

COURSE SYLLABUS

Psychometric Theory I

15:291:515

Fall, 2014

Course Information

Instructor:	Dr. Chia-Yi Chiu
	Office: Room 326, Graduate School of Education
	Email: chia-yi.chiu@gse.rutgers.edu
	Office Hour: By appointment
Time:	4:50PM – 7:30PM, Wednesdays
Classroom:	Room 113, Murray Hall
Required Text:	Allen, M. & Yen, W. (2002). <i>Introduction to Measurement Theory</i>
Recommended Texts:	1. Wilson, M. (2005). <i>Constructing Measures: An Item Response Modeling Approach</i> 3. Embertson, S. & Reise, S. (2000). <i>Item Response Theory for Psychologists</i>

Course Description

This course is designed to provide an overview of basic yet 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. Basic statistical knowledge is required through this course. The topics include principles of educational and psychological measurement, such as scaling, reliability and validity analyses, and item analysis, introduction to Classic Test Theory (CTT), applications of factor analysis, introduction to Item Response Theory (IRT) and test development.

Course Goals

After successfully completing this class students should

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.
6. Be able to read, interpret, and critically evaluate measurement methodology, reported outcomes and subsequent interpretations, as found in educational and behavioral research journals.

Course Requirements

1. **eCollege Access:** The lecture notes will be posted on our course page supported by eCollege prior

to every lecture. You have to download, print the notes and handouts, and bring them to the class. Also, the homework assignments are web-based. Please make sure you are able to access eCollege at onlinelearning.rutgers.edu/ecollege and familiarize with the functions required to access the handouts and complete the homework assignments.

2. **Midterm exam:** The midterm exam, worth 30% of your final course grade, will be in-class.
3. **Final exam:** The final exam, worth 40% of your final course grade, will be take-home. You have one day (12am-12pm, 12/10) to finish the exam. The final exam includes two parts:
 - a. The first part of the final exam includes questions related to the course materials taught in class. This part is worth 30%.
 - b. The second part is a critique/reflection on a journal article where knowledge and quantitative techniques taught in class were used. This part is worth 10% and you should have the article ready before the exam.

Notice: No late exam is acceptable.

4. **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.
5. **Participation:** Your participation is expected throughout the semester.
6. CELL PHONES AND SIMILAR DEVICES MUST BE TURNED OFF AND MUST STAY STOWED AT ALL TIMES DURING CLASS. LAPTOPS CAN ONLY BE USED FOR NOTE TAKING. NO ONLINE SURFFING IS ALLOWED.

Final Grade

Final letter grade will be assigned as follows:

Final Score	Letter Grade
90% and Above	A
80%-89%	B+
75%-79%	B
65%-74%	C+
60%-64%	C
Below 60%	F

Academic Integrity Policy

The Office of Student Conduct supervises issues related to violations of academic integrity_(see <http://academicintegrity.rutgers.edu>). Please familiarize yourself with the university policy on academic integrity at http://academicintegrity.rutgers.edu/files/documents/AI_Policy_2013.pdf

Office of Disability Services

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>.

Tentative Schedule

Date	Course Content and Reading	Due
09/03	Ch1 & Ch2: Introduction; Basic statistical concepts	
09/10	Ch7, Ch8, and handout: Transformation; Scaling; Equating	
09/17	Ch3: Classical Test Theory	Assignment I
09/24	Ch4: Reliability I	
10/01	Handout: Reliability II	Assignment II
10/08	Review	
10/17	<u>Midterm</u>	
10/22	Ch5: Validity I	
10/29	Ch5: Validity II	
11/05	Ch6: Item Analysis	Assignment III
11/12	Secs. 11.5-11.8 and Handout: Item Response Theory	
11/19	Secs. 10.5, 10.9, and Handout: IRT Applications, Issues in ability testing, test bias	Article
11/26	<i>Thanksgiving Recess</i>	
12/03	Review	Assignment IV
12/10	<u>Final Exam</u>	