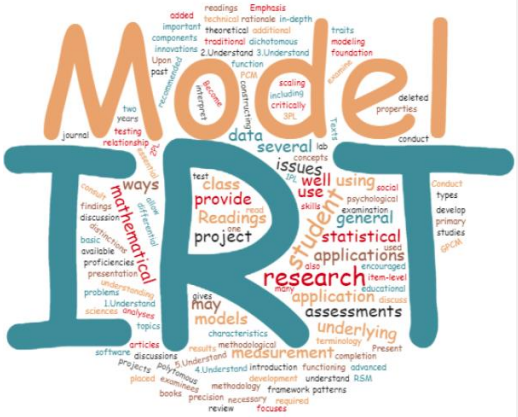
ED_PSYCH 577
Item Response Theory

The course will provide a general introduction to item response theory (IRT) and examine the use of IRT in the social sciences. IRT is the most important technical innovations in educational and psychological measurement in the past 50 years. IRT gives us an advanced statistical framework for modeling item-level response patterns from many types of assessments as a function of one or more underlying traits. The statistical models used in IRT provide ways to understand measurement precision and the relationship between item characteristics and examinees' proficiencies in ways traditional test theory does not allow. The course focuses on (a) understanding the basic components of IRT, (b) practical applications, and (c) in-depth examination of methodological issues. Emphasis will be placed on the application IRT and its mathematical foundation. In the course, the student will (a) develop skills to conduct IRT research and (b) critically review the use of IRT in research.



Spring 2019 Schedule

4:10 PM – 7:00 PM
Every Tuesday
Jan 08 – April 27, 2019

Major Topics

- Review of measurement topics and CTT
- An overview of IRT and its assumptions
- Various IRT Models
- Parameter estimation & Model-data fit
- Measurement Error in IRT
- Applied analyses using Software
- Scaling and scale transformations
- Models for polytomous data
- Test score equating and linking
- Measurement invariance and item bias
- Intro to Multidimensional and multilevel IRT
- Intro to Computerized Adaptive Testing

About the Instructor

Shenghai Dai, PhD

Dr. Dai has broad background in statistics, psychometrics, and research methods. His research examines the performance and utility of current methodological frameworks that capture students' cognitive development and knowledge growth across various settings. He is interested in applying statistical methods such as missing data analysis, structural equation modeling, and longitudinal data analysis in broad education contexts.

For more information about the courses, please contact Dr. Dai (s.dai@wsu.edu).

College of Education