

Psychometric Theory I
15:291:515:01
Fall, 2013

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, Tuesdays
Classroom:	Room 119, Scott 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> 2. Crocker, L. & Algina, J. (1986). <i>Introduction to Classical & Modern Test Theory</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. **Email & 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. **Exams:** The two online exams, midterm and final, are worth 30% and 30% of the final grade, respectively. You will need a calculator for the exams.
3. **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.
4. **Presentation:** A group presentation, worth 10% of the final grade, will be held at the end of the semester. Each group selects and presents a journal paper in which skills that we learn in class were employed.
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 MAY BE USED ONLY FOR NOTE TAKING.**

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

Tentative Schedule

Date	Course Content and Reading	Assignments
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 and handout: Test Construction	Assignment III
11/12	Ch6: Item Analysis	
11/19	Secs. 11.5-11.8 and Handout: Item Response Theory	
11/26	Secs. 10.5, 10.9, and Handout: IRT Applications, Issues in ability testing, test bias	Assignment IV
12/03	Review	presentation
12/10	<u>Final Exam</u>	

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.