

## PSYCHOMETRICS: THEORY & METHODS

INSTRUCTOR: Barbara G. Dodd  
OFFICE: SZB 538L  
OFFICE HOURS: Monday and Wednesday 1:00 to 2:30 and by appointment  
PHONE: 471- 0188  
EMAIL: [bdodd@austin.utexas.edu](mailto:bdodd@austin.utexas.edu)

OPTIONAL TEXT: Kline, T. J.B. (2005). *Psychological testing: A practical approach to design and evaluation*. Thousand Oaks: Sage.

REQUIRED: A packet of selected reading available from Jenn's Copy & Binding, 2200 Guadalupe St., (512)482-0779.

### COURSE

REQUIREMENTS: 1. In-class exam over topics 1 - 5  
2. In-class exam over topics 6 - 10  
3. Take-home exam over topics 11 - 12  
4. In-class exam over topics 13 - 14  
5. Occasional homework assignments

EVALUATION: Grades will be based on an average of the first four requirements above, with each counting equally.

GRADES:	95% or more	A
	90% to 94%	A-
	85% to 89%	B+
	80% to 84%	B
	75% to 79%	B-
	etc.	

### 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.

RECOMMENDED SUPPLEMENTARY REFERENCES:

- Allen, M. J., & Yen, W. M. (2002). *Introduction to Measurement Theory*. Prospect Heights, IL: Waveland Press.
- Crocker, L. & Algina, J. (2006). *Introduction to classical and modern test theory*. Belmont, CA: Wadsworth Publishing Co.
- DeVellis, R. F. (2011). *Scale development: Theory and applications*. Los Angeles, CA: Sage Publications Inc.
- Embretson, S. E. & Reise, S. P. (2000). *Item response theory for psychologists*. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Gulliksen, H. (1987). *Theory of mental tests*. Hillsdale, NJ: Erlbaum.
- Hambleton, R.K., Swaminathan, H. & Rogers, H. J. (1991). *Fundamentals of item response theory*. Newbury Park, CA: Sage Publication, Inc.
- Kim, J. & Mueller, C.W. (1978). *Factor analysis*. Beverly Hills, CA: Sage Publications, Inc.
- McDonald, R.P. (1985). *Factor analysis and related methods*. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.
- McDonald, R. P. (1999). *Test theory: A unified treatment*. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- McIver, J.P., & Carmines, E.G. (1981). *Unidimensional scaling*. Beverly Hills, CA: Sage Publications, Inc.
- Thurstone, L.L. (1959). *The measurement of values*. Chicago: University of Chicago Press.
- Torgerson, W.S. (1958). *Theory and methods of scaling*. New York: John Wiley.

OUTLINE OF TOPICS AND SUGGESTED READINGS:

<u>TOPICS</u>	<u>READING</u>
1. Measurement concepts	Ch. 1
2. Statistical concepts for test theory	Ch. 1
3. Classical Test Theory	Ch. 5
4. Reliability	Ch. 7 & 8
5. Validity	Ch. 9
6. Item response theory	Ch. 6
7. Norms and scores	Ch. 4
8. Norm-referenced vs. criterion-referenced tests	
9. Test construction	Ch. 3
10. Item analysis	Ch. 5 & 6
11. Principal factor analysis	Ch. 10
12. Principal components analysis	Ch. 10
13. Scaling theory	
14. Methods of unidimensional scaling	Ch. 2 & 3

Tentative Schedule:

9/2	Labor Day
9/9	Introduction & Measurement Concepts, Statistics
9/16	Classical Test Theory
9/23	Reliability, Validity
9/30	Validity, Review
10/7	Exam I, IRT
10/14	IRT
10/21	IRT, Norms & Scores, NRT vs. CRT
10/28	Test Construction, Item Analysis
11/4	Exam II, Matrix Algebra
11/11	FA & PCA
11/18	PCA, take home Exam, Scaling Theory, Unidimensional Scaling
11/25	Unidimensional Scaling, Review, CIS
12/2	Exam IV

**Exams**

I	10/7
II	11/4
III	11/18 due 11/25
IV	12/2