, and ethical issues, to read and critique relevant products of research.

Standard 3. Candidates will apply their knowledge and skills of quantitative and qualitative research methods, including basic concepts, principles, techniques, and ethical issues, to conduct research and/or inform practice in diverse applied settings.

Standard 4. Candidates will demonstrate oral and written communication relevant to educational psychology, including knowledge and use of APA style and professional formats (e.g., oral presentations, poster presentations, article abstracts, literature reviews, research proposals, reports).

Standard 5. Candidates will demonstrate professional dispositions relevant to educational psychology such as critical thinking, collaboration, interpersonal communication, intercultural competence, ethical leadership, professionalism, and technological skills.

Required Texts

1. Coaley, K. (2014). *An introduction to psychological assessment and psychometrics (2nd ed.)*. Sage.
2. American Psychological Association. (2020). *Publication manual of the American Psychological Association. (7th Ed.)*. Author. [The concise guide for students is also acceptable.]

Recommended Texts

1. American Educational Research Association, American Psychological Association, and National Council on Measurement in Education. (2014). *Standards for Educational and Psychological Testing*. Author.
2. Furr, M. (2018). *Psychometrics: An introduction (3rd ed.)*. Sage.

Course Performance Evaluation

Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Blackboard, VIA, hard copy).

- **Assignments and/or Examinations**

Class Participation (10%). You are expected to participate in in-class activities that are individual or small group assignments. Assigned readings are to be completed. Attendance is required. Please contact the instructor if you plan to miss a class. Late submission of assignments will lead to an automatic deduction of points from the participation score. Participation includes:

- o Attend all class sessions on time.
- o Use your MASON e-mail account for all correspondence with the instructor.
- o Complete readings in advance of the class and participate fully in discussions, group, or individual classwork.

Homework Assignments (30%). Throughout the course there will be small weekly homework assignments meant to extend your understanding of the class material. These will include concept maps and term lists about the readings, as well as concept map reflection assignments.

Throughout the course there will also be assignments on relevant content related to the measurement project. The aim of these assignments is to break down complex parts of the project into manageable steps and give you an opportunity for practice and to receive feedback.

Mid-Term Examination (20%). The material will address readings, class, and homework materials. The exam will include application-type test items (multiple choice, short answer, etc.) related to the core concepts. The exam will be open textbook and notes and administered via Blackboard.

Measurement Project (40%). You have one major project in this course which is to develop and pilot test a psychological or educational measure. This project has five parts (see below). *Drafts for each part are due throughout the course (4% of grade for each draft), with the final paper integrating all revised or updated project parts (20% of grade for final paper).* This is a performance-based assessment for the Educational Psychology program.

a) Introduction and Literature Review: Include three (3) research studies discussing your construct. Based on this review, provide the definition of the construct you will measure: (1) conceptually define your construct (2) operationally define the construct.

Write a literature review that examines a minimum of two (2) measurement studies or measurement reviews about existing measures. You need to analyze the measures critically and address strengths and weaknesses. 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. This section will address the following questions: How are the items in the existing measures similar to and different than each other? How are the scales similar to or different from each other? That is, what gaps or problems related to measurement does your scale address? Describe the intended population, how the measure can be used, and by whom. Identify whether your measure will include sub-constructs.

b) Development and Methods Plan: Develop a plan to write your items for your measure. You need to include a minimum of ten (10) items. Your plan describes the number of items that you will include and the scale that you will develop. The plan should also include details about administering the measure: online/paper, instructions, and the first draft of the items. Identify how you will select your sample for pilot tests. You may not administer the measure to minors (under the age of 18 years). 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.

c) Pilot Study: Pilot test your measure with at least 25 participants. 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 final report and track changes.

d) Reflection: Reflect on your work in relation to what you have learned about the measurement development process. Discuss limitations of your plan. Provide specific details about how you would improve the process and the measure. Reflect on how you could enhance reliability and validity evidence.

e) Final Paper: Write your measurement report. The report should include the introduction, a review of relevant literature, methods, pilot study 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. Track changes to show revisions based on instructor comments. Include your reflection section at the end.

f) Adherence to APA 7th guidelines, grammar, and mechanics (1% on each draft and 4% on final report): The drafts and final report are written in accordance to APA writing and formatting guidelines.

- **Grading**

Grades will be assigned based on the following:

A+ 98-100%	A 93-100%	A- 90-92%
B+ 88-89%	B 83-87%	B- 80-82%
C 70-79%	F below 70%	

Professional Dispositions

See <https://cehd.gmu.edu/students/polices-procedures/>

Class Schedule

Week	Date	Topic	Reading/ Assignment Due
1	1/24	Course Info Introduction	Ch. 1 Find a Topic Concept Map on Ch 1
2	1/31	Ethical Considerations	Ch. 2 & 10 Concept Map on Ch 2&10
3	2/7	Development of Assessments	Ch. 3 Concept Map on Ch 3 Project Intro and Literature Review
4	2/14	Statistics for Measurement (ASYNCHRONOUS ONLINE CLASS)	Ch. 4 Fruit & Vegetable Stats Concept Map on Ch 4
5	2/21	Reliability	Ch. 5 Concept Map Reflection Concept Map on Ch 5
6	2/28	Reliability in Context of Personality Assessment Item and Test Development	Ch. 8 & 11 Concept Map on Ch 8&11 Project Plan
7	3/7	Validity Item Workshop	Ch. 6 Concept Map on Ch 5

	3/14	NO CLASS – Spring Recess	Draft Your Measure (Study for Midterm)
8	3/21	Validity in Context of Measuring Intelligence	Ch. 7 Concept Map on Ch 5 Peer Review
9	3/28	Midterm Exam	
10	4/4	Item Analysis	Concept Map Reflection
11	4/11	Item Response Theory (ASYNCHRONOUS ONLINE CLASS)	IRT Take Away Cleaned Data Table
12	4/18	Data Analysis Techniques	
13	4/25	Data Analysis Workshop	Project Pilot Results
14	5/2	NO CLASS	Project Reflection
15	5/16	FINAL PROJECT PAPER DUE	

Note: Faculty reserves the right to alter the schedule as necessary, with notification to students.

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 <https://catalog.gmu.edu/policies/honor-code-system/>).
- Students must follow the university policy for Responsible Use of Computing (see <https://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 <https://ds.gmu.edu/>).
- Students must silence all sound emitting devices during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to VIA should be directed to viahelp@gmu.edu or <https://cehd.gmu.edu/aero/assessments> . Questions or concerns regarding use of Blackboard should be directed to <https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/>.
- For information on student support resources on campus, see <https://ctfe.gmu.edu/teaching/student-support-resources-on-campus>

Notice of mandatory reporting of sexual assault, sexual harassment, interpersonal violence, and stalking:

As a faculty member, I am designated as a “Non-Confidential Employee,” and must report all disclosures of sexual assault, sexual harassment, interpersonal violence, and stalking to Mason’s Title IX Coordinator per [University Policy 1202](#). If you wish to speak with someone confidentially, please contact one of Mason’s confidential resources, such as [Student Support and Advocacy Center](#) (SSAC) at 703-380-1434 or [Counseling and Psychological Services](#) (CAPS) at 703-993-2380. You may also seek assistance or support measures from Mason’s Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.

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