

**George Mason University**  
**College of Education and Human Development**  
**Educational Psychology**

EDRS 531.002 – Educational & Psychological Measurement  
3 Credits, Fall 2018  
Thursdays, 4:30pm – 7:10pm, Innovation Hall 333 – Fairfax Campus

**Faculty**

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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, individual, small and large group activities and in-class assignments. The instructor will use Blackboard and other web tools to facilitate in class activities.

## **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); 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 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**

Coaley, K. (2014). *An introduction to psychological assessment and psychometrics* (2<sup>nd</sup> ed.). Thousand Oaks, CA: SAGE.

Other readings will also be assigned for the course and made available on Blackboard.

### **Recommended 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*. (6<sup>th</sup> Ed.). Washington, DC: Author.

Furr, M. (2018). *Psychometrics: An introduction* (3<sup>rd</sup> ed.). Thousand Oaks, CA: SAGE

## Course Performance Evaluation

Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Blackboard, hard copy). **Late assignments will not be accepted without prior instructor approval.**

- **Assignments and/or Examinations:**

**Mid-Term Examination (200 points):** The material will address readings, class, and homework materials. The exam will be 2.5 hours in duration and will include application-type test items (multiple choice, short answer, etc.) on the core concepts.

**Measurement Project (400 points):** 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 (see below). Drafts for each part 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 (50 points):** Prepare a brief report about a current area of interest in educational psychology. 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: (1) conceptually define your construct (2) operationally define the construct. 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. Include a reference list.

**b. Literature Review (50 points):** 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 two (2) measurement studies or measurement reviews about existing measures. You need to analyze the measures critically addressing 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 than each other? That is, what gaps or problems does your scale address?* Identify whether your measure will include sub-constructs. The literature review should include a revised introduction in track changes.

**c. Development and Methods Plan (50 points):** 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. 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 pilot tests. Please contact the instructor if you plan to develop a measure intended for 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.

**d. Pilot Study (100 points):** 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.

**e. Reflection (50 points):** Reflect on your work on the project 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. Include updated sections in track changes.

**f. Final Paper (50 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. It includes what you learned by doing this project and how you would improve your processes and products if you were to develop another measure. Track changes and submit a copy along with a clean copy of the document. Follow APA guidelines.

**g. Adherence to APA 6<sup>th</sup> guidelines, grammar, and mechanics (50 points):** The drafts and final report are written in accordance to APA writing and formatting guidelines.

- **Other Requirements:**

**Class Participation (200 points, ~16 class sessions).** Students are expected to participate in in-class activities that are individual or small group assignments. Assigned readings are to be completed. Attendance is required (20 points). Please contact the instructor if you plan to miss a class. On-time submissions will give you 20 points – late submission of assignments will lead to an automatic deduction of 20 points from the participation score (all-or-nothing).

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

- **Grading Scale**

There are a total 800 points for the course distributed among the four assignments listed above.

A+ = 784 – 800 points

B = 664 – 703 points

A = 744 – 767 points

B- = 640 – 663 points

A- = 720 - 743 points

C = 560 – 639 points

B+ = 704 - 719 points

F = 559 or fewer points

### Professional Dispositions

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

### Class Schedule

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

WEEK	TOPICS	READINGS/MULTIMEDIA	ACTIVITES/ASSIGNMENTS DUE
1	Aug 30th	Introduction	Reading: Chapter 1 In-Class Activity
2	Sep 6th	Ethical considerations The Basic Components	Reading: Chapter 2, Chapter 10 In-Class Assignment
3	Sep 13th	Development of Assessments	Reading: Chapter 3 <b>Introduction Draft</b> In-Class Assignment
4	Sep 20th	Statistics for Measurement	Reading: Chapter 4 In-Class Assignment
5	Sep 27th	Overview of Reliability, Validity, Utility Reliability	Reading: Chapter 5 In-Class Assignment
6	Oct 4th	Reliability in Context Personality Assessment	Reading: Chapter 8 <b>Lit. Review Draft</b> In-Class Assignment
7	Oct 11th	Validity	Reading: Chapter 7 In-Class Assignment
8	Oct 18th	Validity in Context Measurement of Intelligence	Reading: Chapter 11 In-Class Assignment
9	Oct 25th	<b>Mid-Term Exam (Blackboard)</b>	<i>No Class Meeting</i>
10	Nov 1st	Test Development Process Item Analysis	Reading: TBD In-Class Assignment
11	Nov 8th	Ed. Assessment	Reading: Chapter <b>Project: Plan</b>
12	Nov 15th	Data Analysis Techniques	No Reading In-class activity
13	Nov 22nd	<i>Thanksgiving Day - No Class</i>	
14	Nov 29th	Utility Capstone Celebration	Reading: TBD <b>Project: Pilot Test</b>
15	Dec 6th	Utility in Context Measurement in Careers	Reading: TBD
16	Dec 13th	<b>Project: Reflection &amp; Final Paper</b>	

## 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 <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 <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 Tk20 should be directed to [tk20help@gmu.edu](mailto:tk20help@gmu.edu) or <https://cehd.gmu.edu/aero/tk20>. Questions or concerns regarding use of Blackboard should be directed to <http://coursesupport.gmu.edu/>.
- For information on student support resources on campus, see <https://ctfe.gmu.edu/teaching/student-support-resources-on-campus>

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

## Rubric: Class Participation

Student participation is imperative to student learning and a successful class. The following rubric outlines how student participation scores will be determined in this course. All students are expected to demonstrate specific characteristics and actions throughout the semester. The quality and quantity of these actions will determine the points assigned for participation.

### Students are expected to:

- a) Be well prepared for class by completing assigned readings.
- b) Participate fully in class activities and assignments – take an active part in small and large group discussions (without dominating the conversations).
- c) Treat class activities and discussions as important components of the course, showing respect for fellow classmates and the course material.
- d) Attend all class sessions. Arrive on time and stay for the duration of the session.

### Each of these criteria will be assessed on a 5-point scale.

- 20 = Student *consistently* demonstrated the criterion throughout the semester.
- 15 = Student *frequently* demonstrated the criterion throughout the semester.
- 10 = Student *intermittently* demonstrated the criterion throughout the semester.
- 5 = Student *rarely* demonstrated the criterion throughout the semester.
- 0 = Student *did not* demonstrate the criterion throughout the semester.



**Rubric: In-Class Assignments**

<b>Criteria</b>	<b>Unsatisfactory (0-2)</b>	<b>Minimal (3)</b>	<b>Competent (4)</b>	<b>Outstanding (5)</b>
<b>Connections to Coursework</b> <i>Demonstrate connections to course concepts in the task</i>	does not include connections to course concepts	some connections to course concepts that may not be relevant.	adequate connections to relevant course concepts	clear and insightful connections to relevant course concepts
<b>Analysis</b> <i>For tasks that require analysis</i>	Analysis is incomplete or missing.	Analysis is general and addresses only some aspects of the task requirements	Analysis is complete and adequately addresses task requirements	Analysis is thorough and detailed; fully addresses task requirements
<b>APA Style</b> <i>Use APA style and formatting</i>	Uses concise, coherent, well-organized writing with correct APA style.	Writes with some lack of clarity and/or inconsistent APA style with some errors.	Writes with a lack of clarity and coherence, many errors, or incorrect APA style.	Writes with little clarity or coherence, many errors, and/or no use of APA style.

**Note: The criteria will vary depending on the nature of the assignments/tasks.**

### Rubric: Measurement Project

<b>Project Component*</b>	<b>Standard</b>	<b>Does not meet standard Below 35 points</b>	<b>Approaching standard 35 – 40 points</b>	<b>Meets standard 40 – 45 points</b>	<b>Exceeds standard 45- 50 points</b>	<b>Score</b>
<b>Introduction</b>	3, 4	Introduction is not included or is incomplete Only some aspects of the component are addressed	Includes all or most parts of the component but in insufficient detail or with many inaccuracies	Includes all aspects of the component that are adequately addressed	Includes all aspects of the component that are addressed completely and exceptionally well	
<b>Literature Review</b>	4, 6	Lit. review is not included or is incomplete	Includes all or most parts of the component but demonstrates inaccuracies that need to be addressed	Includes all aspects of the component that are adequately addressed	Includes all aspects of the component that are addressed completely and exceptionally well	
<b>Plan</b>	5	Plan is not included or is incomplete	All or most parts of the component are addressed, but inaccuracies are evident and need to be addressed	Includes all aspects of the component that are adequately addressed	Includes all aspects of the component that are addressed completely and exceptionally well	
<b>Pilot Study</b>	5	Pilot study is not included or incomplete	All or most parts of the component are addressed, but inaccuracies are evident and need to be addressed	Includes all aspects of the component that are adequately addressed	Includes all aspects of the component that are addressed completely and exceptionally well	
<b>Reflection</b>	5	Reflection is not included or is incomplete	Reflection includes perfunctory comments on the plan; no critical analysis	Reflection provides a critical analysis of the strengths and limitations of the plan	Reflection provides insightful critical analysis of strengths and limitations of the plan and makes direct connections to course content	
<b>Final Paper</b>		Two or more components are not included or incomplete; Revisions/Corrections are omitted	Includes four or more sections complete; key revisions were omitted or inadequately addressed	All sections are adequately addressed; Revisions demonstrate increased understanding of measurement concepts	All sections are adequately addressed in the revisions and demonstrate exceptional grasp of measurement concepts	
<b>APA Style</b>		Writes with a lack of clarity and coherence, many errors, or incorrect APA style. In-text and full references are not accurate or complete.		Uses concise, coherent, well-organized writing with correct APA style. In-text and full references are accurate and complete.		