PSYC 218 901 Analysis of Behavioural Data

Wednesdays
5:00pm-8:00pm
Web-Oriented Class

Instructor

Dr. Grace Truong
Office location: Kenny 3104
Office hours: Thursdays, 4:30-5:30pm
Email: gracet@psych.ubc.ca
Grace in ≤ 25 words: BC born and raised; all degrees from UBC; studies ownership + attention; likes hiking, food, board games, and oceans; dislikes bad drivers and heat waves

Teaching Assistants (TAs)

Johanna Mickelson
Office hours: Mondays, 5:30pm-6:30pm
Email: johanna.mickelson@ubc.ca

TA in ≤ 25 words: Psychology Student. Research interests are client change processes and crisis intervention. I love baking, volleyball, and football. My unnecessary party trick is singing like snow white.

Halina Deptuck
Office hours: Mondays, 10:00am-11:00am
Email: halinad@student.ubc.ca

TA in ≤ 25 words: I'm a second year MA Counselling Psychology student studying crisis counsellor helping processes. My favourite hobbies are paddle boarding, skiing, and spending time with friends.

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 Jan 21 2022, or before Mar 4 2022 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). 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.

(2) **COGLAB**. Francis, G., and Neath, I. (2007). *CogLab Online Version 5.0 With Access Code*. An access code for CogLab Online 5.0 is available from the bookstore packaged with your Pagano text or as a standalone purchase. register on CogLab, please follow the instructions on the course website in folder called "Laboratories" module.

(3a) **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.

(3b) **SPSS Statistics version 27 or 28**. Available for free download from www.ubc.onthehub.com.

(4) *Top Hat account.* *[free]* Please follow the instructions on Canvas for joining the course.

(5) **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 9	21%
Midterm 2	Mar 16	21%
Assignments (4% x 6)	Throughout term	24%
In class participation (Top Hat)	Throughout term	4%
Research Experience Component (REC/HSP)	Throughout term	3%
Final Exam	TBD	27%
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 formatted as Canvas quizzes. We will not be using Proctorio or Respondus Lockdown during exams. 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 six 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 CogLab or Survey: Prior to completing each lab assignment, you must complete a short CogLab experiment (for lab assignments 1, 3, 4, 5, and 6) or survey (for lab assignment 2) on your own time. The CogLab experiments and survey each require 10-20 minutes to complete. The purpose of the CogLab experiments and survey is to have you generate the data that you will summarize/analyze in your lab assignments. The hope is that you will gain a deeper understanding of data analysis by being involved in the experiments and survey, making the analyses more relevant and meaningful to you.

The due dates and times for completing the CogLab experiments and survey are listed at the end of the syllabus. However, these due dates may change, and it is your responsibility to come to class and/or monitor Canvas for any announced changes. *You will lose 1/4 (25%) of your assignment grade (i.e., 1% of your final course grade) for each CogLab experiment or survey that you do not complete by the due date and time.* You will not be able to make up marks lost because of your failure to complete a CogLab experiment or survey on time.

> **How to complete the CogLab experiments (for lab assignments 1, 3, 4, 5, and 6):** You will complete all CogLab experiments by using the CogLab account that you will set up on the CogLab 5.0 website at coglab.cengage.com. To get instructions for setting up your CogLab account and for completing the CogLab experiments, follow the instructions described in "Getting started with CogLab" which can be found in the Laboratories folder on Canvas. Note that you are required to complete *only* the CogLab experiments by the due dates and times listed at the end of the syllabus; you are *not* required to answer any questions in the CogLab manual written by Francis and Heath.
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> **How to complete the survey (for lab assignment 2):** Follow the link given in the document "Instructions for completing the Qualtrics Survey" which can be found in the Laboratories folder on Canvas.

(ii) Student Guide to SPSS and In-class SPSS Demonstration: After completing each CogLab experiment or survey, 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 in-class demonstration of some of the functions of SPSS required for each lab assignment.

(iii) Lab Assignment: After each in-class SPSS demonstration, the instructor will post a lab assignment for you to complete on your own time. All assignments will be posted in a folder called "Laboratories" on Canvas. The assignments will require you to analyze the data your class has generated in the CogLab experiments and survey. 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 or use another student's work. 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 spend a total of three hours participating in psychology studies. Each hour of participation is worth 1% of your final grade. You can locate and sign up for studies by going to the Department of Psychology's Human Subject Pool (HSP) system at *https://ubc-psych.sona-systems.com*. Details about 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."

Please note that any inquiries about credits should be directed to HSP or the experimenters that you worked with, *not* the instructor. One percentage point is assigned to your final grade for each hour of participation. Credits can be recorded and tracked via the subject credit website. These credits are added to your grade at the end of the course. If you do not correctly assign your credits to this course, you will NOT receive credit so please make sure you have done this correctly.

As an alternative to participating in studies, you may choose to complete library writing projects, in which you read and summarize a research article; each article summary counts as one hour of research participation. For each summary, you must select a research article (not a letter to the editor, commentary, or review paper) published between 2000 and the present in the journal *Psychological Science*. Each summary should be about 500 words and should describe the research question, methods, and results of the study presented in the article. Complete instructions on how to complete the library-writing projects can be found on p.4 ("The Library Option") of the guide at https://psych.ubc.ca/undergraduate/opportunities/human-subject-pool/ in the document entitled "Subject Pool Information for Participants." You must adhere to the complete instructions detailed in the guide to receive your credits.

The HSP system closes on the last day of classes. This will be your final day to earn research participation credits, and the final day to assign credits to this course.

Course Policies

Course Structure
Lectures will be delivered in person during regularly scheduled class time and livestreamed. 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. 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 67 for an exceptionally strong class, 65 for an average class, and 63 for a weak class, with a standard deviation of 14. <u>Please note these averages have been raised by 5% (relative to previous years) to reflect the unique circumstances of this academic year.</u> 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. 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.

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 clicker to answer questions for him or her is also considered cheating. If you are caught with more than one clicker in class, both clickers will be confiscated and 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).

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.

Course Schedule

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

Week	Dates	Topic *[readings]*	Lab
1	Jan 12	Introduction, Math review, Measurement, Frequencies *[Syllabus, Ch. 1, Ch. 2, Ch. 3]*	
2	Jan 19	Central Tendency & Variability, begin Normal Curve *[Ch. 4]*	💻 CogLab "Stroop" due Jan 19
3	Jan 26	Normal curve & z-scores, begin Correlation *[Ch. 5]* SPSS demo #1	💻 Qualtrics survey due Jan 26
4	Feb 2	Correlation *[Ch. 6]* SPSS demo #2	**Lab 1 Assignment due Feb 2**
5	Feb 9	**Midterm 1** (Chapters 1-5) Regression *[Ch. 7]*	💻 CogLab "Memory Span" due Feb 9
6	Feb 16	Regression, Probability *[Ch. 7, Ch. 8]* SPSS demo #3	**Lab 2 Assignment due Feb 16**
7	Feb 23	*Reading Break* *No classes*	
8	Mar 2	Binomial Distribution, Hypothesis Testing *[Ch. 9, Ch. 10]*	💻 CogLab "Change Detection" due Mar 2 **Lab 3 Assignment due Mar 2**
9	Mar 9	Sign Test, Power (time permitting: Confidence Intervals) *[Ch. 10, Ch. 11]* SPSS demo #4	💻 CogLab "False Memory" due Mar 9
10	Mar 16	**Midterm 2** (Chapters 6-9) Sampling distributions; z-tests *[Ch. 12]*	💻 CogLab "Risky Decisions" due Mar 16

11	Mar 23	z-tests; Single sample t-tests *[Ch. 12, Ch. 13]*	**Lab 4 Assignment due Mar 23**
12	Mar 30	Dependent samples t-tests; Independent samples t-tests *[Ch. 14]* SPSS demo #5	
13	Apr 6	ANOVA *[Ch. 15]* SPSS demo #6	**Lab 5 Assignment due Apr 6**
14	Apr 13	No classes	**Lab 6 Assignment due Apr 13**
Final Exam *(cumulative, during final exam period [Apr 12 – Apr 27] TBD by registrar)*			