PSYCHOLOGY RESEARCH AND DATA APPLICATIONS
PSY 350
Fall 2025

Instructor: Christine Smith, Ph.D. (pronouns: She/her/hers)
Office: 2221 AuSable Hall

Drop in and chat or come for help:
Tuesday 1:00-1:30 PM or Thursday 1:00-3:00
By appointment: both in person and via Zoom (please do not request Zoom appointments during my regularly scheduled office hours listed on Tuesday/Thursday).
Phone: (616) 331-2424
Email: SmithC@GVSU.edu

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

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

Tutoring: There are dedicated tutors for this course who work at the GVSU tutoring center. If you find yourself struggling with the content of this course, please reach out to the tutoring center. Information regarding these services can be found here: https://www.gvsu.edu/tutoring/

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 develop your ability to apply information in the interest of solving important problems by engaging in various hands-on activities. In addition, you will learn how to effectively communicate quantitative findings both visually and in writing.

Regardless of your future career goals, the skills you will develop in this course will be of great value to you. Well-developed data literacy skills are essential for those of you planning on going on to graduate school, but they are equally important for those of you who plan to start your career immediately after you graduate. Effectively working with data both in terms of understanding it and communicating its meaning to others (both in writing and visually) is a crucial and marketable skill.

If you have a compatible computer, **I strongly recommend** that you download SPSS onto your computer during the first week of class. It is extremely convenient for you to be able to continue your work outside of class and students in the past have found it unnecessarily burdensome to transfer their work to their personal computers when they use the virtual lab. However, if your computer is not one onto which you can download software, you will need to complete your work using the virtual lab. I have posted the necessary links for the download and for Mac and PC virtual computer lab use below.

Two SPSS software options: 1) you may download the program directly onto your computer https://www.gvsu.edu/it/how-to-download-and-install-spss-224.htm, or 2) you may use GVSU's virtual computer lab. If you have a windows computer you can go to the virtual lab here https://winlab.gvsu.edu, and if you have a Mac computer you can get to the lab here (however, you will need a VPN) https://maclab.gvsu.edu. If you need to set up pulse secure you can find instructions to do so here https://www.gvsu.edu/it/downloading-installing-and-setting-up-pulse-secure-222.htm

***During the **first week of class**, please choose one of these methods and **give it a test run** to ensure that you do indeed have access. Depending on the age of your computer, there may be some (solvable) glitches when downloading/gaining access to the software. You will begin using the software during the second week of class so it is very important that you gain access during the first week.

Required Reading

All required readings will be posted on the course website and will appear in each respective week's folder. There is a basic open-access text that can be found in the module for week 1 and should be used as a general resource. I suspect its content is STA215 review, but many of you may have forgotten some of that material. A nice feature of this online textbook is that it contextualizes the statistical procedures we will be carrying out in this class within the discipline of psychology. Many students find this contextualization illuminating.

There are no supplies or additional materials that you need to purchase for this course.

Learning Objectives

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

Quantitative reasoning: Understanding, critiquing, managing, interacting with, and analyzing data

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.

Evaluation

Worksheets. Each week we will complete worksheets designed to allow you to practice the material we are covering in class. These are low stakes assignments designed to ensure needed skills are being gained. It is extremely important that you complete the worksheets by the deadline stated to avoid falling behind in the class. Each worksheet can be submitted up two times and your recorded grade will always be the **highest** score of your submissions. You will be given time to complete the worksheets during class time, however, you will most likely need to continue working on them outside of class.

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. These quizzes will be taken in class using Respondus Lockdown Browser.

Practice in-class lab practical. 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. These reports will be completed in class and you will have the entire class period to complete them.

In-class lab practical. Instead of a traditional final 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. You will be able to consult all course materials and the statistical flow chart while taking this exam.

Timely completion of coursework. Deadlines are provided to help ensure that students make progress towards course completion. If you find that you are need of some additional time to complete an assignment, please send an **email** describing your circumstances along with a specific plan for completing the work **before the deadline passes.** When an extension is granted, the student will not be penalized for a late submission if they submit their work by the new agreed upon deadline. Any other assignments submitted late **will earn a maximum of ½ credit. Assignments that are more than one week late will earn a maximum of ¼ credit.**

Point breakdown by category.

ASSIGNMENT	POINTS
Worksheets	**100**
Quizzes	4*30 = **120**
In-class practical	3*30 = **90**
Final Exam	**100**
Total	**410**

Grading Scale

GRADE	PERCENT
A	93%-100%
A-	90%-92%
B+	87%-89%
B	83%-86%
B-	80%-82%
C+	77%-79%
C	73%-76%
C-	70%-72%
D+	67%-69%
D	60%-66%
F	<60%

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.

Academic Integrity: Each student is expected to pursue the academic goals and objectives in this course with the highest level of honesty and integrity. Representing someone's words or ideas as your own, whether done unintentionally or deliberately is plagiarism. Any student found plagiarizing will receive a grade of "F" in the course.

I recognize that many students utilize AI-based assistance when editing their work. **However, all the work you submit MUST be your own writing.**

You should **never** include in any of your assignments anything that was not written directly by you. Including anything you did not write will be treated as an academic misconduct case and will result in a grade of "F" in the course. If you are unsure where the line is between collaborating with AI and copying from AI, I recommend the following:

1. Never hit "Copy" within your conversation with an AI assistant. You can copy your own work into your conversation, but do not copy anything from the conversation back into your assignment. Instead, use your interaction

with the AI assistant as a learning experience, then let your assignment reflect your improved understanding.
2. Do not have your assignment and the AI agent open at the same time. Use your conversation with the AI as a learning experience, then close the interaction down, open your assignment, and let your assignment reflect your newly revised knowledge. This includes avoiding using AI directly integrated into your composition environment: just as you should never use the words written by a classmate as your own, you should never add AI generated content to your submission.

****A note about collaboration: Collaborative work is sometimes allowed in this course. Collaborative work means sharing ideas/knowledge 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.

Course Calendar

Unit 1: Wrangling and Exploring Frequency Data

Week 1: August 26-28
Introduction to the Course
Review of the syllabus and key course relevant concepts (e.g., SPSS/Excel). Review of basic statistical concepts. Please have SPSS on your computer by the end of this week.

Week 2: September 2-4
Importing and Interacting with Data.
We will learn how to make a codebook, clean a data set, and do some very simple analyses using SPSS. We will also continue to review basic statistical concepts. We will also discuss features of effective visualizations.
Worksheet 1-Responses due by midnight on the 7th of September.

Week 3: September 9-11
Describing and Visualizing Frequency Claims & Writing Methods and Results Sections
This week we will analyze frequency data (all variables will be categorical). Additionally, I will provide several examples of write-ups of statistical tests along with visualizations of these data sets.

Quiz 1: September 11th. You will have the remainder of class time to work on Worksheet 2. If you have completed the worksheet, you may leave class when finished with the quiz.
Worksheet 2- Responses due by midnight on the 14th of September.

Unit 2: Assessing Measurement Quality and Testing Association Claims

Week 4: September 16-18
Measurement & Effect Sizes, Tests of Association: Correlation
This week we will introduce Pearson's r (a real workhorse). We will move to continuous variables and continue to test associations between two variables.
Thursday September 18th: First in-class Lab Practical.
Worksheet # 3 is due September 21 @ midnight.

Week 5: September 23-25
Confidence Intervals & Reliability
We will continue discussing correlation and I will introduce several additional applications of this test.
Worksheet 4-Responses Due by midnight on the 28th.

Week 6: September 30-October 2
Validity and Prediction
This week we will analyze several data sets that will allow us to predict one variable from another. We will also discuss the concept of validity and express it quantitatively.

Week 7: October 7-9
Tuesday Quiz # 2 and Worksheet # 5 (due @ midnight on the 12th).
Thursday: In-class Lab Practical # 2

Unit 3: Methods of Testing Causal Claims and Group Differences

Week 8: October 14-16
Probability and Null Hypothesis Testing
This week we will discuss the underlying logic of hypothesis testing.
Worksheet #6-Responses due by midnight on the 19th.

Week 9: October 23 Only (Fall Break on Tuesday)
Independent and Paired Samples t-tests
We will analyze several data sets and create visualizations for data analyzed with independent and paired groups t-tests.

Week 10: October 28-30
One-way ANOVA
We will explore cases where group differences are assessed with Analysis of variance. We will also create visualizations for ANOVA data.
Worksheet #7 due November 2 @ midnight.

Week 11: November 4-6
Factorial ANOVA
This week we will expand our ANOVA discussion to include contexts where more than one categorical variable is examined at a time.
Quiz # 3 Thursday November 6th.
Worksheet 8-Due by midnight on the 9th.

Week 12: November 11-13
Factorial ANOVA Continued

Week 13: November 18-20
Quiz # 4 Tuesday November 18th.
Worksheet # 9 Due by midnight on the 23rd.
Lab Practical # 3 on November 20th.

Week 14: Thanksgiving Break (both Tuesday & Thursday)

Week 15: December 2-4
Multiple Regression
Worksheet # 10 due by midnight December 7.

Week 16: Final Exam week

Final Exam Schedule:

T/TH 8:30 class	**Thursday December 11th @ 8:00 AM**
T/TH 10:00 class	**Thursday December 11th @ 10:00 AM**
T/TH 11:30 class	**Tuesday December 9th @ 10:00**