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| Week  | Topic | Readings | Assignments/Activities |
| 1 | Building Blocks of assessment designConstruct Maps | Chapter 1, MWChapter 2, MW |  |
| 2 | Item DesignThe Outcome Space | Chapter 3, MWChapter 4, MW |  |
| 3-5 | Introduction of statistical Rasch model for dichotomously Scored ItemsScoring People Using Rasch Model (Person parameter estimation, covering ML, MAP, and EAP estimations) | Chapter 5, MWSoftware tutorials for estimating parameters of Rasch Model for dichotomously scored items (instructor provided) | Lab 1Focus on properties of the statistical model (logistic function), conceptual understanding of item difficulty and latent ability parameter, some hand calculations to make sense of how the model mathematically operates, real data analysis with common dataset, estimate person parameters, interpretation of model parameters, Wright map, etc. |
| 6-7 | Introduction of Rasch family models for polytomously scored items (Rating Scale Model, Partial Credit Model) | Chapter 6.1, MWSoftware tutorials for estimating model parameters of Rasch Model for polytomously scored items (instructor provided) | Lab 2Focus on properties of the statistical model (RSM and PCM), conceptual understanding of category threshold parameters and overall item difficulty, real data analysis with common dataset, estimate item and person parameters for PCM and RSM, interpretation of model parameters, Wright map, in the context of polytomously scored items |
| 8-9-10 | Precision and score consistency (concept of Item and Test Information)Model FitItem FitPerson Fit | Chapter 6.2, MWChapter 7, MWChapter 8, MWSoftware tutorials for evaluating model fit, person fit, and item fit (instructor provided) | Lab 3for a given dataset, focus on assessing dimensionality assumption, creating and interpreting item fit plots, estimating and interpreting Infit and Outfit for items and people, assess item and test information, and precision of person estimates |
| 11 | Student final paper |  | Students presents a final paper applying IRT modeling to a dataset of their interest |

Wilson, M. (2023). *Constructing measures: An item response modeling approach* (2nd ed.). Routledge.