Instructor   Prof **James T. Enns**   Email: jenns@psych.ubc.ca
                    Lectures in Henning 201

Labs   Buchanan
01 Fri 1-3 pm   B215 **Manlu Liu**   Email: manlu.liu@psych.ubc.ca
02 Fri 1-3 pm   B213 **Raymond MacNeil**   Email: raymond.macneil@psych.ubc.ca
03 Fri 3-5 pm   B313 **Lucas Palmer**   Email: lpalmer@psych.ubc.ca

Course Description
In this course you will become an informed consumer and user of statistical methods. This includes learning how to organize data, performing statistical procedures, planning experiments, and communicating your research in words and print. There are two distinct parts to the course. One deals with the nuts and bolts of statistical analysis and research design; this will be covered in Tuesday-Thursday lectures and the Pagano textbook. A second part deals with the computer-assisted analysis of data sets and the presentation of scientific information; this laboratory component runs in parallel to the lectures on Thursday. And to reflect this intensity, this course is worth 4 credits (not the usual 3). The Teaching Assistants are entirely responsible for setting and grading your assignments in this portion of the course. More details will be given in the introductory lab sessions.

Approach to Learning
Lectures cover basic statistical concepts and methods. There is much overlap with the textbook, but lecture material is presented from a somewhat different perspective, in order to give optimal opportunity for different learning styles. Lectures and assignments emphasize "active learning." You will be encouraged to ask "what if?" and "let's see how things look differently if we do them this way."

Requirements
Calculator It is your responsibility to bring one to each class and exam. It should have basic memory functions and square/square root functions. You will not be permitted to use devices with outside connectivity (i.e., phones).

Laptop/Tablet We will use some open-source software in class to illustrate ideas. https://www.jamovi.org/download.html Please download a version that works on your device and have it available in class. We will **not** access this software on tests.

Old-fashioned notebook Absolutely essential! In this class we will use paper, you will work on problems by hand on paper, you will create your own notes to be used in exams on paper, you will hand in responses on sheets of paper you tear out of your notebook. You will need paper!

Textbook Understanding Statistics (10th edition or earlier), by R. Pagano

Lab Assignments & Extra Practice
Pagano contains many end-of-chapter homework questions and answers to many of these questions can be found at back of text for quick corrective feedback. Selected portions of these homework

questions will form the basis of lab assignments, where you will learn how to use the R Language and Environment for Statistical Computing to assist you in the organization, visualization, and analysis of data. To participate in the lab activities and to complete the assignments, you will need to download both R and RStudio. This is opensource software, and therefore is available at no cost. Although the lab slides and handouts will cover the essentials of R programming and syntax required for the assignments, you may find it helpful to also consult the following open-source reference materials:

- Learning Statistics with R
- R for Data Science
- Hands-On Programming with R

Grading

Lecture Components

Quizzes (3 @ 15%)	45%
Final Exam	25%

Lab Components

Written Assignments (8 @ 2%)	16%
Lab Final Exam	14%

Missed Exam and Assignment Policy
Advance Notice is Key! For any absence you must notify me (jenns@psych.ubc.ca) or the Psychology Department office (822-2755) in advance of the deadline. If you show up AFTER a deadline, saying you were sick, you were caring for someone sick, you will receive no credit.

Academic Concession
Please consult the evolving UBC guidelines on academic concession and student self-declaration. http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,329,0,0#26573

UBC'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. 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. All graded work in this course, unless otherwise specified, is to be original work done independently by individuals. If you have any questions as to whether or not what you are doing is even a borderline case of academic misconduct, please consult your instructor. For details on University policies and procedures, please see Student Conduct and Discipline in the UBC Calendar www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,0,0

LECTURE SCHEDULE (Tue & Thurs 11-12:30)

Week	Chapter	Topic	Date
1	Pagano 3	Introduction, Frequency Distributions	Jan 10-12
2	Pagano 4	Central Tendency, Variability	Jan 17-19
3	Pagano 5	Standard Scores, Normal Distribution	Jan 24-26
4	Quiz 1	Tuesday	Jan 31-
	Pagano 6	Correlation	Feb 02
5	Pagano 7	Regression	Feb 07-09
6		Correlation / Regression	Feb 14-16
	----------------- READING BREAK Feb 20-24 -----------------		
7	Quiz 2	Tuesday	Feb 28-
	Pagano 10	Hypothesis Testing	Mar 02
8	Pagano 11	Statistical Power	Mar 07-09
9	Pagano 12	Sampling Distributions, z-test	Mar 14-16
10	Quiz 3	Tuesday	Mar 21-
	Pagano 13	t-test single sample	Mar 23
11	Pagano 14	t-test groups	Mar 28-30
12	Pagano 15	Analysis of variance	Apr 04-06
13	Pagano 16	Analysis of variance cont'd	Apr 11-13
	Final Exam		UBC Schedule TBA

LAB SCHEDULE (Friday 1-3 2x, 3-5 pm)

A total of eight (8) lab assignments + a final lab exam

Lab	Topic	Date
1	Intro to Data Management and R	Jan 13
2	Chaps 3-4 Freq Distributions, Averages & Variance	Jan 20
3	Chap 5 Standard Scores & Normal Distribution	Jan 27
	No Lab since Quiz 1 on Tuesday this week	Feb 03
4	Chaps 6-7 Correlation & Regression	Feb 10
	----------------- READING BREAK Feb 20-24 -----------------	
	No Lab since Quiz 2 on Tuesday this week	Mar 03
5	Chaps 10-11 Hypothesis Testing and Power	Mar 10
6	Chap 12 Sampling Distributions & z-test	Mar 17
	No lab since Quiz 3 on Tuesday this week	Mar 24
7 & 8	Chap 13-16 t-tests and ANOVA	Mar 31
	Final Lab Exam	TBA

* Expect the end of year grades to have a mean of 75% and a standard deviation of 11%.

** All grade appeals must be made in writing to the Instructor.