

**Analysis of Behavioural Data**  
**PSYC 218, Section 005**  
**Winter Term 2, 2020-2021**  
**MWF 14:00 – 14:50, online**

**Instructor**



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## Course Description

Statistics are tools that researchers in psychology and other disciplines use to gain insight into human behavior, that is, how and why people do what they do. This course introduces statistics as a tool for the analysis of quantitative data. We will cover descriptive statistics (how to look for patterns in a large data set), basic principles of probability, and will introduce inferential statistics (how to test hypotheses and draw conclusions from data). Learning about these topics will help you understand others' claims about data, as well as design, conduct, and analyze data from your own scientific research projects.

## Learning Goals

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

- Distinguish between descriptive and inferential statistics
- Calculate by hand a variety of statistics commonly used in psychology (such as means, variance, correlation, regression, z-scores, t-tests)
- Identify the relationships among major statistical concepts: alpha, confidence intervals, effect size, power, variability, sample size.
- Choose and apply the appropriate statistic to analyze a dataset, when provided with a study design and a researcher's purpose.
- Generate a conclusion for a research hypothesis based on the analysis of data.
- Recognize the logic underlying the statistical analyses and evaluate others' interpretations of statistical analyses.
- Appreciate the value of developing statistical literacy.

## Course Prerequisites

PSYC 217 and a declared major in Psychology, Cognitive Systems, or Speech Sciences.

This course 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* (10<sup>th</sup> Edition). Available at the UBC bookstore, bundled with Francis & Neath CogLab (item 2). Alternately, an e-book version of this textbook is available for rental online (go to [www.vitalsource.com](http://www.vitalsource.com) and enter ISBN 1111837260). E-book, looseleaf version, or hardback 10th Edition are all fine. See more details [here](#).
2. **COGLAB.** Francis, G., and Neath, I. (2007). CogLab Online Version 5.0 With Access Code (4<sup>th</sup> Edition). Access code for CogLab Online 5.0 is included with the hardcopy of Pagano textbook, or can be purchased separately from the UBC bookstore. To register on CogLab, please follow the [instructions](#).
3. **SPSS GUIDE.** Cuttler, C. (2020). *A Student Guide to SPSS, including SPSS Student Version 22*. (3d Edition). Available at the UBC bookstore as e-book or hardcopy.
4. **SPSS version 26** is available for free download from [www.ubc.onthehub.com](http://www.ubc.onthehub.com).
5. **Top Hat account.** [free] Please follow the [instructions](#) on Canvas for connecting the account to the course.
6. **Scientific calculator.** You will need a basic scientific calculator, hardware or software.

## Course Website

Lectures will be delivered “live” via Zoom during regularly scheduled class time. These live lectures will be recorded and published on UBC Canvas after each class.

Lecture slides, assignments, and grades will be available through UBC Canvas. Lecture slides will be posted one hour before the class in the [Modules](#) section. You are also welcome to use the [discussion board](#) at the Canvas course page to clarify a difficult topic, arrange to share notes for missed classes, etc.

## Learning appraisals

### At a Glance

<b><i>Learning Appraisal Activity</i></b>	<b><i>Date</i></b>	<b><i>Percent of Total Grade</i></b>
Midterm 1	Feb 12, 2021	20%
Midterm 2	March 19, 2021	20%
Assignments (4% x 6)	Throughout term	24%
In class participation	Throughout term	3%
Research Experience Component	Throughout term	3%
Final Exam	TBD	30%
<b>Total</b>		<b>100%</b>

*See last page of the Syllabus for detailed course schedule*

### Learning Appraisal Descriptions

#### **Examinations**

The midterms and the final exam will consist of multiple choice questions, short answer questions, and computational questions. 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.

The final exam will be longer than the midterm exams and will be cumulative.

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.

#### **Assignments (6 x 4%)**

Six lab assignments spread across the term will give you practical experience analyzing data using SPSS and reporting the results. Each lab assignment has three components. Consult the Course Schedule on the last page of this syllabus and due dates set in Canvas. It is possible these dates could change. You are responsible for coming to class, checking Canvas, and finding out about any changes.

**(1) CogLab or Survey.** You will be asked to spend 10-30 minutes completing an online experiment or survey. This step will allow us to generate a dataset the class will use for the assignment, and will help you develop a deeper understanding of data analysis and

interpretation because you have experienced the study as a participant. *These are always due on Mondays at the start of class. Check the Course Schedule for specific dates.*

***You will lose . (25%) of your assignment grade (i.e., 1% of your final course grade) for each CogLab or Survey you do not complete by the due date and time.*** You will not be able to make up lost marks because of failure to complete a component on time. **See Canvas for links to the CogLab experiments and survey.**

**(2) Student Guide to SPSS and In-Class SPSS Labs.** It is important to read the appropriate chapter(s) for each lab assignment in Cuttler's *A Student Guide to SPSS (3d edition)*, to be announced on Canvas and in class. These chapters provide detailed information about how to perform all the SPSS functions you will need for the assignments, including screen shots from SPSS. Six times during the term, class time will involve hands-on demonstrations of how to use SPSS for the upcoming assignment.

**(3) Lab Assignment.** After each in-class SPSS demonstration, I will post an assignment for you to complete on your own time. All assignments will be posted on [Canvas](#). The assignments will require you to analyze and interpret the data from one of the CogLab or Surveys our class has generated. You will have 1 week to complete each assignment. Check the Course Schedule for specific due dates. Submission is online, through Canvas, as a Word .docx or .pdf file.

***You will lose 1/8 (12.5%) of your assignment grade (i.e., 0.5% of your final course grade) for each day your assignment is late. Late assignments will not be accepted after 7 days.***

Lab assignments must be completed independently. You are encouraged to meet with your Teaching Fellows during their office hours if you require assistance with the assignments. You may also use the discussion boards on Canvas to discuss with your Teaching Fellows and peers any issues you encounter while completing the assignments. Although you may ask 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.*

### **In Class 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. Participation will be taken from January 25, 2021, till the last class, April 14 (only classes **with** polls and questions will be counted).

Two alternative forms of in-class participation will be available:

1. For **live lectures** attendees I will aim to incorporate several multiple-choice questions into each lecture. The answers will be collected through Top Hat or zoom polls.
2. If you **miss a lecture** (or answer less than 50% of the questions during a lecture), you can submit written answers to at least 3 practice questions from the relevant chapter of Pagano textbook. Practice questions relevant for each class will be announced at the end of the class (and will be included in the last slide). These submissions will not be graded for accuracy, and they will be accepted until **April 18, 2021**. Notice that, just like with other assignments, *you may not share these with other students or use another student's work.*

**How to submit:** Make sure to include your student number in the name of the file and upload the file to [Canvas, Assignments, Alternative to in class participation](#).

For both in-class and in-class alternative, participation will be graded in the following manner:

If you respond to the majority of questions in...	You will receive...
90-100% of all classes with clicker questions	3%
80-89% of all classes with clicker questions	2.5%
70-79% of all classes with clicker questions	2%
60-69% of all classes with clicker questions	1.5%
50-59% of all classes with clicker questions	1%
0-49% of all classes with clicker questions	0%

### ***Research experience component (3%)***

As part of this course, you will be asked to spend **three hours participating in psychology studies** through the Department of Psychology's Human Subject Pool (HSP) system. The REC is designed to help you learn more about psychology and how research is conducted by providing you with first-hand experience with psychological research. As **an alternative to participation in subject pool studies you may choose to fulfill the required REC by completing three library writing projects**, for which you read and summarize a research article; each article summary counts as one hour of research participation. Study sign-ups and details about the alternative assignment are posted on

<https://psych.ubc.ca/undergraduate/human-subject-pool/>

(see the *HSP Information for Participants* document). **The REC is worth 3% of your course grade: 1 hour of participation or 1 article summary = 1% x 3.**

## **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**

### **Treat others respectfully**

You are expected to treat all classmates, teammates, instructor, and Teaching Fellows, with respect in and out of the classroom, face-to-face and in writing (e.g., on email). This includes arriving on time and minimizing distractions for other students.

### **Missing exams**

*Course policy is that we do not give make-up midterms.* If you miss an exam for a medical reason, because of a UBC-sanctioned sport travel, or for a religious obligation, you must contact Dr. Dudarev **before the exam**. In case of an illness or an emergency, contact us as soon as possible. You might be required to apply to Arts Advising, and they might require documents to

support the reason you missed a midterm. *If you are excused from one of the midterms we will distribute that proportion of your grade across the other exams.*

**Presence at the Final Exam is mandatory.** If you absolutely must miss the final exam due to an extenuating circumstance like severe illness, you or your caregiver must submit the Arts Advising Online Concession Form<sup>1</sup>. If you have 3 or more exams scheduled to start and finish within a 24 hour period you may request to write the second exam on a different day. However, you must give the instructor of the second exam one month notice. If you miss an exam for any other reason (e.g., work commitments, 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.

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

### 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 very serious concerns of the University, and the Department of Psychology has taken steps to alleviate them. In the first place, the Department has implemented 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 (term papers, lab reports, etc.) that students submit for grading will be compared to over 5 billion

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<sup>1</sup> <https://students.arts.ubc.ca/advising/academic-performance/help-academic-concession/>



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 originality that flag instances of matching text suggesting possible plagiarism; instructors receive copies of these reports for every student in their classes. During exams, the instructor and invigilators reserve the right to move students in their seating arrangement with no explanation provided.

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. For details on pertinent University policies and procedures, please see Chapter 5 in the UBC Calendar (<http://students.ubc.ca/calendar>).

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.

### **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.

## **Resources at UBC**

### **UBC Academic Regulations**

Information about academic regulations, course withdrawal dates and credits can be found in the University Calendar at <http://www.calendar.ubc.ca/vancouver/>.

### **Academic Accommodations for Students with Disabilities**

Academic accommodations help students with a disability or ongoing medical condition overcome challenges that may affect their academic success. Academic accommodations are not determined by course instructors. However, your instructor may consult with Centre for Accessibility should the accommodations affect the essential learning outcomes of a course. For more information, see <https://students.ubc.ca/enrolment/academic-supports/academic-accommodations-disabilities>.

### **Time Management**

Plan your time wisely! See [assignmentcalculator.library.ubc.ca](http://assignmentcalculator.library.ubc.ca) for planning time to complete papers.

### **Learning Commons**

is UBC's online hub for study and research support. This interactive website provides you with a wealth of academic resources, from tutoring and workshops to study groups and online technology tools. It also offers plenty of information on a variety of academic topics, and links to nearly all of the academic resources offered at UBC. <http://learningcommons.ubc.ca>

### **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*

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*

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.

**Student Health Services:** *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/*

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

**Live Well, Learn Well:** *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/*

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.

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

**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.

## Course schedule

Week	Class Dates	Monday	Wednesday	Friday
1	January 11,13,15	Welcome to the course	Introduction (Chapter 1)	Statistics and Scientific method (Chapter 1)
2	January 18, 20, 22	Measurement (Chapter 2)	Frequencies (Chapter 3)	Measures of Central Tendency (Chapter 4)
3	January 25, 27, 29	Measures of Variability (Chapter 4) <b>CogLab “Stroop” due</b>	Normal curve, (Chapter 5)	Normal curve, z-scores (Chapter 5) <i>SPSS Demo (Lab 1)</i>
4	February 1, 3, 5	Z-scores (Chapter 5) <b>Qualtrics Survey due</b>	Correlation (Chapter 6)	Correlation continued (Chapter 6) <b>Assignment 1 due</b>
5	February 8, 10, 12	Correlation continued (Chapter 6) <i>SPSS Demo (Lab 2)</i>	Correlation continued (Chapter 6)	<b>Midterm (Chapters 1-5)</b>
	February 15-19	Spring Break		
6	February 22, 24, 26	Linear regression (Chapter 7) <b>CogLab “Memory Span” due</b> <b>Assignment 2 due</b>	Linear regression continued (Chapter 7)	Multiple regression (Chapter 7) <i>SPSS Demo (Lab 3)</i>
7	March 1, 3, 5	Probability (Chapter 8) <b>CogLab “Change Detection”</b>	Binomial distribution (Chapter 9)	Hypotheses testing (Chapter 10) <b>Assignment 3 due</b>
8	March 8, 10, 12	Sign test (Chapter 10) <i>SPSS Demo (Lab4)</i>	Sampling distributions (Chapter 12)	Z test (Chapter 12)
9	March 15, 17, 19	Z test (Chapter 12) <b>CogLab “False Memory” due</b> <b>Assignment 4 due</b>	Review	<b>Midterm (Chapters 6-10)</b>
10	March 22, 24, 26	Power (Chapter 11)	One sample t test (Chapter 13)	One-sample t test (Chapter 13) <i>SPSS Demo (Lab 5)</i>
11	Mar 29,31 Apr 2	Paired samples t test (Chapter 14) <b>CogLab “Risky Decisions”</b>	Independent samples t test (Chapter 14)	GOOD FRIDAY (no class)
12	April 5, 7, 9	EASTER MONDAY (no class)	<i>SPSS Demo (Lab 6)</i> Analysis of variance (Ch.15) <b>Assignment 5 due</b>	ANOVA continued (Chapter 15)
13	April 12, 14	ANOVA continued (Chapter 15)	Final review <b>Assignment 6 due</b>	-----

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 18th to April 29th**. Saturdays 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 a verifiable medical reason.