PSYCHOLOGY RESEARCH AND DATA APPLICATIONS
PSY 350
Fall 2023

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

Drop in and chat or come for help:
T/TH: 1-2:00 PM
By appointment: both in person and via Zoom.
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

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.

   Although our course is scheduled in a computer lab, I cannot recommend highly enough that you download SPSS onto your computer (if possible) during the first week of class. Last semester when I taught this course for the first time, one of the biggest frustrations for students was the unreliability of the equipment in our classroom.

Additionally, it is extremely convenient for you to be able to continue your work outside of the classroom. Finally, saving your work to your computer's hard drive is another benefit of having SPSS on your computer.

There are two ways you can achieve this: 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.

Required Reading

All required readings will be posted on the course website and will appear in each respective week's folder.

There are no supplies or additional material 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. The two lowest scoring worksheets will be dropped. Any student who completes all the worksheets will get 10 additional points added to their grade at the end of the semester. You will be able to complete most of the worksheets during class time, however, you will have the opportunity to work on the sheet after class too.

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.

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. Each lab report will include at least one data visualization.

Take-Home 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.

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 I do drop the lowest two scoring worksheets).

Point breakdown by category.

Worksheets:

ASSIGNMENT	POINTS
Worksheets	**90**
Quizzes	4*30 = **120**
Lab Reports	4*30 = **120**
Final Exam	**100**
Total	**430**

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%

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 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 <u>not</u> 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 29-31
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 (if possible) by the end of this week.

Week 2: September 5-7
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 12-14
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. I will open Quiz 1 in BB on Thursday after class and you will have until Sunday at midnight to complete it.
Worksheet 2- Responses due by midnight on the 14th of September and Quiz 1 due 17th by midnight. Lab report assignment posted to BB.

Unit 2: Assessing Measurement Quality and Testing Association Claims

Week 4: September 19-21
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.
Worksheet 3-Responses due by midnight on the 21st.
Unit 1 Lab Report Due Sunday 24th @ midnight.

Week 5: September 26-28
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: October 3-5
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.
Worksheet 5-Responses due by midnight on the 5th
Quiz 2 (opened on Thursday evening and to be taken by the 8th at midnight. Lab report assignment posted to BB.

Unit 3: Methods of Testing Causal Claims and Group Differences

Week 7: October 10-12
Probability and Null Hypothesis Testing
This week we will discuss the underlying logic of hypothesis testing.
Worksheet 6-Responses due by midnight on the 12th.
Unit 2 Lab Report Due 15th by midnight.

Week 8: October 17-19
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.
Worksheet 7-Responses due by midnight on the 19th.
Lab report assignment 3A posted to BB.

Week 9: October 24-November 1
This block of time includes your fall break and time where I will be out of town. Thus, there will be no formal class meetings during this time. However, you will have several data sets to analyze, and this will allow you to practice working

independently at identifying and carrying out the appropriate statistical test considering the data and the question/hypothesis posed. I will provide answer keys so that you can check your work. I will also be available via Zoom for any consultations necessary.
Unit 3A Lab Report Due November 1 by midnight.

Week 10: November 2nd
One-way ANOVA
We will explore cases where group differences are assessed with Analysis of variance. We will also create visualizations for ANOVA data.
Quiz 3 (opened on the 2nd and should be taken by midnight on the 5th)

Week 11: November 7-9
Factorial ANOVA
This week we will expand our ANOVA discussion to include contexts where more than one categorical variable is examined at a time.
Worksheet 8-Due by midnight on the 9th.

Week 12: November 14-16
Simple Regression
Worksheet 9-Due by midnight on the 16th.

Week 13: November 21 (Thursday is Thanksgiving)
Tuesday we will review and develop a "big picture" of what we have learned so far. We will also discuss several data sets and you can practice deciding which test you would use to analyze the data presented. I will give you a decision flow chart to assist you.
No worksheet this week!!!
Week 14: November 28-30
Multiple Regression
Worksheet 10-Due by midnight on the 30th.
Quiz 4 will be opened on BB on the 30th and should be taken by midnight on December 3rd.
Unit 3B Lab Report Posted to BB.

Week 15: December 5-7
We will look at a variety of data sets and decide which test to use and how to report our findings.
Worksheet 11-Due by midnight on the 7th.
Unit 3B Lab report due by midnight December 10th.
Take home final posted to BB. Final must be submitted by December 15 at midnight.