

# PSYC 218 901

## Analysis of Behavioural Data

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

### Instructor



#### **Dr. Grace Truong**

**Office location:** Kenny 3104

**Office hours:** Fridays, 3:30pm-4:30pm

**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

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### Teaching Assistants (TAs)

#### **Brandon Tomm**

**Office hours:** Thursdays, 11:00am-12:00pm

**Email:** brandon.tomm@psych.ubc.ca

#### **TA in ≤ 25 words:**

Brandon Tomm is a PhD student studying cognitive science.



#### **Rachel Lai**

**Office hours:** Tuesdays, 6:00pm-7:00pm

**Email:** rachel.lai@ubc.ca

#### **TA in ≤ 25 words:**

Ex-psychology student now studying public health; interested in spinal cord injury and early childhood development research. Likes running, hiking, skiing and all things outdoors!



### 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 22 2021, or before Mar 12 2020 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).

## **Pandemic Changes**

Given the COVID-19 pandemic state, the University of British Columbia has directed all UBC programs to postpone or redesign courses to be delivered online (COVID-19 – Status of summer terms, UBC Broadcast March 25, 2020). As a result, this course has been redesigned to be delivered online.

### **Course Structure**

Lectures will be delivered "live" via Zoom during regularly scheduled class time. These live 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.

# 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 version 26.** Available for free download from [www.ubc.onthehub.com](http://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 10	20%
Midterm 2	Mar 17	20%
Assignments (4% x 6)	Throughout term	24%
In class participation (Top Hat)	Throughout term	3%
Research Experience Component (REC/HSP)	Throughout term	3%
Final Exam	TBD	30%
<b>Total</b>		<b>100%</b>

# 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](http://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.

**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. For students who miss lecture, there is a Top Hat makeup assignment available. (See Canvas for more details.)

Participation will be graded in the following manner:

<b>If you respond to the majority of questions in...</b>	<b>You will receive...</b>
90-100% of all classes with Top Hat questions	3%
80-89% of all classes with Top Hat questions	2.5%
70-79% of all classes with Top Hat questions	2%
60-69% of all classes with Top Hat questions	1.5%
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**

### ***In the (Virtual) Classroom***

Your behaviour in the classroom reflects on you as a person and student. Treat your instructors, fellow classmates, and anyone else that might be a part of our class with respect. This means being courteous and respectful when asking questions or making comments during class, and not monopolizing a discussion or question period.

### **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. Please note these averages have been raised by 5% (relative to previous years) to reflect the unique circumstances of this academic year. 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.

<u>Letter Grade</u>	<u>Percent</u>	<u>Letter Grade</u>	<u>Percent</u>
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		

### 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**

### **The Kaleidoscope:**

*the-kaleidoscope.com*

A confidential peer-run mental health support group that takes place on campus at least once a week. You may attend the group if you are experiencing any kind of mental health related challenges, or if you're just feeling stressed about school in general. Registration is not required to attend the group. See the website for meeting times and locations. Food and drink are provided.

### **Counselling Services:**

*students.ubc.ca/livewell/services/counselling-services*

Phone number: 604-822-3811

Counselling services offers a variety of resources to help you maintain your mental health while in school. You may see a counsellor on an individual basis, attend group counselling, or to document an illness if you should require academic concession.

### **SpeakEasy:** *ams.ubc.ca/services/speakeasy/*

Phone number: 604-822-9246

A student run service that offers confidential support for students experiencing crisis. Also a good resource for additional information and referrals within the UBC community.

**SHARE:** [www.vivreshare.org](http://www.vivreshare.org)

Self Harm Anonymous Recovery and Education is a program designed to promote self care and educate about self harm. SHARE support groups meet biweekly; times and locations can be found on their website.

**UBC Wellness Centre:** [students.ubc.ca/livewell/services/wellness-centre](http://students.ubc.ca/livewell/services/wellness-centre)

Phone number: 604-822-8450

Speak with other students about tips for managing stress, keeping healthy sleep and eating patterns, concerns about safe sex and more.

**Access and Diversity:** [students.ubc.ca/about/access](http://students.ubc.ca/about/access)

604-822-5844

Access and Diversity provides accommodations for students living with physical or mental disabilities.

**Student Health Services:** [students.ubc.ca/livewell/services/student-health-service](http://students.ubc.ca/livewell/services/student-health-service)

604- 822-7011

Student health provides students with a variety of healthcare related services to help you maintain your health while studying. Access to doctors and registered nurses.

**Mood Disorders Clinic UBC:** [ubc-mooddisorders.vch.ca/](http://ubc-mooddisorders.vch.ca/)

A psychiatric program designed specifically to treat individuals living with depression or bipolar disorder.

**Live Well, Learn Well:** [students.ubc.ca/livewelllearnwell](http://students.ubc.ca/livewelllearnwell)

The Live Well, Learn Well initiative is a resource hub that provides students with information to help improve physical and mental wellbeing.

**Mental Health Awareness Club:** [ubcmhac.sites.olt.ubc.ca/](http://ubcmhac.sites.olt.ubc.ca/)

A club that offers opportunities to speak about mental health with others and strives to promote mental health awareness throughout the UBC community.

**Pacific Spirit Addiction Services:**

3rd Floor, 2110 West 43rd Ave Vancouver B.C. V6M 2E1

Phone number: 604-267-3970

A free and confidential service for youth and young adults up to the age of 24. Services include counselling, access to an addiction physician - including usage of a methadone maintenance program - and a drug education series.

**Distress Line:**

Phone number: 1-800-Suicide (784-2433)

If you are in distress or are worried about someone in distress who may hurt themselves, call 1-800-SUICIDE 24 hours a day to connect to a BC crisis line, without a wait or busy signal.

**AMS Food Bank:** [ams.ubc.ca/services/food-bank/](http://ams.ubc.ca/services/food-bank/)

If you are in a financial emergency AMS food bank can provide you with a food hamper. You are able to use the service up to 6 times each term.

**UBC Psychology Clinic:** [clinic.psych.ubc.ca](http://clinic.psych.ubc.ca)

Professional psychological services provided to the community, including assessment & treatment for children, adults & families by clinical psychology trainees.






**BC Crisis Center:** *crisiscentre.bc.ca*

Phone number: 604-872-3311

Non-profit, volunteer-driven organization that provides emotional support to youth, adults, and seniors in crisis in BC. Crisis line available 24/7.

## Course Schedule

 symbol = online activity (completed outside of class time)

Week	Date	In-Class Topic ( <i>Readings</i> )	Activities & Assignments
1	W Jan 13	Introduction, Math review, Measurement, Frequencies <i>Ch. 1, 2, 3</i>	Syllabus
2	W Jan 20	Central Tendency & Variability <i>Ch. 4</i>	 CogLab “Stroop” due
3	W Jan 27	Normal curve & z-scores <i>Ch. 5</i>	SPSS demo #1  Qualtrics survey due
4	W Feb 3	Correlation <i>Ch. 6</i>	<b>Lab 1 Assignment due</b> SPSS demo #2
5	W Feb 10	<b>Midterm 1</b> (Chapters 1-5); Regression <i>Ch. 7</i>	 CogLab “Memory Span” due
	Feb 17	<b>READING BREAK</b>	No class
6	W Feb 24	Regression; Probability <i>Ch. 7, Ch. 8</i>	<b>Lab 2 Assignment due</b> SPSS demo #3  CogLab “Change Detection” due
7	W Mar 3	Binomial Distribution; Hypothesis Testing <i>Ch. 9, Ch. 10</i>	<b>Lab 3 Assignment due</b>  CogLab “False Memory” due
8	W Mar 10	Sign Test; Power (time permitting: Confidence Intervals)	SPSS demo #4

<i>Ch. 10, Ch. 11</i>			
9	W Mar 17	<b>Midterm 2</b> (Chapters 6-9); Sampling distributions; z-tests <i>Ch. 12</i>	CogLab “Risky Decisions” due
10	W Mar 24	z-tests; Single sample t-tests <i>Ch. 12, Ch. 13</i>	<b>Lab 4 Assignment due</b>
11	W Mar 31	Dependent samples t-tests; Independent samples t-tests <i>Ch. 14</i>	SPSS demo #5
12	W Apr 7	ANOVA <i>Ch. 15</i>	SPSS demo #6 <b>Lab 5 Assignment due</b>
13	W Apr 14	<i>Review/Special Topics</i>	<b>Lab 6 Assignment due</b>
<b>Final Exam</b> (cumulative, during final exam period, see note below)			

*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 18 to April 29. Saturdays and Sunday are included in the final exam period. 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.

### Acknowledgements

UBC Vancouver’s Point Grey Campus is situated on the traditional, ancestral, and unceded territory of the [Musqueam people](#).

### Statement regarding online learning for international students

During this pandemic, the shift to online learning has greatly altered teaching and studying at UBC, including changes to health and safety considerations. Keep in mind that some UBC courses might cover topics that are censored or considered illegal by non-Canadian governments. This may include, but is not limited to, human rights, representative government, defamation, obscenity, gender or sexuality, and historical or current geopolitical controversies. If you are a student living abroad, you will be subject to the laws of your local jurisdiction, and your local authorities might limit your access to course material or take punitive action against you. UBC is strongly committed to academic freedom, but has no control over foreign authorities (please visit

<http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,33,86,0> for an articulation of the values of the University conveyed in the Senate Statement on Academic Freedom). Thus, we recognize that students will have legitimate reason to exercise caution in studying certain subjects. If you have concerns regarding your personal situation, consider postponing taking a course with manifest risks, until you are back on campus or reach out to your academic advisor to find substitute courses. For further information and support, please visit: <http://academic.ubc.ca/support-resources/freedom-expression>.