PSYC 218-005: Analysis of Behavioural Data

Winter Term 2, 2022-2023
M/W/F 2-3pm, CHEM D 200
Online home: https://canvas.ubc.ca/courses/107799

TEACHING CONTACTS:

Andrew Rivers, PhD
Office hours: See Canvas
Contact: amrivers@psych.ubc.ca

Email Policy: Please include "PSYC218-005" in the subject line of your emails & note that emails may not be answered on weekends.

Andrew is also happy to meet individually meetings by email request

Miranda Long, TA
Office hours: See Canvas
Contact: mlong@psych.ubc.ca

Vasileia Karasavva, TA
Office hours: See Canvas
Contact: vkarasavva@psych.ubc.ca

Paradox Zhou, TA
Office hours: See Canvas
Contact: linnan.zhou@psych.ubc.ca

Matthew Cooke, TA
Office hours: See Canvas
Contact: mbcooke@mail.ubc.ca

COURSE DESCRIPTION:

Analysis of quantitative data is an important part of our daily lives, whether we are consciously aware of it or not. Scientific research, polls and our own informal data-gathering projects ('Which car is the best deal?' 'What class did students like the best last term?') are all characterized by interpreting data, formally or informally, to support our conclusions. This course introduces statistics as a tool for the formal analysis of quantitative data. We will cover descriptive statistics (finding patterns in data), basic principles of probability, and inferential statistics (testing patterns in data to in order to draw reliable conclusions from those data). Becoming familiar with these topics will help you to analyze others' claims about data with a more trained eye, as well as to clean, describe, and analyze data from your own research projects.

By the end of this course, a successful student can expect to be able to:

1. Contrast descriptive and inferential statistics
2. Explain *why* we use statistics in psychological science
3. Select appropriate statistical techniques for investigating different data structures
4. Interpret statistical findings from the Null-Hypothesis Statistical Testing (NHST) framework; with reference to strengths and limitations of the NHST approach
5. Critique others' (e.g., researchers, media) interpretations of statistical findings
6. Integrate overlapping concepts underlying inferential statistics including estimation, probability, error management, effect size, and statistical power
7. Apply statistical learning by calculating descriptive and inferential statistics using statistical software

REQUIRED MATERIALS

1. Pagano, R. (2012). *Understanding Statistics in the Behavioral Sciences* (10th Ed.) Available at:
    a. UBC Bookstore, bundled with Francis & Neath *CogLab* (item 2)
    b. e-book version at www.vitalsource.com

    Note: Earlier editions of the text are **probably** OK to use

2. Francis, G., & Neath, I. (2007). *CogLab Online Version 5.0 Access Code* (5th Ed.) Available at:
    a. UBC bookstore packaged with your Pagano text (item 1) or as a stand-alone product if not bundled with Pagano text

3. Cuttler, C. (2021). *A Student Guide to SPSS* (3rd Ed.) Available at:
    a. UBC bookstore
    b. Kendall Hunt: https://he.kendallhunt.com/product/student-guide-spss

    Note: Earlier editions of the text are **probably** OK to use

4. SPSS (or *Jamovi*): You will need to have access to either SPSS or *Jamovi* software
    a. 1-year FREE SPSS subscriptions are available at www.onthehub.com
    b. *Jamovi* is always freely available at www.jamovi.org (guide at: www.learnstatswithjamovi.com)

5. Scientific calculator: You will need a calculator that has both an *inverse* and *square root* functions. Graphing and/or programmable calculators are not permitted during exams.

LEARNING ASSESSMENT

Lab Assignments (6x)

There will be 6 total lab assignments in which you will first complete an online *CogLab* experiment or a Qualtrics survey, and then using SPSS, we will analyze data from class responses. For each Lab Assignment you will need to:

1. **Complete the listed *CogLab* experiment or Qualtrics survey** – each take ~10-20 minutes to complete. If you do not complete the *CogLab* (or survey) component, 25% will be deducted from the paired lab assignment
2. **Complete the SPSS assignment** – each assignment will vary in length depending on the topics covered. One week before the assignment deadline, there will be an in-class demonstration of the SPSS skills needed to complete the SPSS assignment. There is a 10% penalty for each day that the assignment is late.

You are encouraged to meet with your TA's, other students, and/or Prof Andrew to discuss challenges as you work through the SPSS assignments. However, **you MUST analyze the data and write-up your findings ON YOUR OWN.**

Midterm Exams (2x)

There will be two in-person midterm exams each worth 20% of your grade. If you miss a midterm exam, your final exam will be worth 20% more points. Unless otherwise stated, ALL material in lectures, in the textbook, and in lab assignments is testable material on exams.

Cumulative Final Exam (1x)
The final exam will be cumulative and will be worth one third of your grade. The date and time will be determined by the registrar. Do not book any trips out of town until the date of the final exam is determined.

HSP Research Experiences (3 credits)
Learning about and evaluating psychological science requires a working knowledge of *epistemology*—how do we know what we know? What do psychological experiments look and feel like? One excellent way to acquire this knowledge is to participate in psychological research. Students will participate in at least 3 hours of accredited psychology experiments at UBC (1% for each HSP credit). To sign up for see https://ubc-psych.sona-systems.com

As an alternative to participating in studies, students can complete writing projects in which you read and summarize a research article from the journal *Psychological Science*. See the HSP website for detailed information including due dates and submission procedures for writing projects.

ASSESSMENT TYPE	Weight (%)
2x Midterm Exam	40%
1x Cumulative Final Exam	30%
10x Practice/Challenge Worksheets	3%
6x Lab Assignments (2-parts each)	24%
Part 1: *CogLab* or survey	
Part 2: SPSS Assignments	
3x HSP Research Experiences	3%
Total	100%

BONUS *Oops! Token*
Even if we are diligent in keeping up with course material and diligent in our planning for the weeks ahead, ***sometimes _____ happens!*** Each student will receive an ***Oops! Token*** that they can use once during the term. The token may be used in the following ways:

- "Oops, I forgot to complete my *CogLab*!"
  - If you use the ***Oops! Token***, I will excuse the missing *CogLab*.
- "Oops, I submitted my SPSS/*Jamovi* assignment after the deadline!"
  - If you use ***Oops!***, I'll accept your submission with no penalty for up to one week.
- "Oops, it's the end of the term and I don't see any more HSP studies available!"
  - If you use ***Oops!***, you'll receive 1 free HSP credit.

Fine Print: The ***Oops Token!*** is a 'no questions asked' benefit, you can use it whenever you'd like and for whatever *oops!* might have happened. The ***Oops Token!*** CANNOT be used for any of the exams but note that you can miss one midterm exam and have the weight added to your final exam.

To use the ***Oops Token!***, please complete the ***Oops Token!*** quiz on Canvas. You can choose any of the above options, and can change your mind by re-taking the survey at any time. I will apply your ***Oops Token!*** at the conclusion of the term, so it will not immediately be reflected in your course marks.

MISCELLANEOUS COURSE POLICIES:

Hybrid Course: This section of PSYC218 is designated as a *hybrid* course. Further information is provided in the supplemental *Hybrid Syllabus* document.

Lecture Recordings & Lecture Notes: I will record and post audio from lectures covering new class material. I do not take attendance and there are no participation points assigned during in-person lecture. Lecture slides in .pdf form will be posted on our Canvas site.

Email Policy: Please include "PSYC 218-005" in the subject heading of all emails. I will attempt to respond to questions within 24 hours. Emails are rarely answered over weekends or holidays.

Meetings: Meetings, either during listed student hours or scheduled via email, are the best way to ask questions about course material. I encourage everyone to take advantage of scheduled student hours and note that I am *happy* to schedule individual meetings with you ☺

PSYC 218 Prerequisites: PSYC 218 requires completion of PSYC 217 and a declared major in Psychology, Cognitive Systems, or Speech Sciences. PSYC 218 is a program requirement to receive a BA degree in Psychology.

Psychology Department's Policy on Grade Scaling: In order to reduce grade inflation and maintain equity across multiple course sections, all psychology courses are required to comply with departmental norms regarding grade distributions. According to departmental norms, the mean grade in a 200-level class is 72 *for a good class*, 70 *for an average class*, 68 *for a weak class* with a standard deviation of 14 percentage points. Scaling is likely to be used in order to comply with these norms; grades may be scaled up or down as necessary by the professor, department, or school. Therefore, grades are *never* official until they appear on your academic record.

Note: An excellent discussion of the rationale for grade scaling by a UBC Psychology professor is available here: https://www2.psych.ubc.ca/~schaller/scaling.htm

Reach out and ask for help if you need it

University students often encounter setbacks from time to time that can impact academic performance. If you run into difficulties and need assistance, I encourage you to contact me by email and we can coordinate a meeting (or not if you'd prefer to stick to email). I will do my best to support your success during the term. This includes identifying concerns I may have about your academic progress or wellbeing through Early Alert. With Early Alert, faculty members can connect you with advisors who offer students support and assistance getting back on track to success. Only specialized UBC advisors are able to access any concerns I may identify, and Early Alert does not affect your academic record.

For more information, visit www.earlyalert.ubc.ca

For information about addressing mental or physical health concerns, including seeing a UBC counsellor or doctor, visit students.ubc.ca/livewell

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Healthy Lifestyles

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on the UBC Senate website.

Diversity and Inclusion

Diversity and Inclusion: Similar to the broader UBC community, the Psychology Department—and this class—seeks to build a community where students feel included and are treated equitably. This class aims to be inclusive of gender identity, gender expression, sex, race, ethnicity, socioeconomic background, sexual orientation, political and religious affiliation, ability, health, and age (this is not an exhaustive list!). Students, instructors, visitors, and readings may sometimes raise controversial and/or sensitive issues. Respectful and productive discussion is encouraged, and students should feel safe to explore ideas without fear of being judged. Our goal is not to always agree, but rather to disagree without being threatening or alienating. However, if a statement or behaviour is likely to offend others or make others feel alienated in any way, it should not be shared with the class (but can be shared with me after class or in student hours). If at any point you feel offended, threatened, or alienated by anything that happens in our class, please feel welcome to let me or a TA know.

COVID Safety: For our in-person meetings in this class, it is important that all of us feel as comfortable as possible engaging in class activities while sharing an indoor space. Non-medical or medical grade masks that cover our noses and mouths are a primary tool to make it harder for COVID-19 to find a new host. If you have not yet had a chance to get vaccinated against COVID-19, vaccines are available to you, free (see https://covid19.ubc.ca/). The higher the rate of vaccination in our community overall, the lower the chance of spreading this virus and the lower the impact of COVID-19 on all of us. If local infection rates are high, you'll likely see me wearing a mask and I have been keeping up-to-date on vaccinations.

If you're sick, it's important that you stay home. If you think you might have COVID symptoms and/or have tested positive for COVID and/or are required to quarantine: You can do a self-assessment for COVID symptoms here: https://bc.thrive.health/covid19/en

The marking scheme for this term is intended to provide flexibility so that we can prioritize your health and still be able to succeed:

- There are no "participation points" for in-class (e.g., clicker questions)
- If you are excused from class, you are able to makeup in-class group article discussions by submitting them directly to Canvas
- If you miss the midterm exam, you are able to push the weight of the exam onto the final exam

If you do miss class because of illness:

- Make a connection early in the term to another student or a group of students in the class. You can help each other by sharing notes. When research groups are assigned, connect with them as a resource when you miss class.
- Consult the class resources on Canvas. I will post slides, readings, recordings for most classes.
- Use the *Piazza* discussion forum for help! I try to reply on the forum frequently, and classmates are almost always available to help
- Come to office hours (some are on *Zoom*, so you can join from anywhere).

If you are sick on a midterm exam day, please email the instructor as soon as you are confident you should not come to the scheduled exam. If you do show up for an exam and you are clearly ill, we will make alternate arrangements with you. It is much better for you to email ahead of time and not attend.

If you are sick on a final exam day, do not attend the exam. You must apply for deferred standing (an academic concession) through Arts Advising no later than 48 hours after the missed final exam/assignment. Students who are granted deferred standing write the final exam/assignment at a later date. Learn more and find the application online: https://science.ubc.ca/students/advising/concession

If I (the instructor) am sick: I will do my best to stay well, but if I am ill, develop COVID symptoms, or test positive for COVID, then I will not come to class. If that happens, here's what you can expect

- I plan to post recorded videos with the content for the missed class
- I also plan to host extra office hours if I am unable to lecture

Acknowledgements: I want to cite those who I learned from in creating this syllabus. Portions are inspired by Dr. Grace Truong, Dr. Benjamin Cheung, Dr. Elizabeth Dunn, Dr. Mark Lam, Dr. Lily May, Dr. Catherine Rawn, Dr. Mark Schaller, & likely many more that I forgot to mention. Thank you all!

WEEK	DATES	Topics	Read	Notes
1	1/9-13	Introduction & Measurement Basics	Ch. 1-2	Obtain access to textbook, *CogLab*, and either SPSS or *Jamovi*
2	1/16-20	Frequency Distributions, Central Tendency, & Variability	Ch. 3-4 SPSS 1&2	***CogLab*** 'Stroop' due Weds
3	1/23-27	Normal Curve, *z*-scores, Correlation	Ch. 5-6	**Qualtrics survey** & ***CogLab*** 'Memory Span' both due Weds
4	1/30-2/3	Linear Regression	Ch. 7 SPSS 3&4	**SPSS Assignment 1** due Monday
5	2/6-10	Sampling & Probability	Ch. 8	***CogLab*** 'Change Detection' due Weds
6	2/13-17	Probability II & Midterm Exam		**SPSS Assignment 2/3** due Monday **Midterm Exam on Friday** Covering Ch. 1-8
2/20-24		**No Class: Reading Break**		
7	2/27-3/3	Binomial Distribution, NHST, & Sign Test	Ch. 9-10 SPSS Ch. 6	***CogLab*** 'False Memory' due Weds
8	3/6-10	Power & Sampling Distributions	Ch. 11	
9	3/13-17	Standard Error, Sampling Distribution of *M*, & *z*-test	Ch. 12 SPSS Ch. 7	**SPSS Assignment 4** due Monday ***CogLab*** 'Risky Decisions' due Weds
10	3/20-24	Single-sample *t*-test & Cohen's *d* effect size	Ch. 13	**Midterm Exam on Wednesday** Covering Ch. 9-13
11	3/27-31	Paired *t*-test, Student's *t*-test	Ch. 14	**SPSS Assignment 5** due Monday
12	4/3-8	Compare *z*- vs. 3 *t*-tests, & Intro to ANOVA	Ch. 15	**No Class** on Friday
12	4/10-12	ANOVA cont.		**SPSS Assignment 6** due Monday **No Class** on Monday or Friday
-	TBA	**FINAL EXAM**		Exam is in-person, location TBA