

Course Syllabus
15:291:515
Psychometric Theory I
Spring 2013

Instructor: Youngsuk Suh

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Office hours: Tuesday 2:30 - 3:30 PM, or by appointment

Time: Tuesday, 4:50 – 7:30 PM

Place: Room 114, Murray Hall

Prerequisite: Statistical Methods in Education I (15:291:531) or the equivalent.

Text: Allen, M. J. & Yen, W. M. (2002). Introduction to Measurement Theory. Prospect Heights, IL: Waveland Press.

Recommended:

1. Crocker, L. & Algina, J. (1986). Introduction to Classical & Modern Test Theory.
2. Wilson, M. (2005). Constructing Measures: An Item Response Modeling Approach.
3. Thorndike, R. M. (2005). Measurement and Evaluation in Psychology and Education. (7th ed.).

Course Description

This course is designed to provide an overview of basic but important topics and issues in educational and psychological testing and measurement. The course topics include principles of educational and psychological measurement, such as scaling, reliability and validity analyses, item analysis, introduction to Classic Test Theory (CTT), introduction to Item Response Theory (IRT), and test development. Basic statistical knowledge is required throughout the course since some issues in the field are necessarily technical.

Course Goals

After successfully completing this class students should

Goal 1. Understand the fundamental concepts, methods, and principles of educational and psychological measurement. Specific objectives are as follows:

- a) Understand the purpose of score transformation and be able to obtain and interpret it.
- b) Be able to obtain and interpret reliability and validity related evidence.
- c) Understand the general procedures of test construction and item writing.
- d) Be able to conduct an item/test analysis from the classical test theory perspective.
- e) Understand the general principles of the item response theory and its applications.

Goal 2. Be more measurement literate. That is, be able to read, interpret, and critically evaluate measurement methodology, reported outcomes and subsequent interpretations, as found in educational or behavioral research journals.

Course Requirements

1. **Exams:** There will be two in-class exams (midterm and final) and one take-home exam. They will be worth 30%, 30%, and 20% of the final grade, respectively. The exams may consist of multiple choice items, computations, and short answer/essay questions.
2. **Presentation:** A short presentation, worth 20% of the final grade, will be held at the end of the semester. Each student selects and presents a journal paper in which skills that we learn in class were employed. More detailed information about the presentation will be distributed.
3. **Homework assignments and in-class work activities** will be given throughout the semester. The answers will be either posted on the course website or discussed during class.
4. **Reading assignments** must be completed prior to each lecture.
5. **Attendance:** Your attendances at the meetings are expected during the semester. Please bring any necessary planned absences to my attention ahead of time.

Calculator: A calculator that performs basic operations is necessary for homework assignments, class exercises, and exams.

Grading System

Final letter grade will be assigned as follows:

Final Score	Letter Grade
90% and Above	A
80%-89.99%	B+
75%-79.99%	B
65%-74.99%	C+
60%-64.99%	C
55%-59.99%	D
Below 55%	F

Makeup Assignments

Only in exceptional circumstances and only with **prior** permission from the instructor, or with a verifiable medical excuse, will students be able to take a makeup exam. The student must provide medical proof of illness. The student is responsible for notifying the instructor by the day of the exam that they cannot attend the exam. The format of make-up test is at the discretion of the instructor.

Communication

In this course **e-mail** will be used as a means of communication with students. You will be responsible for checking your e-mail regularly for class work, deadlines, changes and announcements. Do NOT leave me a phone message in my office because I do NOT check my voicemail regularly. I do, however, check email several times each weekday.

Class handouts used by the instructor will be available on Sakai website at <http://sakai.rutgers.edu> under **15:291:515:01 S13 PsychoeryI**. They will be made available by **8AM** each class day. It is your responsibility to print them out if you want to have hard copies in class. The handouts provide a skeleton of what is being covered each day and will thus be an incomplete version of the material actually covered.

Tentative Class Schedule

Date	Topic	Assigned Readings
Jan. 22	1. Course Overview, Introduction	Ch. 1
Jan. 29	2. Basic Statistical Concepts	Ch. 2
Feb. 5	3. Transforming; Scaling; Equating	Ch. 7 - 8
Feb. 12	4. Classical Test-Score Theory	Ch. 3
	5. Reliability	Ch. 4
	Take-Home Exam I (Covers Topics 1 - 3)	
Feb. 19	5. Reliability Take-Home Exam I Due	Ch. 4, Handouts
Feb. 26	6. Validity	Ch. 5
Mar. 5	6. Validity Review Session	Ch. 5
Mar. 12	Midterm Exam (Covers Topics 4 – 6)	
Mar. 19	Spring Break	
Mar. 26	7. Test Construction; Item Writing, Attitude Scales	Ch. 6, Handouts
Apr. 2	8. Item Analysis	Ch. 6
Apr. 9	9. Item Response Theory	Ch. 11.5-11.8 Handouts
Apr. 16	10. IRT Applications	Ch. 10.9, Handouts
Apr. 23	Presentation	
Apr. 30	11. Issues in Ability Testing; Criterion-referenced Test vs. Norm-referenced Test, Test Bias Review session	Ch. 10.5 Handouts
May. 7	Final Exam (Covers Topics 7 - 11)	

**** Religious holy days** sometimes conflict with class and examination schedules. You must notify your instructor of the issues prior to the classes scheduled on dates you will be absent to observe a religious holy day. If you have to miss an exam due to a religious holy day, it is your responsibility to re-schedule with the professor another time to take the exam.

Policy on Academic Integrity

Please refer to the Policy on Academic Integrity for Undergraduate and Graduate Students at <http://academicintegrity.rutgers.edu>. I will follow the policy strictly.