

Workshop Title: Test Development with IRT

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Wim J van der Linden is currently Chief Research Scientist, CTB/McGraw-Hill, Monterey, CA. He received his PhD in psychometrics from the University of Amsterdam, The Netherlands. His research interests include test theory, computerized adaptive testing, optimal test assembly, test equating, modeling response times on test items, as well as decision theory and its application to problems of educational decision making. He is co-editor of three published volumes: *Handbook of Modern Item Response Theory* (New York: Springer, 1997; with R. K. Hambleton), *Computerized Adaptive Testing: Theory and Applications* (Boston: Kluwer, 2000; with C. A. W. Glas), and its sequel *Elements of Adaptive Testing* (New York Springer, 2010; with C. A. W. Glas). He is also the author of *Linear Models for Optimal Test Design* published by Springer in 2005, and currently serves as editor (with R. K. Hambleton) for a new three-volume *Handbook of Item Response Theory: Models, Statistical Tools, and Applications* to be published by Chapman & Hall/CRC in 2012. Dr. van der Linden has served on the editorial boards of nearly all major test-theory journals and is currently co-editor for the Springer *Series on Statistics for Social and Behavioral Sciences*. He is also a former President of the *Psychometric Society*, Fellow of the *Center for Advanced Study in the Behavioral Sciences*, Stanford, CA, was awarded an Honorary Doctorate from Umea University in Sweden in 2008, and is a recipient of the ATP and NCME Career Achievement Awards for his work on educational measurement. For the full CV see <http://www.utwente.nl/gw/omd/en/members/vanderlinden/>



Workshop Description:

In spite of all its sophisticated modeling and use of statistics, test theory has not yield much spin-off in the form of a technology that allows us to rigorously engineer educational tests to a given set of specifications. This workshop teaches such a technology based on the view of test assembly as an instance of combinatorial optimization. The first part of the workshop introduces the principles of item-response theory (IRT) required for test development. The second part shows how an almost unlimited variation of content, statistical, and practical test specifications can be modeled as constraints on item selection from an IRT-calibrated item pool. The third part deals with such applications as the assembly of single test forms, multiple parallel forms, multiple forms with different specifications, and the development of large-scale assessments. Finally, it is discussed how the same technology can be used to develop adaptive testing programs.

Intended Audience:

Participants in the workshop are expected to have minimal command of statistics and probability theory at the level of undergraduate training in the social or behavioral sciences as well the mathematics of linear equations and inequalities.

Participants who want to prepare for the workshop should use: W. J. van der Linden (2005). *Linear models for optimal test design*. New York: Springer