George Mason University
College of Education and Human Development
Educational Psychology

EDRS622: DLI – Educational & Psychological Measurement
3 Credits, Fall 2022
Aug 24, 2023 – Dec 16, 2023, Online Thursday, 4:30 to 7:10pm

Faculty
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Prerequisites/Co-requisites
<u>Recommended Prerequisites:</u> Concurrent enrollment with EDRS 621 possible with instructor permission; instructor permission possible with previous statistics experience.

Required Prerequisites: (EDRS 620^C and 621^{*C}).
* May be taken concurrently.
^{C} Requires minimum grade of C.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.
Students in a Non-Degree Undergraduate degree may **not** enroll.

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. Offered by School of Education. May not be repeated for credit. Equivalent to EDRS 531.

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

This course will be delivered online (76% or more) using a mix of a synchronous and an asynchronous format via Blackboard Learning Management system (LMS) housed in the MyMason portal. You will log in to the Blackboard (Bb) course site using your Mason email name (everything before @masonlive.gmu.edu) and email password.

Under no circumstances, may candidates/students participate in online class sessions (either by phone or Internet) while operating motor vehicles. Further, as expected in a face-to-face class meeting, such online participation requires undivided attention to course content and communication.

Technical Requirements

To participate in this course, students will need to satisfy the following technical requirements:

- High-speed Internet access with standard up-to-date browsers. To get a list of Blackboard's supported browsers see:
  https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#supported-browsers

  To get a list of supported operation systems on different devices see:
  https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#tested-devices-and-operating-systems
- Students must maintain consistent and reliable access to their GMU email and Blackboard, as these are the official methods of communication for this course.
- Students will need a headset microphone for use with the Blackboard Collaborate web conferencing tool.
- Students may be asked to create logins and passwords on supplemental websites and/or to download trial software to their computer or tablet as part of course requirements.
- The following software plug-ins for PCs and Macs, respectively, are available for free download: [Add or delete options, as desire.]
  - Adobe Acrobat Reader: https://get.adobe.com/reader/
  - Windows Media Player:
    https://support.microsoft.com/en-us/help/14209/get-windows-media-player
  - Apple Quick Time Player: www.apple.com/quicktime/download/

Expectations

- Course Week:
  Because class is scheduled for Thursdays, our week will start on Thursday, and finish on Wednesday. Our synchronous meetings take place as indicated on the Schedule of Classes, typically on Thursdays between 4:30 pm and 7:10 pm.
- Log-in Frequency:
  Students must actively check the course Blackboard site and their GMU email for communications from the instructor, class discussions, and/or access to course materials at

least 5 times per week. In addition, students must log-in for all scheduled online synchronous meetings.

- Participation:
  Students are expected to actively engage in all course activities throughout the semester, which includes viewing all course materials, completing course activities and assignments, and participating in course discussions and group interactions
- Technical Competence:
  Students are expected to demonstrate competence in the use of all course technology. Students who are struggling with technical components of the course are expected to seek assistance from the instructor and/or College or University technical services.
- Technical Issues:
  Students should anticipate some technical difficulties during the semester and should, therefore, budget their time accordingly. Late work will not be accepted based on individual technical issues.
- Workload:
  Please be aware that this course is not self-paced. Students are expected to meet specific deadlines and due dates listed in the Class Schedule section of this syllabus. It is the student's responsibility to keep track of the weekly course schedule of topics, readings, activities and assignments due.
- Instructor Support:
  Students may schedule a one-on-one meeting to discuss course requirements, content or other course-related issues. Those unable to come to a Mason campus can meet with the instructor via telephone or web conference. Students should email the instructor to schedule a one-on-one session, including their preferred meeting method and suggested dates/times
- Netiquette:
  The course environment is a collaborative space. Experience shows that even an innocent remark typed in the online environment can be misconstrued. Students must always re-read their responses carefully before posting them, so as others do not consider them as personal offenses. Be positive in your approach with others and diplomatic in selecting your words. Remember that you are not competing with classmates, but sharing information and learning from others. All faculty are similarly expected to be respectful in all communications
- Accommodations:
  Online learners who require effective accommodations to insure accessibility must be registered with George Mason University Disability Services.

Communication

The Blackboard site for this course is the primary channel of communication. Please check the Blackboard course regularly for updates (at least 5 times a week). Please use the Blackboard discussion board, email function, and office hours.

- Discussion board: Please check the discussion board regularly. You are strongly encouraged to post questions about assignments in the discussion board. You are likely not the only one with the same question. Consider the discussion board as an extra resource for getting extra help with assignments.

- Email communication should be restricted to questions related to sensitive, confidential information, such as questions about grades, personal circumstances requiring accommodations, etc.
  - Emails will be returned within 2 business days and may not be returned on weekends/holidays.
  - When you send an email to me, please put EDRS531 at the beginning of the subject line.
- Office hours provide the opportunity to ask and discuss questions about the course materials or activities you may have.

Should you have concerns that you may not be able to fully participate or engage in any of the activities listed below, please do not hesitate to contact me by e-mail. We can discuss alternative arrangements that suit your needs.

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 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.

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

1. Coaley, K. (2014). *An introduction to psychological assessment and psychometrics* (2nd ed.). SAGE

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. American Psychological Association. (2020). *Publication manual of the American Psychological Association*. (7th Ed.). Author.
3. Furr, M. (2018). *Psychometrics: An introduction* (3rd ed.). SAGE
4. SPSS Software: IBM Statstics GradPack (https://www.ibm.com/us-en/marketplace/spss-statistics-gradpack/details)

Course Schedule

Class/ Week	Date	Topic	Activities	Activities Due
1	8/24	Introduction	Readings: Chapter 1 Assignment: Find A Topic	Wed before class 2, 11:59pm,

2	8/31	Ethical Considerations	Readings: Chapter 2, Chapter 10	Wed before class 3, 11:59pm
3	9/7	Development of Assessments	Readings: Chapter 3 Assignment: Introduction & Literature Review	Wed before class 4, 11:59pm
4	9/14	Statistics for Measurement	Readings: Chapter 4 Assignment: Fruit & Vegetable Stats	Wed before class 5, 11:59pm
5	9/21	Reliability	Readings: Chapter 5	Wed before class 6, 11:59pm
6	9/28	Reliability in Context of Personality Assessment Item & Test Development	Readings: Chapter 8 & Chapter 11 Assignment: Draft Your Measure	Wed before class 7, 11:59pm
7	10/5	Validity, Item Workshop	Readings: Chapter 6 Assignment: Methods	Wed before class 11:59pm 8,
8	10/12	Validity in Context of Measuring Intelligence	Readings: Chapter 7	Wed before class 10, 11:59pm
9	10/19	Mid-Term Exam		
10	10/26	Item Analysis		Wed before class 11, 11:59pm
11	11/2	Item Response Theory (asynchronous online)	Assignment: 1. Data Table 2. IRT Take Away	Wed before class 12, 11:59pm
12	11/9	Data Analysis Workshop I		Wed before class 13, 11:59pm
13	11/16	Data Analysis Workshop II	Assignment: Results	Wed before class 14, 11:59pm
14	11/23	No class	Assignment: Discussion & Reflection	Wed before class 15, 15, 11:59pm
15	11/30	Reflection	Assignment: Project Report	After class 15, 11:59pm

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

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.

- Class Participation (15%, ~14 class sessions). 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 5% max. for overall 10 quizzes
  - o 10% for class attendance, in-class participation
  - Expectations

- 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.

- **Assignments (15%):** Throughout the course there will be 5 assignments (i.e., 3% each) on relevant content related to the measurement project. The aim of those assignment is to break down complex parts of the measurement 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 be 2.5 hours in duration and 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 (50%):** You have one major project in this course which is to develop and pilot test a psychological or educational measure. This is a performance-based assessment. The report should address a current issue that has implications for developing a new measure. The project consists of the following parts part are due throughout the course, with the project report integrating all revised or updated project parts:
  1. Introduction/Literature Review (5%)
  2. Methods (5%)
  3. Pilot/Results (5%)
  4. Discussion (5%)
  5. Measurement Report (30%)
  6. Report (30%)

Grading

There are a total 400 points for the course distributed among the four components listed above.

Grading scale:

A+ = 98 – 100%
A = 93 – 97.9%
A- = 90 – 92.9%
B+ = 88 – 89.9%
B = 83 – 87.9%
B- = 80 – 82.9%
C = 70 – 79.9%
F = 69.9 or less

Graded Activities

Activity	Percentage
Participation	15%
Assignments	15%
Mid-Term Exam	20%
Measurement Project	50%
Total	100%

Professional Dispositions

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

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/.

Classroom Climate

You are encouraged to discuss and share ideas with your classmates. To facilitate a respectful and inclusive classroom climate, be open to explore and challenge each other's ideas without criticizing individuals. Diversity is a source of creativity and innovation and I ask that learners appreciate diverse perspectives, that they listen respectfully and let everyone speak. If you have concerns about the dynamics or classroom climate, please do not hesitate to bring them to my attention.

The College of Education and Human Development seeks to create a learning environment that fosters respect for people across identities. We welcome and value individuals and their differences, including gender expression and identity, race, economic status, sex, sexuality, ethnicity, national origin, first language, religion, age and ability. We encourage all members of the learning environment to engage with the material personally, but to also be open to exploring and learning from experiences different than their own.

Gender identity and pronoun use: If you wish, please share your name and gender pronouns with me and how best to address you in class and via email. I use she/her/hers for myself and you may address me as "Alexandra", "Prof. Patzak" or "Mrs. Patzak" in email and verbally.

Individual accommodations: Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all learners by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations for this class, please first visit http://ds.gmu.edu for detailed information about the Disability Services registration process. Then please discuss your approved accommodations with me. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu | Phone: (703) 993-2474.

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/ .

Rubric: In-Class Assignments

Criteria	Unsatisfactory (0)	Minimal (1)	Competent (2)	Outstanding (3)
Connections to Coursework *Demonstrate connections to course concepts in the task*	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
Analysis *For tasks that require analysis*	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

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

Rubric: Measurement Project

Project Component	Program Standard	Does not meet standard (0%)	Approaching standard	Meets standard	Exceeds standard	Score
Rubric: Measurement Project						
Introduction/Literature Review:						
Definitions	2	Conceptual and operational definitions not present.	Conceptual and operational definitions are limited, incomplete, or one is missing.	Conceptual and operational definitions are present but could be strengthened by supporting empirical literature or explanation with citations.	Conceptual and operational definitions are fully developed with supporting empirical literature.	1%
Analysis of the Literature	2	Does not include at least two measurement studies on construct.	Summary of at least two measurement studies is included but discussion of strengths and weaknesses is limited or incomplete.	At least two measurement studies are analyzed fully, including reliability and validity as well as strengths and weaknesses.	At least two measurement studies are synthesized with thoughtful connections between them.	1%
Argument for Measure	2	The need for the measure is not described.	The need for measure is described but lacks clarity and its use is not justified or grounded in the literature.	The need for the measure and intended use are described but could be strengthened by drawing on the previous analysis of the measurement studies.	The need for the measure and intended use are fully described and effectively draws on the previous analysis of the measurement studies.	1%
Methods:						

Description of Measure	3	Description of measure is not included.	Description of measure is incomplete. Open-ended items are not included.	Description of measure is present but the clarity and organization could be improved. Appropriate open-ended items are included.	Description of measure is complete and well organized, including target population, intended users, and structure of the measure (i.e., subscales, number of items, response options/scale). List of items, including appropriate open-ended items and relevant background/demographic items, are included as table or in appendix.	0.75%
Item Development	3	Description of item development is not included.	Description of item development is incomplete.	Description of item development is present but the explanation could be more thorough or the clarity could be improved.	Item development is fully described, including writing of items or adaptation of existing items, gathering expert feedback, and determination of response scale.	0.75%
Procedures for Data Collection	3	Description of procedures for collecting data is not included.	Description of procedures for collecting data is incomplete.	Description of data collection is present but could be more thorough or the clarity could be improved.	Description of data collection is detailed and clear including sample/participants; instructions; recruitment; pilot administration (e.g., online/in-person, timeline); ethical considerations.	0.75%
Analysis Procedures	3	Description of data analysis is not included.	Description of data analysis is incomplete.	Description of data analysis is present including descriptive statistics, evidence of validity, and evidence of reliability but could be strengthened with additional explanation.	Description of data analysis is detailed and appropriate, including descriptive statistics, evidence of validity, and evidence of reliability.	0.75%
Pilot:						

Descriptive Statistics	3	Presentation of descriptive statistics is not included.	Descriptive statistics are presented but incomplete and/or inaccurate.	Descriptive statistics are presented with minimal inaccuracies but could be strengthened with additional explanation or further details.	Descriptive statistics, including demographic/background information and item-level statistics, are presented with a detailed and appropriate explanation of results.	1%
Reliability	3	Presentation of reliability evidence is not included.	Reliability evidence is presented but incomplete and/or inaccurate.	Reliability evidence is presented with minimal inaccuracies but could be strengthened with additional explanation or further details.	Relevant reliability evidence is presented with a detailed and appropriate explanation of results.	1%
Validity	3	Presentation of validity evidence is not included.	Validity evidence is presented but incomplete and/or inaccurate.	Validity evidence is presented with minimal inaccuracies but could be strengthened with additional explanation or further details.	Relevant validity evidence is presented with a detailed and appropriate explanation of results.	1%
Discussion						
Discussion of Measure	3	Discussion of the measure is not included.	Discussion includes basic comments on the measure but should be developed with critical analysis of strengths and weaknesses and/or with the inclusion of a revised measure.	Discussion provides a critical analysis of the measure's strengths and weaknesses. Presents revised measure, but could be strengthened by drawing more closely on the relevant results of the pilot study.	Discussion provides a critical analysis of the measure's strengths and weaknesses. Presents revised measure with detailed and appropriate connections to the results of the pilot study.	1.5%

Reflection	5	Reflection on the measure development process is not included.	Reflection includes basic comments that should be developed with more connections to the measure development process.	Reflection provides a thoughtful analysis of the measure development process but could be strengthened with additional explanation and connection.	Reflection provides insightful analysis of the measure development process including limitations/constraints and suggestions for improvement with direct connections to course content.	1.5%
Format & Writing:						
APA Style	4	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.		4%