Instructor

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Teaching Fellows

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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 go 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* (10th 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 and enter ISBN 1111837260). The looseleaf version or hardback 10th Edition are both fine.

2. **COGLAB.** Francis, G., and Neath, I. (2007). CogLab Online Version 5.0 With Access Code (4th Edition). An access code for CogLab Online 5.0 is available from the bookstore packaged with your Pagano text. Or you can purchase access directly from the website (www.nelsonbrain.com/webapp/wcs/stores/servlet/en/micrositesca/UBC-PSYC218). To register on CogLab, please follow the instructions on the course website in folder called "Laboratories" under the "Modules" folder.

3. **SPSS GUIDE.** Cuttler, C. (2014). *A Student Guide to SPSS, including SPSS Student Version 22.* (2nd Edition). Available at the UBC bookstore. The book comes with an access code for a free download of SPSS 22, which is a software package that we will be using throughout the course. Please follow installation guide for SPSS on the course website in folder "Laboratories", under the "Modules" folder.

4. **i>Clicker.** Available at the UBC bookstore.

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. Graphing calculators are NOT permitted during exams.

Course Website
Lecture slides, assignments, and grades will be available through UBC Canvas. Lecture slides will be posted one hour before the class. 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

Learning Appraisal Activity	Date	Percent of Total Grade
Midterm 1	Feb 10, 2020	20%
Midterm 2	March 13, 2020	20%
Assignments (4% x 6)	Throughout term	24%
In class participation	Throughout term	3%
Research Experience Component	Throughout term	3%
Final Exam	TBD	30%
Total		**100%**

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 competing 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.*
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> ***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.**
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> **(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 (2nd 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. Five times during the term, class time will involve hands-on demonstrations of how to use SPSS for the upcoming assignment. Bring (or share) an SPSS-enabled computer.
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> **(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 on paper, at the class. If you cannot make it to the class, you can submit your assignment (typed or scanned) by email to **both** Aria and Brent.

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.*

iClicker 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. Please bring your clicker to every class; it is not possible to make up iClicker points if you are absent or if you forget your clicker.
Please be sure to register your i>clicker ID by clicking on "iClicker" on the sidebar of the course Canvas page. The instructor will aim to incorporate several clicker questions into each lecture.

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

Attendance
Please come to every class prepared to participate in your learning. Bring your iClicker device, paper and writing tools (in addition to a laptop, if you choose to bring one), and an open mind. *If you must miss class* you are responsible for obtaining missed notes and important announcements. You will not be able to regain participation points for missed classes.

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.

During exams
Every exam will require you to fill out a Scantron sheet in response to multiple choice questions, and therefore it is your responsibility to bring a pencil and eraser to every exam. You will not be allowed to write the exam if you are more than 30 minutes late, or if another student has already submitted his/her exam, if that occurs first. When time is called you must immediately stop writing, remain quiet and follow the instructions for submitting your exam. Failure to comply with any of these instructions will result in a '0' on your exam.

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[1]. 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

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[1] https://students.arts.ubc.ca/advising/academic-performance/help-academic-concession/

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. 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 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 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

Course schedule

Week	Class Dates	Monday	Wednesday	Friday
1	January 6, 8, 10	Introduction (Chapter 1)	Measurement (Chapter 2)	Frequencies (Chapter 3)
2	January 13, 15, 17	Measures of Central Tendency (Chapter 4)	Measures of Variability (Chapter 4)	Measures of central tendency and variability (Chapter 4)
3	January 20, 22, 24	Normal curve, z-scores (Chapter 5) **CogLab "Stroop" due**	Z-scores (Chapter 5) *SPSS Demo (Lab 1)*	Z-scores continued (Chapter 5)
4	January 27, 29, 31	Correlation (Chapter 6) **Qualtrics Survey due**	Correlation continued (Chapter 6) **Assignment 1 due**	Correlation continued (Chapter 6) *SPSS Demo (Lab 2)*
5	February 3, 5, 7	Linear regression (Chapter 7) **CogLab "Memory Span" due**	Linear regression (Chapter 7)	Multiple regression (Chapter 7) *SPSS Demo (Lab 3)* **Assignment 2 due**
6	February 10, 12, 14	**Midterm (Chapters 1-6)**	Probability (Chapter 8)	Probability continued (Chapter 8)
	February 17- 21	Spring Break		
7	February 24, 26, 28	Binomial distribution (Chapter 9) **Assignment 3 due, CogLab "Change Detection" due**	Hypotheses testing (Chapter 10)	Sign test (Chapter 10) *SPSS Demo (Lab4)*
8	March 2, 4, 6	Sampling distributions (Chapter 12)	Z test (Chapter 12)	Z test (Chapter 12) **Assignment 4 due**
9	March 9, 11, 13	Power (Chapter 11) **CogLab "False Memory" due**	Review	**Midterm (Chapters 7-10,12)**
10	March 16, 18, 20	One sample t test (Chapter 13)	*SPSS Demo (Lab 5)* Effect size for one-sample t test (Chapter 13)	Confidence intervals for one-sample t test (Chapter 13)
11	March 23, 25, 27	Paired samples t test (Chapter 14) **CogLab "Risky Decisions" due**	Independent samples t test (Chapter 14) **Assignment 5 due**	Two-sample t-test (review, Chapter 14) *SPSS Demo (Lab 6)*
12	March 30, April 1, 3	Analysis of variance (Chapter 15)	ANOVA continued (Chapter 15)	ANOVA continued (Chapter 15) **Assignment 6 due**
13	April 6, 8	ANOVA continued	Final review	----------

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 14th** 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.