

Course Syllabus
15:291:515:90
Online Psychometric Theory I
Spring 2014

Instructor: Youngsuk Suh

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Time: New course materials will be posted on Tuesdays

Online session: Thursdays

Discussion: Every weekday

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 goal of the course is to offer fundamental knowledge and techniques required to analyze educational and psychological tests from the perspective of psychometrics. 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 achieve the following goals.

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

1. Understand the purpose of score transformation and be able to obtain and interpret it.
2. Be able to obtain and interpret reliability and validity related evidence.
3. Understand the general procedures of test construction and item writing.
4. Be able to conduct an item/test analysis from the classical test theory perspective.
5. 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 online exams, midterm and final, which are worth 30% and 30% of the final grade, respectively.
2. **Homework assignments:** Approximately 4 homework assignments, worth 30% of the final grade, will be given online during the semester. You have a whole week to work on a homework assignment. No late homework assignment is acceptable.
3. **Final Report:** A report/critique from a self-selected journal paper that applies the theories and techniques covered in the course is worth 10% of the final grade. The final report/critique is due on May 2nd. More detailed information about the final report will be distributed.
4. **Reading assignments:** Assigned readings must be completed prior to each lecture.
5. **Participation:** Your participation is expected throughout the semester.
6. **Calculator:** A calculator that performs basic operations is necessary for homework assignments and exams.

Communication

Email & ECollege Access: Efficient communication is the key to evaluate how successful an online course is. In this course, emailing and eCollege are the two communication tools that we heavily rely on. To maximize the teaching and learning effects, you should check your email account frequently and make sure you are able to receive information, download files, drop messages, do homework, and, take exams from our course web page. All information and activities are time sensitive. Late responses and requests will not be handled. For example, you will have a run of time to finish each homework assignment. However, you will not be able to access the homework assignment after its due date.

Online Sessions

Online sessions in this course are analogous to office hours in a regular course. Online sessions are not held for getting through the notes, but for demonstrating how to solve challenging problems in the notes or for explaining difficult concepts covered in the lecture notes. Voice-recorded sessions will be uploaded on every other Thursday.

Dropbox

In addition to the online sessions, an alternative to find the solutions to your questions is simply drop your questions to a designate Dropbox on our course web page. A **Basket** labeled **Question Box** will be created every week for you to drop content-related questions. Your questions will be answered on a daily basis (**weekdays during the daytime**). Therefore, please make sure you are familiar with the function, **Dropbox**.

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

Tentative Class Schedule

The following class schedule is subject to change if necessary. Reading assignments must be completed each week.

Date	Topic	Assigned Readings
Jan 21-Jan 25	Getting Started	Handouts
Jan 26-Feb 1	Introduction	Ch. 1
Feb 2-Feb 8	Basic Statistical Concepts	Ch. 2
Feb 9-Feb 15	Transforming; Scaling; Equating	Ch. 7 & 8, Handout
Feb 13	*ClassLive	
Feb 16-Feb 22	Classical Test-Score Theory	Ch. 3
Feb 18	*HW 1 assigned	
Feb 23-Mar 1	Reliability	Ch. 4, Handout
Feb 24	*HW 1 due	
Feb 25	*HW 2 assigned	
Feb 27	*ClassLive	
Mar 2-Mar 8	Validity I: Review Session	Ch. 5
Mar 3	*HW 2 due	
Mar 11	Midterm Exam	
Mar 15-Mar 23	Spring Break (No Class)	
Mar 24-Mar 29	Validity II	Ch. 5
Mar 30-Apr 5	Test Construction; Item Writing, Attitude Scales	Ch. 6, Handouts
Apr 1	*HW 3 assigned	

Apr 6-Apr 12 Apr 7 Apr 10	Item Analysis *HW 3 due *ClassLive	Ch. 6
Apr 13-Apr 19 Apr 17	Item Response Theory *ClassLive	Ch. 11.5-11.8, Handouts
Apr 20-Apr 26 Apr 22	IRT Applications; Issues in Ability Testing; Test Bias *HW 4 assigned	Ch. 10.5 & 10.9, Handouts
Apr 27-May 3 Apr 28 May 1 May 2	Review session *HW 4 due *ClassLive Final Report Due	
May 6	Final Exam	

Policy on Academic Integrity

Please refer to the Policy on Academic Integrity for Undergraduate and Graduate Students at <http://academicintegrity.rutgers.edu>. Clear evidence of violation of academic integrity policy may result in a grade of F for the course.

Accessibility of Online Courses

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation:

<https://ods.rutgers.edu/students/documentation-guidelines>

If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>