PSYC 218 008
Analysis of Behavioural Data

Wed & Fri
12:30pm – 2:00pm
SHRM B1009

Instructors

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Acknowledgements

UBC Vancouver's Point Grey Campus is situated on the traditional, ancestral, and unceded territory of the Musqueam people. We pay respect to the traditional guardians of this land and we acknowledge their longstanding relationship with this territory. We acknowledge the traditional knowledge keepers, both young and old. We honour their courageous leaders: past, present, and future.

Course Description

Statistics are, quite simply, tools that researchers in psychology (and other disciplines) use to gain insight into how and why people do what they do. No more, no less. Statistics aren't magic. They don't tell us exactly what's going on (but they can give us insight, as long as our interpretations are correct). And statistics are certainly not something to be feared. Yes, there are calculations and calculators and computers involved. But those are just about getting the numbers. What's really

important is how we interpret them, so that we can evaluate hypotheses and learn things about people.

Keep in mind that this course is an *introduction* to statistics. We're not going to master everything about statistics. Sometimes the ideas we'll be learning about might not seem relevant to understanding behavior, but they're laying a foundation that you can take with you into the world and into future courses. For many people, this course will present quite a challenge. Prepare to put in the work, don't fall behind, seek help when you need it, and you'll find yourself off and running toward developing statistical literacy and understanding people a bit better. You might even learn something about yourself in the process!

Your Learning Goals

At the end of this course, you will be able to:

- Compare and contrast descriptive statistics and inferential statistics
- Calculate by hand a variety of statistics commonly used in psychology (e.g., correlation, regression, z-scores, t-tests)
- Choose and apply the appropriate statistic to analyze a dataset, when provided with a study's design and a researcher's purpose
- Interpret what the statistics you calculate mean about the data and the hypothesis
- Evaluate others' interpretations of statistical analyses
- Explain and execute the process of a hypothesis test
- Explain the (limited!) meaning of "statistical significance"
- Define and discuss the relationships among major statistical concepts (e.g., alpha, effect size, power, sample size)
- Appreciate the value of developing statistical literacy

Withdrawals: Withdrawal from this course without record of the course on your transcript must occur by Jan 16 2026, or by Mar 6 2026 for withdrawal with a standing of "W" on your transcript.

Integration of course in curriculum: This course requires successful completion of PSYC 217 Research Methods and declaring a major in Psychology, Cognitive Systems, or Speech Sciences. It is a requirement for the BA Psychology major, and is a prerequisite for Honours and PSYC 359 (advanced statistics).

Accessibility Statement

To empower you to make the most of this course, I have worked and continue to work on creating an accessible learning environment. Our amazing brains process information in so many ways – reading, watching, and listening (to name just a few) – and this course has been formatted so that you can learn the material in multiple ways. If you experience any challenges that prevent you from engaging with the course content, please reach out to me (by email, via Canvas, or during office hours) so that we can address them.

Course Materials

(1) **TEXTBOOK**. Pagano, R. (2013). *Understanding Statistics in the Behavioral Sciences* (10th Edition). Since none of the textbook exercises are for marks, you may use any format of the book (digital, loose-leaf, hardcover). The ninth edition of the text is somewhat but not majorly different from the tenth edition. You are responsible for the tenth edition material. Use the ninth at your own risk.

(2a) **SPSS GUIDE**. Cuttler, C. (2020). *A Student Guide to SPSS* (3rd Edition). Available at the UBC bookstore in digital and hard copy forms, either format is acceptable.

(2b) **SPSS Statistics version 30 or 31**. Available for free download from https://ubc.onthehub.com.

(3) ***Top Hat account.*** *[free]* Follow the instructions on Canvas for joining the course.
Join code sec 008: 181586 (https://app-ca.tophat.com)

(4) **Scientific calculator**. You will need a basic scientific calculator (one with inverse and square root functions will be sufficient and should only cost about $10) for exams.

Course Website:
Lecture slides, assignments, and grades will be available through UBC Canvas. Lecture slides will be posted after class.

Learning Appraisals at a Glance

Learning Appraisal Activity	Date	Percent of Total Grade
Midterm 1	Feb 4	21%
Midterm 2	Mar 4	21%
Lab Pre-Checks (1% x 3)	Throughout term	3%
Lab Assignments		15%
Lab 1 (4%)	Throughout term	
Lab 2 (5%)		
Lab 3 (6%)		
In class participation (Top Hat)	Throughout term	4%
Research Experience Component (REC/HSP)	Throughout term	3%
Final Exam	TBD	33%
Total		**100%**

Learning Appraisal Descriptions

Examinations

The midterms and the final exam will consist of multiple choice questions, short answer questions, and computational questions. You will be provided with a formula sheet. These will draw on both lectures and the readings and, for superior performance, you must have a clear understanding of both these sources of course content. You will be challenged to push beyond memorization of facts and to integrate and apply course material. Research shows greater long-term retention with multiple testing— not just studying—opportunities (Roediger & Karpicke, 2006). The final exam will be longer

than the midterm exams and will be cumulative. Exams will be in person. Midterms must be completed during class time unless a different time is approved by the instructor.

If you have three or more final exams scheduled to start and finish within a 24-hour period, you may request to write the second exam on a different day. You must make this request to the instructor giving the second exam at least one month before the exam date. If you absolutely must miss the final exam due to an extenuating circumstance like severe illness, you or your caregiver must apply for Academic Concession by contacting your Faculty's Advising Office.

Laboratories

You will be required to complete three lab assignments. Some class time will be allocated to begin the labs and you will complete the remainder on your own time. The lab assignments are intended to complement the lectures by giving you practical experience with analyzing data (using the software SPSS) and with reporting the results of various analytic techniques. Each assignment is worth 4-6% of your final grade. Each laboratory has four components:

(i) Completing the Pre-Check. Before each assignment, there will be a pre-check. Each pre-check comes with a video tutorial that demonstrates some foundational skills and a brief Canvas quiz. Because it is intended to make the lab assignment easier to complete, you can redo the pre-check quiz as many times as needed to get a perfect score. For each pre-check, getting a perfect score before the deadline will earn you 1%. Getting a perfect score after the deadline will earn you 0.5%.

(ii) Generating Data With Qualtrics or Reading Article Information: The data for Assignments 1 and 2 will be generated by the whole class via a Qualtrics survey. This step will allow us to generate a dataset the class, and will help you develop a deeper understanding of data analysis and interpretation because you have experienced the study as a participant. *You will lose 1⁄4 (25%) of your Assignment 1 grade (i.e., 1% of your final course grade) for not completing the Qualitrics Survey on time.* See Canvas for links to the survey.

The data for the remaining assignment will come from a real dataset. The dataset may be pared down so it is suitable for this course. Since you are not generating the data as a participant, familiarize yourself with the research question and the variables by reading the article information on the assignment page in Canvas.

(iii) Student Guide to SPSS and SPSS Demonstration: To prepare to do the assignment, you should read the appropriate chapter(s) for the lab assignment in *A Student Guide to SPSS*. The appropriate chapter(s) for each lab assignment will be announced in class and written in the instructions for each lab assignment. These chapters provide detailed information about how to perform all the SPSS functions you will need to complete the lab assignments. You will also receive a brief TA-led demonstration of some of the functions of SPSS required for each lab assignment.

(iv) Lab Assignment: After each SPSS demonstration, I will post a lab assignment for you to complete. All assignments will be posted in a module called "Laboratories" on Canvas. The assignments will require you to analyze the data your class has generated in the survey or the data from a research paper. You will have about one week to complete each of the assignments. The assignments are formatted as Canvas quizzes but there is no time limit.

The due dates and times for the lab assignments are listed at the end of the syllabus. Every student will be allocated TWO 1-day late passes for these lab assignments. Use them all at once (2 days for

one assignment), or separate (e.g., 1 day for 2 assignments). After those two days have been used, standard late deductions of 10% per day will apply (except in emergency circumstances). The last question of each assignment will ask if you would like to use a late pass. Answer that question and the TA will manually apply the late pass(es) as needed.

Lab assignments must be completed independently. You are encouraged to meet with your teaching assistants if you require assistance with the assignments. You may also ask your teaching fellows questions you encounter while completing the assignments. Although you may ask your teaching fellows for assistance, *you must complete the analyses and write-ups on your own*. You may not share your work with other students, use another student's work, or use answers from AI sources (e.g., ChatGPT). You may also not post your answers to any lab assignment questions on the Canvas discussion boards. Anyone who posts any answers to any assignment questions on Canvas will receive 0 on the assignment.

Optional Assessment (Pilot)

As part of a larger project on Universal Design for Learning (UDL), we will be piloting an optional assessment for the lab assignments. For this assessment, you will be given access to a dataset one week in advance and be able to explore it on your own time. On the day of the assessment, you will be given some SPSS output using a subset of the dataset and be asked to interpret the output. The questions will closely mirror the lab assignment questions. Completing the optional assessment is entirely optional and you will have until **April 1** to decide whether you want to do it. Your score on the optional assessment will replace your lowest lab assignment score. If you have been granted a reweighting concession on a lab assignment, you may choose to do the optional assessment instead of taking the reweight. More information will be available later in the term.

Top Hat Participation

Active participation during lectures will be essential for you to learn the material, prepare for exams, and get the most out of this course. I will aim to incorporate a few Top Hat questions into each lecture to check for understanding of key concepts and to encourage active participation and discussion. Please have the Top Hat website open during lecture so you can answer questions in real time.

Participation will be graded in the following manner:

If you respond to the majority of questions in…	**You will receive...**
80-100% of all classes with Top Hat questions	4%
70-79% of all classes with Top Hat questions	3%
60-69% of all classes with Top Hat questions	2%
50-59% of all classes with Top Hat questions	1%
0-49% of all classes with Top Hat questions	0%

Research Experience Component (REC/HSP credits/Library Assignments)

The Research Experience Component (REC) is designed to help you learn more about psychology by providing first-hand experience in research. For this course, you will be asked to earn three research experience credits. Most students will choose to earn these credits by spending three hours participating in psychology studies (worth ~1% point for each hour) through the Department of Psychology's Human Subject Pool (HSP) system. You can locate, create an account, and sign up for studies by going to https://hsp.psych.ubc.ca. Please register in the system by the end of the first month of classes to have the opportunity to earn your first ½ hour credit with a brief online survey that will increase your eligibility for more studies.

Once registered in the system, you will be able to browse through and select which studies you wish to participate in, sign up for an available timeslot, and confirm your accumulated credits afterward. **At the end of the last day of class for the term, the subject pool is closed**. At that point, you will no longer be able to receive credits. I strongly urge you to participate in and confirm your credits long *before* the last week of class since **many studies will not offer timeslots near the end of the term and you may be locked out before allocating your credits to your desired course**. Further instruction on how to use the HSP online system can be found at https://psych.ubc.ca/undergraduate/opportunities/human-subject-pool/ in the document entitled "Subject Pool Information for Participants."

Alternative assignment:

The Library Option

As an alternative to participation in psychology subject pool experiments, you may complete a library-writing project. Such projects consist of reading and summarizing 1) the research question, 2) the methods and 3) the results (in written form) of a research article from the peer reviewed journal *Psychological Science*. You will receive one (1) research participation credit for each article summary that meets the following requirements.

Requirements:

- The article must have been published in the journal titled "*Psychological Science*"
- The article must have a publication date from the year 2000 to present (i.e. papers from 2001 are acceptable; those from 1999 or earlier are not)
- The article must be a research article; it cannot be a review article, a news item, a notice, or a letter to the editor, for example
- The summary should be approximately 500 words in length
- You must include your name, student number, course, section, instructor and email address on each summary
- You must log on to the Human Subject Pool (HSP) system (http://hsp.psych.ubc.ca/) and create an account before submitting your article summaries. Your credit is assigned using the online system.

For each course, you may obtain the same number of extra credits via the library option as specified in the course syllabus (i.e. the same number of credits available for students who participate in research).

Summaries must be submitted **no later than 10 days before the end of classes**.

University Policies

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.**

Course Policies

Course Structure
Lectures will be delivered in person during regularly scheduled class time. The lectures will be recorded so they can be viewed later. Sometimes a portion of class time will be dedicated to practice questions. The instructor will be available for assistance during these periods but "practice question time" will not be recorded. Slides will be posted **after** lecture to preserve the integrity of in-class activities. During lecture, please note the slide number (at the bottom) and take notes accordingly.

In the Classroom
University courses should be conducive to learning and rigorous intellectual inquiry within a context in which everyone feels included and respected—regardless of race, ethnicity, gender identity, gender expression, sexual orientation, political or religious affiliations, ability, age, social status, etc. All students in this class are encouraged to express themselves thoughtfully when discussing course material; and, when you do express yourself, it's important that you do so in a manner that shows respect for every other member of this class. Therefore, please make sure that you're familiar with UBC's policy on building and maintaining a respectful environment. You can find additional information about resources pertaining to equity, diversity, and inclusion on the Psychology Department's website: https://psych.ubc.ca/about/equity-inclusion/

Missing Exams
If you are aware of scheduled UBC-sanctioned sport travel or a religious obligation that conflicts with the date of an exam, you MUST contact the instructor within the *first week of classes* so that alternate arrangements can be made. If you miss an exam for a valid reason, you must contact the instructor *before the exam* or as soon as possible after the exam. Makeup exams are subject to instructor approval and can only be taken within **one (1) week** of the original exam date (unless your circumstance warrants a longer period). If you miss an exam for any other reason (e.g., sleeping in, forgetting there was an exam, etc.), you will receive a "0" on the exam.

Reviewing Exams
You may review your midterm exam after the exam marks are released. Your TA will be available to answer any questions or concerns regarding your exams. You must arrange to see your exam **within 2 weeks** of the grades being released. Following this two week period, your exam will not be available.

Access and Diversity
UBC is committed to equal opportunity in education for all students including those with documented physical disabilities or learning disabilities. If you have a disability that affects your learning or performance on tests or exams please visit http://students.ubc.ca/about/access and take the necessary steps to ensure your success at UBC.

Grades

In Psychology at UBC-V, we employ department-wide grading standards to promote equitable alignment, supporting students and course instructors as they learn and teach across many diverse courses and sections. For each course section, instructors should aim for a grade average in the following Target Ranges (before any bonus HSP points are added, but including any mandatory HSP points): **B- (68-71%) in Introductory 100-level and 200-level courses;** B (72-75%) in Intermediate 300-level courses; B+ (76-79%) for Advanced 400-level courses and Selective-Entry lower-level courses (e.g., PSYC 277, 278, 312, 370, 371, 349, 359, 365). Ranges are intended to provide some flexibility to instructors and account for differences that can occur between classes. Ranges increase across year levels to account for improvements in student learning, and students' ability to self-select into more specialized courses. During the course, instructors may choose to adjust grades and/or difficulty of the assessments, to align with the Target Range. Grades are not official until they appear on a student's academic record. You will receive both a percent and a letter grade for this course.

Letter Grade	Percent	Letter Grade	Percent
A+	90 - 100	C+	64-67
A	85 - 89	C	60-63
A-	80 - 84	C-	55-59
B+	76 - 79	D	50-54
B	72 - 75	F	0-49
B-	68 - 71		

Copyright and Intellectual Property

All readings for this course are copyrighted, and cannot be redistributed without permission of the copyright owner. Lecture videos and other course materials are the intellectual property of the instructor(s) and these also cannot be redistributed (e.g., posted on any other website, or shared in any other way) without instructor permission. Violation of these policies may lead to academic discipline. Uploading course materials to AI tools is not permitted.

Academic Misconduct

Cheating on exams will result in a score of 0 for that exam. All responses to lab assignment questions must be written independently. Sharing your answers to lab assignment questions or using another student's work is considered cheating and will result in a score of 0 for that assignment. Using another student's Top Hat account to answer questions for them is also considered cheating. If you are caught with more than one Top Hat account in class, you will both receive a 0 for course participation. All forms of academic misconduct will be reported to the university for appropriate action.

Generative AI Policy

The assessments in this course are designed to help you think and communicate clearly about data analysis. Sometimes learning to think and communicate in new ways can feel challenging and it is tempting to bypass the challenge by using external sources. However, the *desirable difficulty* (Bjork et al., 2011) of working through novel ideas is what helps you learn and remember concepts in the long term. You chose to major in psychology; I encourage you to actually learn it. Moreover, generative AI tools (e.g., ChatGPT, OpenAI) are error-prone and often fail to account for many common psychological research practices that affect statistical analyses. Blindly pasting in AI outputs can lead to incorrect answers and low scores. If for no other reason than self-interest, be very cautious in believing what AI tells you. ***In this class, use of generative AI (e.g., Chat GPT, OpenAI) for lab assignments is not permitted and will be considered academic misconduct.***

Psychology Department's Position on Academic Misconduct

Cheating, plagiarism, and other forms of academic misconduct are serious concerns of the University, and the Department of Psychology has taken steps to alleviate them. In all cases of suspected academic misconduct, the parties involved will be pursued to the fullest extent dictated by the guidelines of the University. Strong evidence of cheating or plagiarism may result in a zero credit for the work in question. According to the University Act (section 61), the President of UBC has the right to impose harsher penalties including (but not limited to) a failing grade for the course, suspension from the University, cancellation of scholarships, or a notation added to a student's transcript.

If you have any questions as to whether or not what you are doing is even a borderline case of academic misconduct, please consult me. For details on pertinent University policies and procedures, please see Chapter 5 ("Policies and Regulations") in the UBC Calendar (http://students.ubc.ca/calendar).

Helpful Resources

Additional resources may also be helpful as you contend with the challenges of taking university courses during a pandemic, and just dealing with life's challenges more broadly.

- Assistance with working remotely: https://it.ubc.ca/ubc-it-guide-working-campus
- Guidance on useful skills for students: https://learningcommons.ubc.ca/student-toolkits/
- Student's guide to Canvas: https://students.canvas.ubc.ca/
- Counselling Services: http://students.ubc.ca/livewell/services/counselling-services
- Wellness Centre: http://students.ubc.ca/livewell/services/wellness-centre
- Student Health Services: http://students.ubc.ca/livewell/services/student-health-service

Course Schedule

💻 symbol = online activity (completed outside of class time)

Week	Dates	Wednesday *[readings]*	Friday *[readings]*	Lab
1	Jan 7, 9	Introduction, Math review *[Syllabus, Ch. 1]*	Measurement, Frequencies *[Ch. 2, Ch. 3]*	
2	Jan 14, 16	Central Tendency & Variability *[Ch. 4]*	Central Tendency & Variability, begin Normal Curve *[Ch. 4]*	💻 **Qualtrics survey due Jan 16** (11:59pm)
3	Jan 21, 23	Normal curve & z-scores *[Ch. 5]* SPSS demo #1	Normal curve & z-scores *[Ch. 5]*	Pre-Check 1 due Jan 25
4	Jan 28, 30	Correlation *[Ch. 6]*	Correlation *[Ch. 6]*	**Lab 1 Assignment due Jan 28**
5	Feb 4,6	**Midterm 1** (Chapters 1-5)	Regression *[Ch. 7]*	
6	Feb 11, 13	Regression *[Ch. 7]* SPSS demo #2	Probability *[Ch. 8]*	
7	Feb 18, 20	*Reading Break* *No classes*		Pre-Check 2 due Feb 22
8	Feb 25, 27	Binomial Distribution *[Ch. 9]*	Hypothesis Testing *[Ch. 10]*	**Lab 2 Assignment Feb 25**
9	Mar 4, 6	**Midterm 2** (Chapters 6-9)	Sign Test *[Ch. 10]*	
10	Mar 11, 13	Power *[Ch. 11]*	Sampling distributions; z-tests *[Ch. 12]*	
11	Mar 18, 20	z-tests *[Ch. 12]*	Single sample t-tests *[Ch. 13]*	

12	Mar 25, 27	Dependent samples t-tests *[Ch. 14]*	Independent samples t-tests *[Ch. 14]*	
13	Apr 1, 3	ANOVA *[Ch. 15]* SPSS demo #3	ANOVA *[Ch. 15]*	Pre-Check 3 due Apr 5
14	Apr 8, 10	Special Topics / Catch-up Final Exam Review	Optional Assessment	**Lab 3 Assignment due Apr 8**
Final Exam *(cumulative, during final exam period [April 14 – April 25] TBD by registrar)*				

Schedule is subject to change as term progresses. Updates will be announced in class.

Important

The Final Exam will take place during the final exam period, which runs from April 14 through April 25. Your attendance at the final exam is mandatory. You should not make travel plans until you learn the date of your final exam. You cannot take the final at a different date/time unless you have university approval.