EDRS 797 - 002: Introduction to Measurement and Survey Development (3 credits)
Fall 2016

Course Time: Thursday 4:30-7:10 p.m.
Course Location: Thompson Hall L014

Instructor: Marvin Powell, Ph. D.
Office Hours: Wednesday 3-4pm & Thursday 3-4pm
Office Hours Location: Room 2105 West Building
Email Address: mpowel11@gmu.edu

Course Description:
EDRS 797 introduces students to the classical measurement theory, survey and scale item development, and provides students with hands-on applications. Students require a working knowledge of statistical concepts so that we may determine the degree to which our measurement tools are meaningful (by conducting Exploratory Factor Analysis, Generalizability Theory and Item Response Theory). EDRS 797 provides students with the requisite skills to develop, analyze, and interpret instruments used in educational research. Students will learn through a combination of reading assignments, hands-on experience in developing a measurement tool and using data analysis procedures to assess measurement validity.

Prerequisite: B- or higher and satisfactory completion of EDRS 811 or equivalent required.

Learning Outcomes: This course is a one-semester measurement course design to expand students' understanding of organizing, analyzing, and interpreting educational measurement, it is expected that you will be able to:

a. Evaluate and apply appropriate standards and use of educational and psychological testing as they relate to test construction, fairness in testing, reporting, and use of test scores
b. Employ test construction practices that include item-writing for various types of assessment procedures;
c. Demonstrate a conceptual understanding of reliability and validity of educational and psychological measures;
d. Define and classify procedures used to provide validity evidence for educational and psychological tests
e. Conduct exploratory factor analysis as a method of assessing validity of a measure;
f. Read, understand, and interpret scientific articles related to development and validation of educational and psychological measurements.

Course Format: Lectures will be used to present quantitative and factual information. Seminar discussions will occasionally be used to clarify and extend knowledge presented in assigned readings. In-class and out-of-class homework, readings, and exercises will be assigned each week and used to clarify lectures or prepare for discussion. **Questions are encouraged**.

Required Materials:

Crocker, L., & Algina, J. (2006). *Introduction to classical & modern test theory*. Mason, OH: Thompson-Wadsworth.

Recommended Resource:

American Educational Research Association, American Psychological Association, & 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 edition).* Washington, DC: APA.

Cardinet, J., Johnson, S., & Pini, G. (2010). Applying generalizability theory using EduG. In G. A. Marcoulides (Ed.) *Quantitative Methodology Series*. New York: Routledge.

Shavelson, R. J., & Webb, N. M. (1991). Generalizability theory: A primer. Newbury Park, CA: Sage.

Class Attendance & Participation: Students are expected to come to class on time, complete assignments, and participate in class discussions.

ASSESSMENT:

- **Homework Assignments (20%):** Assignments and exercises will be given on a regular basis and will include (a) Questions from readings, (b) Homework Problems, and/or (c) Data Analysis Assignment. These assignments will be used as a record of attendance and participation in class discussions.

- **Article Review (20%):** You will review (as though you were peer reviewing) an empirically-based article from one of the following journals and provide a two-page **critical** review of the article. Your review should address the nature of the study, literature reviewed, methods (appropriateness), hypotheses, data, or conclusions. Your review will be less than two double spaced page

  Appropriate Measurement Journals:

  Applied Measurement in Education

  Applied Psychological Measurement

  Educational Assessment

  Educational Measurement: Issues and Practice

  Educational and Psychological Measurement

  Journal of Educational Measurement

  Journal of Personality Assessment

  Journal of Psychoeducational Assessment

  Psychological Assessment

  Measurement and Evaluation in Counseling and Development

- **Test Construction Project (40%):** You will be assigned to one of 3 groups of 6 or fewer students. One group will be assigned to each of the three areas:

  A. Survey of Thoughts, Feelings, Opinions

  B. Educational Content Assessment

  C. Psychological Domain Functioning

Each group will then follow appropriate procedures for constructing an assessment, collect data from a sample of individuals, and critically analyze the instrument created to determine the assessment's properties, strengths and weaknesses. The purpose of this project is to focus and integrate the concepts covered in class. You will submit a document that simulates a complete manuscript for publication (in one of the abovementioned journals).

- **Group Presentation (20%):** The result of the project will be presented in class.

Grading Scale: Grades will be assigned based on the following:

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

Final grades are based in the assessments described above. "Extra credit" is not available.

Late Assignments: *As a general rule, late papers/homework will not be accepted*. If you believe you have EXCEPTIONAL circumstances and wish to negotiate to have extra time to complete course work, you must discuss this with me before the day the assignment is due. (Negotiating means that you will be sacrificing a portion, perhaps substantial, of your grade for extra time).

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://coursessupport.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/.

Tentative Course Schedule

Date	Class	Topic	Readings
9/1	1	Course Overview Foundation of Assessment	
9/8	2	Testing and Assessment Basic/Essential Statistical Concepts	Snow (1992) C&A pp. v – 65 (Chapters 1-3)
9/15	3	Basic/Essential Statistical Concepts Legal and Ethical Considerations	C&A pp. v – 65 (Chapters 1-3) Standards…
9/22	4	Test Development & Construction	Ch. 4 & 5 C&A Haladyna, Downing, & Rodriguez (2002)
9/29	5	Classical Test Theory and Reliability	Allen & Yen Chapter 3 Ch. 6 C&A
10/6	6	Reliability Procedures	Ch. 7 C&A Henson (2001) Streiner (2003)
10/13	7	Generalizability Theory	Ch. 8 C&A
10/20	8	Introduction to Validity	Ch. 10 C&A Cronbach & Meehl (1955)
10/27	9	Validity	Ch. 11 and Ch. 12 C&A Messick (1995)
11/3	10	Validity	Ch. 12 and Ch. 13 C&A
11/10	11	Exploratory Factor Analysis	Ch. 13 C&A
11/17	12	Exploratory Factor Analysis	Ch. 13 C&A
11/24		**Thanksgiving – NO CLASS**	
12/1	13	Item Analysis *Group Presentation*	Ch. 14 C&A
12/8	14	Item Response Theory *Group Presentation*	Ch. 15 C&A
12/15	15	*Group Presentation*	