

## Tests and Measurement

PSY 510 – Fall 2019

Prof. Katie Corker

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Section 01, T/Th 1:00-2:15, Mackinac Hall A2165

Office Hours: T/Th 2:45-4pm, Monday 1:30-3pm

Appointments during Office Hours:

<https://katiecorker.youcanbook.me/>

Appointments at other times (email to request)

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Office Phone: (616) 331-2932 (but email is recommended)

Note: This course is subject to the GVSU policies listed at

<http://www.gvsu.edu/coursepolicies>

### I. Course Overview

Measurement is central to the role of a school psychologist. As you progress through your degree, you will be learning how to collaborate with teachers and other school staff to support students' success. **Above all, a school psychologist relies on data, including data from tests and measurements, to inform decisions about how to best support students.**

In this class, you will learn the foundational skills you need to interact effectively with data from tests and measures. These skills include understanding how to evaluate the quality of a test or measurement, how to interpret test scores, and how to critically compare and contrast possible tests or measures, as well as how the tests and measures you use as a school psychologist were developed. You will also learn how to communicate about tests and measures orally, in writing, and using tables and figures.

### II. About Your Instructor

**A. Contacting me.** The best way to contact me is via e-mail. I typically check e-mail throughout the day, but only during normal business hours (9 am – 5 pm). If you send me an email in the evening, you should not expect to get

a response until the next business day.

**B. Office hours.** Office hours are listed above, but I am available to meet with you during other times, if you make an appointment with me by e-mail.

**C. My expertise.** I was trained as a personality and social psychologist with a specialization in quantitative methods. I earned a Ph.D. and a master's degree from Michigan State University and a bachelor of arts from the University of Northern Iowa. I have conducted research in the areas of motivation, goal setting, academic achievement, and the role of personality in influencing all of these variables.

### **III. Required Reading & Supplies**

**Required Text:**

Furr, R. M. (2017). *Psychometrics: An introduction* (3rd ed.). Los Angeles: Sage. ISBN: 978-1506339863

You may also use the previous edition:

Furr, R. M., & Bacharach, V. R. (2014). *Psychometrics: An introduction* (2nd ed.). Los Angeles: Sage. ISBN: 978-1452256801

**Required Readings:** Additional required readings will be posted on the course website.

**Technology:** This class meets in a computer lab. A personal laptop computer running Windows or Mac OS is optional. Necessary software will be provided and installed in class.

### **IV. Learning Objectives**

[From the syllabus of record] Students in this course will learn to:

1. Critically appraise a wide range of tools for measuring educational and psychological constructs.
2. Combine knowledge of basic statistical concepts in the administration, scoring, and interpretation of tests.
3. Select appropriate assessment tools based on knowledge of measurement concepts (including reliability and validity) .
4. Compare and contrast a variety of assessment tools (achievement, cognitive, interest inventories, personality

assessment, life skill assessments, etc.) in terms of strengths and weaknesses.

5. Recommend specific assessment tools to evaluate student characteristics.
6. Defend ethical and legal standards related to assessment.
7. Evaluate and prioritize guidelines for assessing culturally and linguistically diverse individuals.

This course is designed to help students develop their skills in the following areas:

**A. Assessment use and evaluation.** Students will learn how to evaluate the quality of a test or measurement and how to interpret test scores. Emphasis will be on interpreting tests and measurements in the context of schools and in psychological research.

**B. Assessment creation.** Students will learn how professional tests are created. You will learn how to write high quality items and to combine those items into tests and measures. You will learn the basic conceptual underpinnings of test construction, and you will use statistical analysis (including factor analysis) to craft and refine high quality tests and measures.

**C. Quantitative reasoning.** Students will use statistics to interpret and evaluate data from tests and measures. This course emphasizes descriptive statistics (measures of central tendency, variability, and correlation), as well as measures of test reliability and validity.

**D. Oral presentation and civil discourse.** Oral communication is a critical skill for success in your life at GVSU and beyond. Students in this course will work to improve their formal presentation skills, as well as hone their ability to discuss the results of tests and measures in a sensitive and ethical way. Upon completing this course, students should be able to verbally explain what a score on a test or measurement means, to an untrained audience. They should be able to explain its meaning in multiple ways.

It is the instructor's goal that students become proficient in each of these key areas. Evaluations are designed to assess the extent to which proficiency has been attained.

## V. Evaluation

- A. Measurement Lab Exercises.** Measurement is not a passive activity - the best way to learn about measurement is to actively work on measurement problems. Therefore, this course will feature laboratory exercises designed to be hands on applications of important course concepts. The penalty for late work is described below. The labs will be begun (and some could possibly be completed) during class time.
- B. Exams.** There will be two midterm exams and one cumulative final exam. The purpose of midterms is to give early feedback on your understanding of course material and make sure you are keeping up with the material. Exams will be a mix of multiple choice and short-answer format. The dates of the exams are firm - I will not change them at the last minute.
- C. DASS Project and Paper.** To build on the skills developed in the lab exercises, you will work with an existing dataset that measured the DASS (Depression, Anxiety, Stress Scales). Students will examine the factor structure of the measure and assess its reliability and validity. In small groups, you will work together to write a report about your analyses. The project concludes with a whole class discussion about strengths, weaknesses, and potential revisions for the DASS.
- D. Test Review Presentation & Handout.** You will work with classmates and review a published standardized test commonly used to assess students in basic skill areas. You will use the test manual, as well as the publisher's information online, scientific articles, and other resources available from graduate faculty. As a group, you will prepare a handout describing your review and give a 30-35 minute oral presentation to the class.
- E. Attendance.** I expect that you will attend all classes and participate actively. If you are absent from class, it is your responsibility to make up any missed material by consulting a classmate. Only then may you make an appointment to meet with me to ask follow up questions.

Students *must* come to office hours prepared; students who are habitually absent without excuse (> 2 classes missed) should expect limited access to office hours.

There are no make-up exams or presentations, except in the following cases:

1. Excused absence for approved extracurricular/religious holiday: Students should make arrangements with me at least one week before the exam to take the exam early.
2. Excused absence for illness: Students with documented illness or injury should (1) notify me immediately and provide documentation, and (2) make arrangements to take the exam at the soonest possible opportunity, but no later than one week following the scheduled exam. I reserve the right to give the exam in an alternative form.

Missed presentations may be subject to an alternative assignment. Students should make every effort to be there for a presentation.

**F. Homework & Participation.** There is no formal grading of in-class activities and exercises, but students are expected to make up any missed exercises by meeting with peers or the instructor. For collaborative assignments, individual contributions to group work may be considered in the assignment grade.

**G. Extra credit.** Students may complete measure critiques for extra credit, worth up to 5 points each. Directions are on the course website. Furthermore, students may attend psychology research talks in the department or on campus and then write a one page reflection to be submitted on Blackboard no later than 7 days after the talk. Reflections are worth up to 5 points each. Students may earn no more than 20 points of extra credit through any combination of extra credit possibilities. All extra credit is due, via Blackboard, no later than 5 pm on 12/5/19.

**H. Late policy.** Unless otherwise noted above, the late policy for written work is as follows. Work may be

submitted early, via Blackboard, for any assignment. Each student is allotted up to **3 grace days**, to be used at your discretion, throughout the term. Each 24 hour period an assignment is late counts as one grace day. **Work that is submitted late and beyond the allotment of grace days FOR ANY REASON receives a two full letter grade (20%) deduction (e.g., a paper that earns an 80% is worth a 60% if 0-24 hours late; a paper that earns an 80% is worth a 40% if 24-48 hours late).** Furthermore, no work may be submitted after the official close of the semester without an approved course extension. (Such extensions are granted in only the most extreme, and documented, circumstances.)

#### **I. Point breakdown by category.**

<b>ASSIGNMENT</b>	<b>POINTS</b>	<b>PERCENT</b>
Lab Exercises (4x)	$30 \times 4 = 120$	20%
DASS Report	70	12%
Test Review: Handout & Presentation	80	13%
Midterm Exams (2x)	$90 \times 2 = 180$	30%
Final Exam	150	25%
Extra Credit	Up to 20 pts.	3%

#### **VI. Grading Scale**

<b>GRADE</b>	<b>POINTS</b>	<b>PERCENT</b>
A	555-600	93%-100%
A-	537-554	90%-92%
B+	519-536	87%-89%
B	495-518	83%-86%
B-	477-494	80%-82%
C+	459-476	77%-79%
C	435-458	73%-76%
C-	417-434	70%-72%
D+	399-416	67%-69%
D	358-398	60%-66%
F	<357	<60%

**THESE ARE FIRM CUT-OFFS.** I round up to the nearest percent

(e.g., 86.5% rounds up to 87% and equals a B+, but 86.4% rounds down to 86% and equals a B). The point categories listed above reflect this rounding. DO NOT attempt to negotiate grades with me. It is your responsibility to make sure your grade ends up where you want it to be. I have provided ample extra credit opportunities for students who wish to improve their grades. Students who want to improve their *learning* (and therefore their grades) should see me *early* in the class for assistance. I will *not* negotiate grades with you, but I will do everything in my power to help you put in the necessary work to be as successful as you desire.

## **VII. Disability Accommodation**

Any student in this class who has special needs because of a learning, physical, or other disability, please contact me and Disability Support Services (DSS) at (616) 331-2490. Furthermore, if you have a disability and think you will need assistance evacuating this classroom and/or building in an emergency, please make me aware so that the university and I can develop a plan to assist you. It is the student's responsibility to request assistance from DSS.

## **VIII. Academic Honesty**

**Unless otherwise noted, all work for this course should be independently completed. Students should take special care to provide proper citation of sources when submitting written work. Adopting words, passages, or ideas without citation is plagiarism and will be treated as such per GVSU guidelines. Furthermore, students should not self-plagiarize, that is, reuse their own work from another course.**

The following are statements provided by the university and can be found in the Student Code, Sections, 223.00 and 223.01.

"Students will do original work and will not take or receive the efforts of another person on any test or assignment, use unauthorized resources on quizzes or tests, plagiarize, or give/sell other students papers or assignments not authorized by the instructor. You are responsible for making yourself aware of and for understanding the policies and procedures that pertain to academic integrity. To that end, be sure to familiarize yourself with the GVSU Student Code (Section 223.00 and 223.01) related to academic integrity. Furthermore, be sure to reference

sources at all times. If you are uncertain about such an issue prior to submission of an assignment, project, or test, please see me so we can eliminate that uncertainty.

No student shall knowingly plagiarize or copy the work of another person and submit it as his/her own. Offering the work of someone else as one's own is plagiarism. Any ideas or material taken from another source for either written or oral presentation must be fully acknowledged. The language or ideas taken from another may range from isolated formulas, sentences, or paragraphs to entire articles copied from the internet, books, periodicals, speeches, or from the writing of other students. The offering of materials assembled or collected by others in the form of projects or collections without acknowledgement also is considered plagiarism. In short, any student who fails to give credit in written or oral work for the ideas or materials that have been taken from another is guilty of plagiarism."

## **IX. Our Social Contract**

In order for this course to function optimally, we both have parts to play, and when we each do our part, everyone benefits.

As professor, I promise to always do my very best to select interesting and thought-provoking course material. I will prepare course materials to the best of my abilities, and I will make decisions about the course according to the learning goals I have outlined here. I will act fairly - holding every student to the same high standard and providing equal opportunities for success.

As student, you promise to prepare diligently for class, to always contribute to the best of your abilities, to never cheat or act dishonestly, and to treat your classmates and me with the highest respect. You will do your best to attend class and be on time. You will not ask me to grant you special privileges that aren't available to the rest of your classmates, in order that I may adhere to my promise to be fair and just to all of you.

It is expected that students will spend 3-4 hours outside class for each hour in class. This means that for this three credit course, you should expect to spend 12-15 hours per week on this course (including class time). This is the expected amount for all school psychology grad classes. Note that some weeks will be



heavier and others lighter.

## X. Course Calendar

Wk.	Date	Topic	Reading/Homework/Due
1	8/27	Introduction	<b>Read:</b> F&B Ch. 1
	8/29	Latent Variables & Psychometrics	<b>Read:</b> F&B Ch. 2 <i>Drop by 8/30 for 100% refund</i>
2	9/3	Statistics Review & Computer Basics	<b>Read:</b> F&B Ch. 3
	9/5	Testing Ethics	<b>Read:</b> Coaley Ch. 10 (BB); Optional: F&B Ch. 11
3	9/10	Statistics Lab	-
	9/12	Reliability	<b>Read:</b> F&B Ch. 5, 6, 7
4	9/17	Reliability & Validity	<b>Due:</b> Statistics Lab <b>Read:</b> F&B Ch. 8
	9/19	Validity	<b>Read:</b> F&B Ch. 9
5	9/24	Catch Up & Review	-
	9/26	EXAM 1: Ch. 1-3, 5-9, Coaley Ch. 10	<b>EXAM 1</b>
6	10/1	Reliability Lab	<i>Lab Day, Mac D-2-117</i>
	10/3	Constructing New Tests	<b>Read:</b> F&B Ch. 4
7	10/8	Constructing New Tests Introduce Test Review	<b>Due:</b> Reliability Lab Form groups and consultations #1
	10/10	Ability Testing	<b>Read:</b> Ritchie (2015), Ch. 1-2
8	10/15	Ability Testing	-
	10/17	Ability Testing Lab	<i>Lab Day, Mac D-2-117</i>
9	10/22	<i>Fall Break</i>	
	10/24	EXAM 2: Ch. 4-9; Ritchie (2015) Ch. 1-2	<b>EXAM 2</b> <i>Drop by 10/25 for W</i>
10	10/29	Personality & Rating Scales	<b>Due:</b> Ability Testing Lab <b>Read:</b> Funder, Ch. 3-4
	10/31	Different Sources of Data	-
11	11/5	Personality/Behavior Lab	<i>Lab Day, Mac D-2-117</i>
	11/7	<i>No meeting (MASP)</i>	
12	11/12	Putting It All Together: Examining Reliability, Validity, and Factor Structure of the DASS	<b>Due:</b> Personality Testing Lab
	11/14	Work day - DASS Project	-

13	11/19	Screeners; Other Kinds of Tests	<b>Read:</b> Glover & Albers (2007)
	11/21	Surveys & Sampling	<b>Read:</b> Schwarz, 1999, F&B Ch. 10
14	11/26	Revising the DASS: Discussion	<b>Due:</b> DASS Reports (BB)
	11/28	NO CLASS - THANKSGIVING	
15	12/3	Test Review Presentations	<b>PRESENTATIONS</b> <b>Due:</b> Test Review Info Sheets & Slides (BB)
	12/5	Test Review Presentations	<b>PRESENTATIONS</b>
16	Tues. 12/10	FINAL EXAM	<b>CUMULATIVE FINAL EXAM</b> <b>(12pm-2pm)</b>

## **XI. Advanced Readings (Optional, Supplementary)**

### Introductory Issues (Weeks 1-2)

Borsboom, D. (2006). The attack of the psychometricians. *Psychometrika*, 71, 425-440.

Meehl, P. E. (1993). Four queries about factor reality. *History and Philosophy of Psychology Bulletin*, 5, 4-5.

### Reliability and Validity (Weeks 3-4)

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, 52, 281-302.

Loevinger, J. (1957). Objective tests as instruments of psychological theory. *Psychological Reports*, 3, 635-694.

### Constructing New Tests and Measures (Week 7)

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7, 309-319.

Simms, L. J. (2008). Classical and modern methods of psychological scale construction. *Social and Personality Psychology Compass*, 2, 414-433.

Simms, L. J., & Watson, D. (2007). The construct validation approach to personality scale construction. In R. W. Robins, R. C. Fraley, & R. F. Krueger (Eds.) *Handbook of research methods*

*in personality psychology* (pp. 240-258). New York: Guilford Press.

#### Ability Testing (Week 8-9)

Deary, I. J. (2012). Intelligence. *Annual Review of Psychology*, 63, 453-482.

Gottfredson, L. (1997). Why *g* matters: The complexity of everyday life. *Intelligence*, 24, 79-132.

Johnson, W., te Nijenhuis, J., Bouchard, Jr., T. J. (2008). Still just 1 *g*: Consistent results from five test batteries. *Intelligence*, 36, 81-95.

#### Personality Testing (Week 9-10)

John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative Big Five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.) *Handbook of personality: Theory and research* (pp. 114-156). New York: Guilford Press.

King, L. A. (1995). Wishes, motives, goals, and personal memories: Relationship of measures of human motivation. *Journal of Personality*, 63, 985-1007.

Furr, R. M., & Funder, D. C. (2007). Behavioral observation. In R. W. Robins, R. C. Fraley, & R. F. Krueger (Eds.) *Handbook of research methods in personality psychology* (pp. 273-291). New York: Guilford Press.

#### Surveys, Item Construction, Response Biases (Week 13)

Krosnick, J. A., & Presser, S. (2010). Question and questionnaire design. In P. V. Marsden & J. D. Wright (Eds.) *Handbook of survey research* (2nd ed., pp. 263-313). United Kingdom: Emerald Group Publishing Limited.

Schwarz, N. (1999). Self-reports: How the questions shape the answers. *American Psychologist*, 54, 93-105.

Huang, J. L., Curran, P. G., Keeney, J., Poposki, E. M., & DeShon, R. P. (2012). Detecting and deterring insufficient

effort responding to surveys. *Journal of Business and Psychology*, 27, 99-114.