

RMTD 430 Online
Psychological Measurement
(Fall 2020)

Instructor: Ken A. Fujimoto, Associate Professor

E-mail: kfujimoto@luc.edu

Phone: (312) 915-6852

Office: Lewis Towers, Room 1136

Office hours: By appointment

Class Meetings: None (asynchronous online class)

Course Description

The purpose of this course is to provide the students with an introduction to psychological measurement. This class will focus on the issues of reliability and validity of the data, where the data come from tests that measure latent traits that are often of interest in education and psychology. The concepts of test scores and reliability will be viewed mainly from a classical test theory (CTT) perspective and secondarily from an item response theory (IRT) perspective. This class is not designed to train students to be skilled psychometrists or psychometricians. Rather, this class is intended to introduce the students to various aspects of psychological measurement. There are other classes that delve deeper into specific topics covered in this class.

As a result of this course, the students will

- be able to judge the characteristics of a measurement instrument
- understand the concept of reliability and calculate various reliability indices
- understand the concept of validity and how to determine whether test scores are valid
- have knowledge of CTT
- have general knowledge of IRT
- be able to perform a factor analysis

Requirements

Students are expected to have taken a graduate-level introductory statistics course (e.g., RMTD 404).

Required Text

Bandalos, Deborah L. (2018). *Measurement theory and applications for the social sciences*. New York, NY: The Guilford Press.

Recommended Text

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.

Technological Knowledge and Skills

Students will use SPSS (Statistical Package for the Social Sciences). Most of the computers on Water Towers Campus are equipped with the latest version of SPSS. Students can also obtain a copy of IBM SPSS Statistics for home use free of charge. For details about obtaining a copy of

the software for home use, please go to <https://www.luc.edu/its/itrs/researchtechnologies/home-use.shtml> (see the “IBM SPSS Statistics” section under the “Student Home Use” heading). The version available from ITS will be sufficient for this class.

Study Materials and Weekly Quizzes

You will learn a new topic each week. Each week, you will be assigned a chapter (or a part of a chapter) from the required text and be expected to view a recorded presentation associated with the topic. Then you will be expected to complete a quiz based on the material assigned to you that week. Make sure you finish reading the assigned chapters and watching the recordings before you start the quizzes. I will release each week’s study material by Monday morning of that week. An e-mail will be sent to students when the materials are available. Please pay attention to the due date for the quizzes. Late work will not be accepted unless prior arrangements have been made with the instructor.

Examinations

There will be two exams in this course. The exams will be open book and open notes, and you may use a calculator and a computer during the exams.

Evaluation

Grades will be based on points accumulated on quizzes and exams. There will be 100 total possible points, with the points distributed in the following:

Quizzes	50%
Exam 1	30%
Exam 2	20%

The grade ranges in terms of percentages are:

100.0-90.0 = A	84.9-80.0 = B+	69.9-65.0 = C+	54.9 and below = F
89.9-85.0 = A-	79.9-75.0 = B	64.9-60.0 = C	
	74.9-70.0 = B-	59.9-55.0 = C-	

Online Course Requirements

To ensure learning occurs in the online environment, there are certain requirements for this class:

Required Access

- At least a DSL Internet connection
- Loyola Email Account with reliable access
- Sakai – We post all the materials for this class in Sakai

- Access to SPSS - Most of the computers on Water Towers Campus are equipped with the latest version of SPSS. Students can also obtain a copy of IBM SPSS Statistics for home use free of charge. For details about obtaining a copy of the software for home use, please go to <https://www.luc.edu/its/itrs/researchtechnologies/home-use.shtml> (see the “IBM SPSS Statistics” section under the “Student Home Use” heading). The version available from ITS will be sufficient for this class.

Required Familiarity

- Be able to download and upload files
- Be able to use Microsoft Office Package, especially Microsoft Word and Microsoft PowerPoint

In addition to hardware access and software utilization, the following represent factors that facilitate a productive and effective online learning experience. (Material adapted from the University of Wisconsin Online website on Online Etiquette.

<http://online.uwc.edu/technology/etiquette>)

- Tone down your language. Given the absence of face-to-face cues, written text can easily be misinterpreted. Avoid the use of strong or offensive language and the excessive use of exclamation points. If you feel particularly strongly about a point, it may be best to write it first as a draft and then to review it before posting it, in order to remove any strong language.
- Keep a straight face. In general, avoid humor and sarcasm. These frequently depend on facial or tone of voice cues absent in text communication or on familiarity with the reader.
- Be forgiving. If someone states something that you find offensive, mention this directly to the instructor. Remember that the person contributing to the discussion is also new to this form of communication. What you find offensive may quite possibly have been unintended and can best be cleared up by the instructor.
- The recorder is on. Think carefully about the content of your message before contributing it. Once sent to the group, there is no taking it back. Also, although the grammar and spelling of a message typically are not graded, they do reflect on you. Your audience might not be able to decode misspelled words or poorly constructed sentences. It is good practice to compose and check your comments in a word-processor before posting them.
- Test for clarity. Messages may often appear perfectly clear to you as you compose them, but turn out to be perfectly obtuse to your reader. One way to test for clarity is to read your message aloud to see if it flows smoothly. If you can read it to another person before posting it, then even better.
- Netspeak. Although electronic communication is still young, many conventions have already been established. **DO NOT TYPE IN ALL CAPS**. This is regarded as shouting and is out of place in a classroom. Acronyms and emoticons

(arrangements of symbols to express emotions) are popular, but excessive use of them can make your message difficult to read.

SOE Vision

The School of Education of Loyola University Chicago is a community that seeks to transform members to impact local and global communities through the principles of social justice.

School of Education Mission

The School of Education at Loyola University Chicago, a Jesuit Catholic urban university, supports the Jesuit ideal of knowledge in the service of humanity. We endeavor to advance professional education in service of social justice, engaged with Chicago, the nation, and the world. To achieve this vision, the School of Education participates in the discovery, development, demonstration, and dissemination of professional knowledge and practice within a context of ethics, service to others, and social justice. We fulfill this mission by preparing professionals to serve as teachers, administrators, psychologists, and researchers who work across the developmental continuum, and by conducting research on issues of professional practice and social justice.

School of Education Conceptual Framework

Our School's Conceptual Framework – ***Social Action through Education*** – guides the curricula of School of Education programs in the preparation of carrying out the mission of social justice. These dimensions of the conceptual framework also serve as the foundation to the School of Education – standards that are explicitly embedded in major benchmarks across all SOE programs. Our conceptual framework is described here: www.luc.edu/education/mission/. Social inequities exist for many subgroups within the population (including but not limited to subgroups based on race, gender, sexual orientation, social class, ethnicity, and ability). This course will help students develop the foundational knowledge needed to carry out quantitative research that could offset social inequities that exist in our society for one, some, or all groups.

Objectives

The essential objectives for this course are:

1. Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories)
2. Learning fundamental principles, generalizations, or theories
3. Learning to apply course material (to improve thinking, problem solving, and decisions)
4. Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course

School of Education Commitment - COVID-19

Loyola's School of Education (SOE) recognizes that this is an unprecedented time. We understand that moving into the 2020-2021 academic year while living in the context of the COVID-19 pandemic may stir feelings of uncertainty, fear, or anxiousness. We want you to know that your safety, health, and well-being, as well as that of our faculty and staff, remain our

primary concern. We want to be able to support you in any way that we can. We ask you to embody the Jesuit value of *Cura Personalis*, or care for the whole person, as we prepare to learn together. We ask that you consider your way of being in this community, to act with care, and treat all with dignity to keep yourself and others safe.

The University understands that you may encounter obstacles that make reaching academic goals more difficult. We strongly encourage you to access the Student Resources on [Loyola's COVID-19 Response webpage](#) for information, supports, and resources on basic needs such as housing, food, financial aid, and medical and mental health. This web page also offers information on official University communications, access to technology, and student services. All Loyola University Chicago administrators, faculty, and advisors are also here for you.

The SOE is committed to working with all students to address any challenges that may arise during the semester. Please reach out to your professor as early as possible to discuss any accommodations you think may be necessary in order for you to successfully complete your coursework. We know this will be a semester like none other, but through collaboration, communication, and shared responsibility, we will not only get through this difficult time; we will thrive.

COVID-19 Reporting Protocol

In preparation for our upcoming semester, Loyola University Chicago's Emergency Response Management team has been working to develop protocols in accordance with Centers for Disease Control and Prevention (CDC) guidelines that help ensure the health and safety of our community. Given the rising number of COVID-19 cases across our country, it is very likely that incidence within our community will occur in the fall.

Students, faculty, and staff who have tested positive for COVID-19 must report their case to the University as soon as possible. **If you have tested positive for the virus, please contact us at covid-19report@LUC.edu or by calling 773-508-7707. All COVID-19-related questions or feedback should continue to be sent to covid-19support@LUC.edu, not the new case reporting email address.**

Loyola University Chicago School of Education Syllabus Addendum

Smart Evaluation

Towards the end of the course, students will receive an email from the Office of Institutional Effectiveness as a reminder to provide feedback on the course. Students will receive consistent reminders throughout the period when the evaluation is open, and the reminders will stop once the evaluation is completed.

- The evaluation is completely anonymous. When the results are released, instructors and departments will not be able to tell which student provided the individual feedback.
- Because it is anonymous and the results are not released to faculty or departments until after grades have been submitted, the feedback will not impact a student's grade.

- The feedback is important so that the instructor can gain insight in to how to improve their teaching and the department can learn how best to shape the curriculum.

Special Circumstances--Receiving Assistance

Students are urged to contact me should they have questions concerning course materials and procedures. If you have any special circumstance that may have some impact on your course work, please let me know so we can establish a plan for assignment completion. If you require assignment accommodations, please contact me early in the semester so that arrangements can be made with Services for Students with Disabilities (SSWD) (<http://www.luc.edu/sswd/>).

Syllabus Addendum Link

- <http://www.luc.edu/education/syllabus-addendum/>

This link directs students to statements on essential policies regarding *academic honesty*, *accessibility*, *ethics line reporting* and *electronic communication policies and guidelines*. We ask that you read each policy carefully.

This link will also bring you to the full text of our conceptual framework that guides the work of the School of Education – *Social Action through Education*.

Privacy Statement

Assuring privacy among faculty and students engaged in online and face-to-face instructional activities helps promote open and robust conversations and mitigates concerns that comments made within the context of the class will be shared beyond the classroom. As such, recordings of instructional activities occurring in online or face-to-face classes may be used solely for internal class purposes by the faculty member and students registered for the course, and only during the period in which the course is offered. Students will be informed of such recordings by a statement in the syllabus for the course in which they will be recorded. Instructors who wish to make subsequent use of recordings that include student activity may do so only with informed written consent of the students involved or if all student activity is removed from the recording. Recordings including student activity that have been initiated by the instructor may be retained by the instructor only for individual use.

Schedule

Week	Dates	Topics	Readings
1	8/24	1. Introduction	Ch. 1 (pg 4–9) Ch. 2 (pg. 21–24, & 37. You can skim the other pages in the chapter)
2	8/31	2. Process of test construction	*This is more of an FYI lecture related to Ch. 3–5, but you don't need to read these chapters unless you're interested in them (*see note below)
3	9/7	3. Item Analysis for Cognitive and Noncognitive Items 4. Test Score Composites	Ch. 6
4	9/14	5. Introduction to Reliability and the Classical Test Theory Model	Ch. 7
5	9/21	6. Coefficient Alpha (Part 1)	Ch. 8 (pg. 172–188)
6	9/28	7. Coefficient Alpha (Part 2) 8. Standard Error of Measurement	Ch. 8 (pg. 172–188 cont'd) Ch. 8 (pg. 198–201)
7	10/5	9. Other Types of Reliability	Ch. 8 (pg. 190–198, 201–206)
8	10/12	10. Interrater Agreement and Reliability	Ch. 9
9	10/19	Exam 1	
10	10/26	11. Exploratory Factor Analysis	Ch. 12
11	11/2	12. Item response theory	Ch. 14
12	11/9	13. Item Bias	Ch. 16
13	11/16	14. Multidimensionality	No Chapter
14	11/23	~ ~ ~ ~ Thanksgiving Break ~ ~ ~ ~	
15	11/30	15. Validity	Ch. 11
16	12/7	Exam 2	

*The lecture on Process of test construction is just an overview of some aspects of the test construction that can contribute to measurement error (a topic we'll be spending a lot of time on in the upcoming weeks). This class is not about test construction (there is actually a different class on test construction—RMTD 403). The key things I cover in this lecture will help explain why measurement error could arise.

Evaluation of Disposition in RMTD 430

Rubric

Area	Target	Acceptable	Unacceptable
Systematic Inquiry AEA A.3	Candidate communicates effectively and appropriately with faculty and peers.	Candidate is working on communicating effectively and appropriately with faculty and peers.	Candidate is unable to communicate effectively and appropriately with faculty and peers.
Responsibilities for General and Public Welfare AEA E.3	Candidate’s written work is appropriate and effective for the course.	Candidate’s written work is sometimes appropriate and effective for the course.	Candidate’s written work is inappropriate and ineffective for the course.
Timeliness	Candidate is able to meet all deadlines.	Candidate is sometimes able to meet all deadlines.	Candidate is unable to meet all deadlines.
Integrity/Honesty AEA C.5	Candidate appropriately represents procedures, data, and findings – attempting to prevent misuse of their results.	Candidate represents procedures, data, and findings in a manner that is likely to allow the misuse of their results.	Candidate misrepresents procedures, data, and findings. There is minimal attempt to prevent misuse of their results.