

PSYCHOLOGY RESEARCH AND DATA APPLICATIONS

PSY 350 - Fall 2023

Mackinac Hall A2165

Prof. Katie Corker

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Prerequisites: PSY 101 or HNR 234, STA 215 or STA 312, PSY 300
(taken either before this course or together with it)

Office Hours:

Tu/Th 2:30pm-3:30pm (in-person or online)

Appointments during Office Hours:

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

Appointments at other times (email to request)

Note: This course is subject to the GVSU policies listed at
<http://www.gvsu.edu/coursepolicies>

I. Course Overview

This course is designed to enhance your ability to organize, summarize, analyze, and visualize data in the context of psychological research. You will engage in various hands-on activities, developing your ability to apply information to solve important problems. In addition, you will learn how to effectively communicate quantitative findings both visually and in writing.

The skills we develop in this course will be important for you no matter where you go next after your time at GVSU. This topic is relevant for those who will soon pursue graduate study, but perhaps it is even more crucial for students who will move directly into a career. Working with, and understanding, data is a crucial skill for all of us.

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 might not 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. Much of my current research pertains to replicability in psychological research, what has been termed "meta-science" (the study of science and scientists).

III. Required Reading

All required readings will be posted on the course website.

Recommended Supplements:

1. Sarnecka, B. (2019). *The writing workshop: Write more, write better, be happier in academia.* <https://osf.io/z4n3t/> (free)
2. *Publication Manual of the American Psychological Association, 7th Edition* (available at the library); see also [APA style handouts from APA](#)

IV. Learning Objectives

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

- A. Quantitative reasoning: Understanding, critiquing, managing, interacting with, and analyzing data
- B. Communication: Relaying information about data, orally, in writing, and graphically

After successful completion of this course, students will be able to:

- (1) interpret the results of correlational and experimental designs.
- (2) assess reliability and validity quantitatively.
- (3) identify and apply a variety of descriptive and inferential statistical tests appropriate for analyzing psychological data.
- (4) explain orally, in writing, and graphically, the findings of psychological research.

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

V. Evaluation

- A. Worksheets.** Each class day will involve completion of worksheets to practice techniques for interacting with and analyzing data. These are low stakes assignments designed to ensure needed skills are being gained. To allow for periodic absences, the lowest scoring three worksheets will be dropped.
- B. Quizzes.** There will be one quiz per unit (for all units except the last). The purpose of the quizzes is to help you check your understanding of course material and make sure you are keeping up with the material.
- C. Lab reports.** Each unit will involve completion of a brief (approximately two to three page) report detailing the method and results of the analysis for each lab.
- D. Presentations.** In the last unit of the course, students will develop a research question that can be tested using existing data. In small groups, they will present the results of their analysis.
- E. Lab practical.** Instead of a traditional exam, you will be asked to demonstrate your understanding of course concepts and skills in a lab practical. This means that you will be given a data set and asked to analyze and answer questions about it, working independently, during class time.
- F. Extra credit.** Each student may write up to four reflections, mixing and matching as desired from the two types below, worth up to 5 points each for a maximum of 20 points extra credit. You may *not* reuse your own work from another course. Reflections must be written independently and exclusively for this course. All extra credit must be submitted on the course website by 5 pm on the last day of regular class for the semester.
(Adapted from Dr. Kari Lock Morgan, Penn State)
 - a. Data in the Literature:** Find a p-value or confidence interval in a published paper. Read the paper, and write a brief reflection describing the data and

data collection (including any limitations), the effect of interest, the hypotheses or research question, the p-value or confidence interval, and an interpretation of the finding. Critique the result: What is the evidence, if any, for the big validities, especially statistical validity? What are the strengths and weaknesses of the study?

- b. Data in the Media:** Find an example of statistics used incorrectly in the popular media. Write a paragraph about what mistake is being made, and how you would advise them to do a better job, if you were to be hired as a quantitative consultant. Rewrite the conclusion they should have made, given the data/results they have (which may include listing limitations), and describe how they could have collected the data / conducted the analysis to get the conclusion they originally wanted to make.

G. Late policy. Deadlines are provided to help ensure that students make progress towards course completion. Students with extenuating emergency or health circumstances should reach out to the instructor via email as soon as possible. In general, late worksheets and quizzes are not accepted (but we do drop the lowest scoring three worksheets). See notes below the schedule for additional information about due dates.

H. Point breakdown by category.

ASSIGNMENT	POINTS	% OF TOTAL
Worksheets	15*10 = 150	30%
Quizzes	4*30 = 120	24%
Lab Reports	5*30 = 150	30%
Presentation	30	6%
Lab Practical	50	10%

VI. Grading Scale

GRADE	POINTS	PERCENT
A	463-500	93%-100%
A-	448-462	90%-92%
B+	433-447	87%-89%
B	413-432	83%-86%
B-	398-412	80%-82%
C+	383-397	77%-79%
C	363-382	73%-76%

C-	348-362	70%-72%
D+	333-347	67%-69%
D	298-332	60%-66%
F	<297	<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. 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, figures/graphs, 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 penalties for academic dishonesty range from zero on that assignment to failure in the course.

A note about collaboration: Collaborative work is sometimes allowed in this course. Collaborative work means sharing ideas with your peers. Collaboration does not mean giving completed work to your peers to use. If you have questions about what kind of collaboration is allowed, please talk to the instructor.

For additional details on academic honesty, please see the [student code](#).

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 any scheduled meetings 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.

X. Course Calendar

Week	Date	Topic	Reading/Homework/Due
Unit 1: Wrangling and Exploring Data			
1	8/29	Introduction & Syllabus Review of Key Concepts	-
	8/31	SPSS/Excel Basics Importing and Interacting with Data	Worksheet 1 <i>Drop by 9/1 for 100% refund</i>
2	9/5	Importing and Interacting with Data	WS1 continues
	9/7	Creating a Codebook	Worksheet 2
3	9/12	Describing and Visualizing Frequency Claims	Worksheet 3
	9/14	Method & Results Sections	Quiz 1
Unit 2: Assessing Measurement Quality and Testing Association Claims			
4	9/19	Measurement & Effect Size Tests of Association:	Worksheet 4 Worksheet 5

		Correlation & Chi-Square	Due 12p 9/18: Unit 1 Lab Report
	9/21	Confidence Intervals	Worksheet 6
5	9/26	Constructing Total Scores	Worksheet 7
	9/28	Reliability & Validity for Measured Variables	Worksheet 8
6	10/3	Reliability & Validity for Measured Variables	Worksheet 9
	10/5	Data Visualization	Quiz 2
Unit 3: Testing Causal Claims and Group Differences			
7	10/10	Probability and NHST	Worksheet 10 Due 12p 10/9: Unit 2 Lab Report
	10/12	Statistical Power	Worksheet 11
8	10/17	Independent and paired samples t-tests	Worksheet 12
	10/19	One-way ANOVA Data Visualization	Worksheet 13 Worksheet 14
Fall Break			
9	10/26	Reliability & Validity for Manipulated Variables	Quiz 3
Unit 4: Using Multiple Methods to Triangulate			
10	10/31	Simple Regression	Worksheet 15 Due 12p 10/30: Unit 3 Lab Report
	11/2	Multiple Regression	Worksheet 16
11	11/7	Replication and Multisite Studies	Worksheet 17
	11/9	Multistudy Papers	Worksheet 18
12	11/14	Catch Up	-
	11/16	Preparing for DIY Analysis	Quiz 4
Unit 5: Putting It All Together			

13	11/21	DIY Analysis	Due 12p 11/20: Unit 4 Lab Report
<i>Thanksgiving Break</i>			
14	11/28	DIY Analysis	-
	11/30	DIY Analysis	-
15	12/5	Final Presentations	-
	12/7	Final Presentations	Due 12p 12/7: Unit 5 Lab Report
16	Tues. 12/12	Lab Practical	Sec 01: 12p-2p

Due dates: Worksheets are due before the start of the next class period after which they are assigned. The lowest scoring three worksheets are dropped. Quizzes are due on the day they are assigned. Lab reports are due by 12 pm the day before a new unit begins (dates marked above). Final presentations and lab practical occur on the dates marked above and cannot be rescheduled except in emergency circumstances.

XII. Academic Support and Tutoring

Statistics Tutoring Center:

GVSU's Stats Tutoring Center offers both in-person and online drop-in tutoring this semester, starting Wednesday, August 30. You can access the most up-to-date information on our website at <https://www.gvsu.edu/tutoring/stats/>. There you will find our current hours, information on how to access online tutoring with Discord Voice and a schedule of when you can find tutors to help with your specific course or software package. Bring questions to any center about using technology, on methods and concepts, or on specific problems. All Stats Center tutoring is FREE, so stop by early and often.

We plan to offer:

- In-person tutoring on the Allendale campus (MAK A-2-101): Monday - Thursday 10am - 5pm and Friday 10am - 2pm
- In-person tutoring on the Pew campus (EC 608): Monday - Thursday 1pm - 5pm
- Online tutoring via Discord Voice: Sunday - Thursday 5pm - 9pm

To access virtual drop-in tutoring, you can use the link in your Blackboard course called Stats Tutoring Center or visit our website. Then you will need to click on the "Online Stats Tutoring Center" button, which will require a GVSU login. We ask that when you enter our Discord server, please change your username to your first and last name so we can get you signed in and connected with a tutor.

Tutoring and Reading Center Appointments: GVSU's Tutoring and Reading Center offers appointment tutoring both in-person and virtually. You can sign up for 50-minute tutoring appointments for many courses. Request a tutor at <https://www.gvsu.edu/trc/> or schedule directly on Navigate.

Psych Friends Peer-to-Peer Mentors: Psych Friends mentors are upper-level psychology and behavioral neuroscience students who are trained to provide support in many areas, such as: effective studying and time management techniques, exam preparation and reflection skills, understanding the PSY and BNS major requirements, potential jobs and careers in the field, the process of applying for graduate school, and how to maintain physical and mental health as a student. Visit <https://www.gvsu.edu/navigate> to schedule an online or in-person meeting today!