PSYCHOLOGY RESEARCH AND DATA APPLICATIONS
PSY 350
Winter 2024

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

Drop in and chat or come for help:
M/W: 1-2:00 PM
By appointment: both in person and via Zoom (please do not ask for Zoom appointments during my regularly scheduled office hours).
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. 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 from classroom equipment to their own computers.

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. 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 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. Most lab reports will include at least one data visualization.

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 of your course materials and the statistical flow chart while taking this exam.

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 me via email as soon as possible. In general, late worksheets and quizzes are not accepted unless arrangements have been made in advance.

Point breakdown by category.

Worksheets:

ASSIGNMENT	POINTS
Worksheets	**100**
Quizzes	4*30 = **120**
Lab Reports	4*30 = **120**
Final Exam	**100**
Total	**440**

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 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](#).

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Course Calendar

Unit 1: Wrangling and Exploring Frequency Data
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Week 1: January 8-10
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: January 15 (NO CLASS MLK DAY Recess)-17
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 17th of January.

Week 3: January 22-24
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 Wednesday after class and you will have until Sunday at midnight to complete it.

Unit 2: Assessing Measurement Quality and Testing Association Claims

Week 4: January 29-31
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 31st.
Unit 1 Lab Report Due Sunday February 4th @ midnight.

Week 5: February 5-7
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 7th.

Week 6: February 12-14
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 14th
Quiz 2 (opened on Wednesday evening and to be taken by the 18th at midnight. Unit 2 Lab report assignment posted to BB.

Unit 3: Methods of Testing Causal Claims and Group Differences

Week 7: February 19-21
Probability and Null Hypothesis Testing
This week we will discuss the underlying logic of hypothesis testing.
Worksheet 6-Responses due by midnight on the 21st.
Unit 2 Lab Report Due 25th by midnight.

Week 8: February 26-28
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 28th.
Lab report assignment Unit 3A posted to BB.

Week 9: March 4-6 SPRING BREAK

Week 10: March 11-13
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 13th and should be taken by midnight on the 17th)
Unit 3A Lab Report Due March 17th by midnight.

Week 11: March 18-20
Factorial ANOVA
This week we will expand our ANOVA discussion to include contexts where more than one categorical variable is examined at a time.

Week 12: March 25-27
Factorial ANOVA Continued
Worksheet 8-Due by midnight on the 27th.

Week 13: April 1-3
Multiple Regression
Worksheet 9-Due by midnight on the 3rd.
Unit 3B Lab Report Posted to BB.

Week 14: April 8-10
Multiple Regression
Worksheet 10-Due by midnight on the 10th.
Quiz 4 will be opened on BB on the 10th and should be taken by midnight on the 14th.
Unit 3B Lab Report due by April 14th at midnight.

Week 15: April 15-17
Review and Wrap Up-Using our Statistical Flow Chart
We will look at a variety of data sets and decide which test to use and how to report/interpret our findings.

Final Exam Schedule:

| **M/W class @ 9:00** | **Wednesday April 24th 8-9:50 AM** |
| **M/W class @ 10:30** | **Monday April 22nd 10-11:50 AM** |