PSYC 218 951
Analysis of Behavioural Data

Tues & Thurs
1:00pm - 4:00pm
IBLC 182

Instructor

Dr. Grace Truong
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In-Person office hours: Tuesdays, 11:30-12:30pm
Zoom office hours: Wednesdays, 11:30-12:30pm

Teaching Assistants (TAs)

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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 before July 8 2024, or before July 26 2024 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).

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 28 or 29**. Available for free download from www.ubc.onthehub.com.

(3) ***Top Hat account.*** *[free]* Please follow the instructions on Canvas for joining the course.
Join code: 116855 (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	July 16	21%
Midterm 2	July 30	21%
Assignments (4% x 5)	Throughout term	20%
In class participation (Top Hat)	Throughout term	4%
Research Experience Component (REC/HSP)	Throughout term	3%
Final Exam	TBD	31%
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 five lab assignments 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% of your final grade. Each laboratory has three components:

(i) 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 will use for some assignments, 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 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 assignments will come from real research articles and real datasets. The datasets may be pared down so they are 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.

(ii) 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.

(iii) **Lab Assignment:** After each SPSS demonstration, the instructor will post a lab assignment for you to complete on your own time. 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 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 will apply (except in emergency circumstances).

Lab assignments must be completed independently. You are encouraged to meet with your teaching fellows 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.

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**.

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.

Grades

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 average grade in a 100- and 200-level Psychology courses are 72 for an exceptionally strong class, 70 for an average class, and 68 for a weak class, with a standard deviation of 14. Scaling may be used in order to comply with these norms; grades may be scaled up or down as necessary by the professor or department.

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		

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.

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.

Academic Misconduct
Cheating on exams will result in a score of 0 for that exam. Lab assignments must be completed 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 cheating will be reported to the university for appropriate action.

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. First, the Department uses software that can reliably detect cheating on multiple-choice exams by analyzing the patterns of students' responses. In addition, the Department subscribes to *Turnitin*, a service designed to detect and deter plagiarism. All materials (e.g., papers, lab assignments) that students submit for grading may be scanned and compared to over five billion pages of content located on the Internet or in *Turnitin*'s own proprietary databases. The results of these comparisons are compiled into customized "Originality Reports" containing several, sensitive measures of plagiarism; instructors receive copies of these reports for students in their class.

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).

Unless explicitly authorized by the instructor, use of generative AI (e.g., Chat GPT, OpenAI) for lab assignments is not permitted and will be considered academic misconduct.

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.

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.**

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.

- Guidance for online classes: https://keeplearning.ubc.ca/
- 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/
- COVID-19 health guidance: https://covid19.ubc.ca/health-guidance/
- Mental health support: https://students.ubc.ca/covid19/mental-health-during-covid-19-outbreak
- 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

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 Schedule

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

Week	Dates	Tuesday *[readings]*	Thursday *[readings]*	Lab
1	July 2, 4	Introduction, Math review, Measurement, Frequencies *[Syllabus, Ch. 1, Ch. 2, Ch. 3]*	Central Tendency & Variability, begin Normal Curve *[Ch. 4]* SPSS demo #1	💻 Qualtrics survey due **July 4 (11:59pm)**
2	July 9, 11	Normal curve & z-scores *[Ch. 5]*	Correlation *[Ch. 6]*	**Lab 1 Assignment due July 11**
3	July 16, 18	**Midterm 1** (Chap 1-5) Regression *[Ch. 7]*	Regression, Probability *[Ch. 7, Ch. 8]* SPSS demo #2	
4	July 23, 25	Binomial Distribution, Hypothesis Testing *[Ch. 9, Ch. 10]*	Sign Test, Power SPSS demo #3 *[Ch. 11]*	**Lab 2 Assignment due July 25**
5	July 30 Aug 1	**Midterm 2** (Chap 6-9) Sampling distributions, z-tests *[Ch. 12]*	z-tests, Single sample t-tests *[Ch. 12, Ch. 13]* SPSS demo #4	**Lab 3 Assignment due Aug 1**
6	Aug 6, 8	Dependent samples t-tests, Independent samples t-tests *[Ch. 14]* SPSS demo #5	ANOVA *[Ch. 15]*	**Lab 4 Assignment due Aug 8** **Lab 5 Assignment due Aug 16 *(after classes end)***
Final Exam *(cumulative, during final exam period [Aug 13 – Aug 17] 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 Aug 13 through Aug 17. 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.