

## Computerized-Based Testing

INSTRUCTOR: Barbara G. Dodd

OFFICE: SZB 538L

OFFICE HOURS: Monday and Wednesday, 1:00 to 2:30 and by appointment

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### REQUIRED TEXTS:

Wainer, H., Dorans, N.J., Eignor, D., Flaugher, R., Green, B.F., Mislevy, R.J., Steinberg, L., & Thissen, D. (2000). *Computerized adaptive testing: A primer* (2<sup>nd</sup> ed.). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Two packets: 1) selected readings and 2) course notes are available from Jenn's Copy & Binding, 2200 Guadalupe St., (512) 473-8669.

### ADA ACCOMMODATIONS:

The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-4641 TTY.

### COURSE REQUIREMENTS:

1. In-class exam over unit I
2. Class discussion leader on a journal article
3. Group research proposal and presentation

### EVALUATION:

Grades will be based on an average of the three requirements above, with each component counting equally. Assignments 2 and 3 require a handout to accompany each presentation.

RECOMMENDED SUPPLEMENTARY REFERENCES:

- Duani, Y., von Davier, A., & Lewis, C. (2014). *Computerized multistage testing: Theory and applications*. Boca Raton, FL: Chapman & Hall.
- Mills, C. R., Potenza, M. T., Fremer, J.J., & Ward, W. C. (2002). *Computer-based testing: Building for future assessments*. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Parshall, C. G., Spray, J. A., Kalohn, J. C., & Davey, T. (2002). *Practical considerations in computer-based testing*. New York:Springer-Verlag New York, Inc.
- Sands, W. A., Waters, B. K., & McBride, J. R. (Eds.). (1997). *Computerized adaptive testing: From inquiry to operation*. Washington, DC: American Psychological Association.
- Van der Linden, W. J. & Glas, C. A. W. (Eds.). (2000). *Computerized Adaptive Testing: Theory and Practice*. Dordrecht, Netherlands: Kluwer Academic Publishers.
- Van der Linden, W. J. & Glas, C. A. (Eds.). (2010). *Elements of Adaptive Testing*. New York: Springer.

## Outline of Topics and Reading Assignments

TOPICS	READING
I. CBT systems based on dichotomous IRT models	
A. History	Wainer, Ch. 1; Sands, Ch. 5
B. System Requirements	Wainer, Ch. 2
C. Item Banking Techniques	Wainer, Ch. 3 & 4; Sands, Ch. 11
D. Components of CAT Algorithms	Wainer, Ch. 5; Sands, Ch. 12 & 11 Leroux, Lopez, Hembry & Dodd
E. Multistage Testing	Hendrickson
F. Reliability	Wainer, Ch. 7; Sands, Ch. 17
G. Validity	Wainer, Ch. 8; Sands, Ch. 17
G. Score Reporting	Wainer, Ch. 6; Sands, Ch. 26
II. CBT systems based on polytomous IRT models	
A. Components of CAT Algorithms	Dodd, De Ayala, & Koch Boyd, Dodd, & Choi Gorin, Dodd, Fitzpatrick, Shieh
B. Item Exposure Control	Davis & Dodd Davis Boyd, Dodd & Fitzpatrick
C. Item Selection	Choi & Swartz Ho & Dodd Murphy, Dodd, & Vaughn Choi, Grady, & Dodd
D. Multistage Testing	Kim & Dodd
III. Applications	Journal Articles
IV. Caveats	Wainer, chapter 10
V. Research Proposal	

### **Tentative Schedule**

8/26 Introduction / Research Teams / History  
9/2 Systems / Item Banking  
9/9 CAT Components  
9/16 CAT Components  
9/23 CAT Components / GPCCAT  
9/30 Class Study  
10/7 Reliability & Validity / Score Reporting  
10/14 Exam / Poly CAT  
10/21 Poly CAT  
10/28 Poly CAT / MST  
11/4 Article Presentations 1, 2, 3, & 4  
11/11 Article Presentations 5, 6, 7, & 8  
11/18 Research Project 1 & 2  
11/25 Research Project 3 & 4  
12/2 Caveats, CIS

**Exam 10/14**