Instructor: Peter F. Halpin  
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Office: Kimball Hall, 246 Greene Street, 204  
Office Hours: TBA  
Credits: 2

Class Meeting Time / Room: Mondays 2:00-4:45pm. Class meets the first 7 Mondays of Fall semester; optional 1-credit independent study to continue project-based work into the second half of semester.

Course Description: This course reviews and expands on the topics of measurement and reliability for psychological and educational test data. The starting point is classical test theory, moving quickly onto unidimensional and multidimensional factor models for continuous data, and then onto item response theory for dichotomous and ordered-categorical data. The course is especially well suited to students who have collected test / questionnaire data and want to (a) analyze the measurement properties of the test (e.g., its reliability, dimensionality) and (b) obtain summary scores for each respondent, scores that can be used for reporting or as variables in further analyses.

Course Orientation: This course is intended to provide students with the requisite skills to deal with test / questionnaire in their own research. Class time is split between 1/2 theoretical discussion and 1/2 hands-on examples. Students are encouraged to bring a laptop to follow along with examples in class. Students can use a software of their choice, but class material focuses on R and Mplus (a free demo of Mplus is available at www.statmodel.com and the full version is available at the Bobst 5th floor Digital Studio). Evaluation is centered on data-based assignments and a final project. For the final project, students may work in pairs and are encouraged to use data from their own research.

Prerequisites: Statistics at the level of RESCH-GE 2003. Classical true score theory (e.g., APSYC 2140) is strongly recommended but not required.

Website: The course uses Classes for lecture notes, handouts, readings, homework assignments, and general information.

Text: Readings from the research literature and book chapter excerpts will be provided. An annotated bibliography is provided at the end of this syllabus.
**Grading:**
10%  Class attendance and participation 
45%  Three computer-based homework project 
45%  Final project 

**Participation:** Participation is evaluated on a class-by-class basis. Each class, up to two participation points can be earned-- one point for attendance, and another for contributing to the classroom discussion. The final participation grade is the average over the classes.

**Homework:** Three computer-based homework projects will be assigned. Students have one week to complete assignments and class time is dedicated to working on assignments on the day they are distributed. Students can work together, but each person must hand in their own work.

**Final Project:** The project requires applying one or more of the models discussed in class to real data, interpreting the model, obtaining scores from the model, and evaluating the quality of the scores. Students are required to secure access to a data source that is appropriate for the final project. The project will be most beneficial if students use their own data. Students are encouraged to consult NYU Library Data Services (nyu bobst data services [http://guides.nyu.edu/dataservices](http://guides.nyu.edu/dataservices)) for information about publicly available data sources, and the course instructor can suggest a number of publicly available data sources in education. Students can work together, and may optionally hand-in the project in pairs. Students have two weeks after the last lecture to complete the final project, and must submit a **hard copy** to the instructors mailbox.

**Timeline:** This time line is approximate and may be altered during the semester.

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<thead>
<tr>
<th>Week</th>
<th>Homework</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td></td>
<td>Overview, review of classical test theory</td>
</tr>
<tr>
<td>2</td>
<td>HW1 distributed</td>
<td>The unidimensional factor model for continuous data</td>
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<tr>
<td>3</td>
<td>HW1 due</td>
<td>The multidimensional factor model for continuous data</td>
</tr>
<tr>
<td>4</td>
<td>HW1 returned</td>
<td>Item response theory for dichotomous data</td>
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<tr>
<td></td>
<td>HW2 distributed</td>
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<tr>
<td>5</td>
<td>HW2 due</td>
<td>Item response theory for categorical data</td>
</tr>
<tr>
<td>6</td>
<td>HW2 returned</td>
<td>Multi-group comparisons</td>
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<tr>
<td></td>
<td>HW3 distributed</td>
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Bibliography (*denotes assigned reading)


Krosnick, J. a., & Presser, S. (2010). Question and Questionnaire Design. Handbook of Survey Research. (This is about writing questionnaires, not analyzing data from questionnaires.)


(Good historical introduction and discussion of main issues in exploratory factor analysis.)

