

RMTD 430
Psychological Measurement
(Fall 2018)

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Office hour: Mondays 2:30pm–4:00pm and by appointment

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
- be able to perform a basic IRT analysis

Requirements

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

Required Text

Crocker, L. & Algina, J. (1986). *Introduction to classical and modern test theory*. Belmont, CA: Wadsworth, Cengage Learning.

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) and IRTPro. Most of the computers on Water Towers Campus are equipped with the latest version of SPSS and the student version of IRTPro. For home use, students can purchase or rent the SPSS Graduate

Package. More information can be found in the section “IBM SPSS Statistics 25” under the STUDENT HOME USE section in: <http://www.luc.edu/itrs/researchcomputing/home-use.shtml>. Students can also download a free student version of IRTPro at <http://www.ssicentral.com/irt/student.html>

Homework

Six assignments will make up the points devoted to homework. The total homework points will be converted to a percentage score, then weighted and combined with the exam scores to obtain a final overall grade. You are encouraged to discuss the homework assignments with other students in the class, but each student must separately write up her or his own answers and turn in a copy by the due date.

Homework turned in late will be penalized one letter grade per day it is late unless prior arrangements have been made with the instructor. Please keep in mind that homework assignments turned in late (excused or unexcused) may not receive the same feedback or receive the same turnaround as those that are turned in on time. Late homework should still be uploaded to Sakai.

If you would like to appeal a grade after your HW is graded, you must make the appeal in writing and submit it along with the graded HW to the instructor within two weeks of receiving the graded HW.

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 computer during the exams. However, books, notes, computers, and calculators cannot be shared or circulated during exams, so be sure to bring your own material.

Participation

Regular attendance and participation in class discussions are expected. Contact the instructor ahead of the class meeting if you cannot attend the class. If you miss a class, you are responsible for obtaining any information presented in class that day from one of your classmates.

Evaluation

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

Homework Assignments	60%
Exam 1	20%
Exam 2	20%

The grade ranges in terms of percentages are:

100.0 – 92.0 = A	87.9 – 84.0 = B+	74.9 – 72.0 = C+	64.9 and below = F
91.9 – 88.0 = A–	83.9 – 80.0 = B	71.9 – 70.0 = C	
	79.9 – 75.0 = B–	69.9 – 65.0 = C–	

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.

IDEA Objectives

IDEA is an evaluation system that our School uses to assess whether a class reaches its major goals by the end of the semester. 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

Loyola University Chicago School of Education Syllabus Addendum

IDEA Course Evaluation Link for Students

Each course you take in the School of Education is evaluated through the IDEA Campus Labs system. We ask that when you receive an email alerting you that the evaluation is available that you promptly complete it. To learn more about IDEA or to access the website directly to complete your course evaluation go to: <http://luc.edu/idea/> and click on ***STUDENT IDEA LOGIN*** on the left hand side of the page.

Dispositions

All students are assessed on one or more dispositional areas of growth across our programs: ***Professionalism, Inquiry, and Social Justice***. The instructor in your course will identify the dispositions assessed in this course and you can find the rubrics related to these dispositions in LiveText. *For those students in non-degree programs, the rubric for dispositions may be available through Sakai, TaskStream or another platform.* Disposition data is reviewed by program faculty on a regular basis. This allows faculty to work with students to develop throughout their program and address any issues as they arise.

LiveText

All students, *except those who are non-degree*, must have access to LiveText to complete the benchmark assessments aligned to the Conceptual Framework Standards and all other accreditation, school-wide and/or program-wide related assessments. You can access more information on LiveText here: [LiveText](#).

Syllabus Addendum Link

- 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***.

Schedule

Week	Dates	Topics	Readings	Due
1	8/27	1. Introduction	Ch. 1	
2	9/3	~ ~ ~ ~ Labor Day -- No Class ~ ~ ~ ~		
3	9/10	2. Process of test construction	Ch. 4	
4	9/17	3. Test scores as composites	Ch. 5	
5	9/24	4. Reliability and the classical true score model	Ch. 6	HW1
6	10/1	5. Procedures for estimating reliability	Ch. 7	HW2
7	10/8	~ ~ ~ ~ Fall Break -- No Class ~ ~ ~ ~		
8	10/15	6. Validity	Ch. 10 (skim this chapter)*	HW3
9	10/22	Exam 1		
10	10/29	7. Factor analysis	Ch. 13	
11	11/5	8. Item analysis	Ch. 14	HW4
12	11/12	9. Item response theory (part 1)	Ch. 15	HW5
13	11/19	10. Item response theory (part 2)	Ch. 15	
14	11/26	11. Detecting differential item functioning	Ch. 16	HW6
15	12/3	Open topic		
16	12/10	Exam 2		

* Additional readings in the class readings folder: 1) AERA, APA, & NCME chapter on validity; 2) Messick (1995). Read these how you normally read material (do not skim these).

Evaluation of Disposition in RMTD 404

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.