PSYO 372: RESEARCH METHODS & STATISTICS

2023/2024 Term 1
Lecture: Tuesdays & Thursdays 12:30-2pm (ART 210)
Lab: Wednesday 11am-2pm (ART 215)

Professor: Leanne ten Brinke, Ph.D.
Email: leanne.tenbrinke@ubc.ca
Pronouns: she/her
Office Hours: Tuesdays 2:30-3:30pm, starting September 10th, 2024
ART 318 and on Zoom
https://ubc.zoom.us/j/61068153240?pwd=Y1FETjhGOVJ0VUNIeGd6eDFQbHdnQT09
Meeting ID: 610 6815 3240
Passcode: 947443
If this time conflicts with your other commitments, please email me to set up an appointment.

Lab Instructor: William Spencer Murch, Ph.D.
Email: spencer@psych.ubc.ca
Pronouns: he/him

Teaching Assistants: Contact information can be found on Canvas.

Course Objectives

This course is designed to provide you with foundational skills and hands-on experience in conducting psychological science. Together, we will learn how to develop research questions and hypotheses, design research to test those predictions, identify and execute appropriate statistical analysis, and interpret results. We will also discuss the strengths and weaknesses of various research designs to determine what we can and cannot conclude from our results. Overall, this course will develop your practical skills in <u>creating and critiquing</u> psychological research.

Student Learning Outcomes

Designing research: Students will be able to design various research studies that test a single research question. Students will be able to assess the strengths and weaknesses of various research designs and come to appropriate conclusions based on the chosen design.

Analyzing data: As part of designing research, students will be able to design analysis plans to aid in testing confirmatory hypotheses. Specifically, students will learn to build statistical models to represent null and alternative hypotheses and compare those models in a null hypothesis significance testing framework. Students will be able to conduct these analyses in R and interpret outcomes.

Creating research: Students will be able to formulate a research question that builds on existing knowledge, design a study, analyze data, and interpret findings. Students will also be able to formulate suggestions about future research.

Scientific communication: Students will learn to prepare an APA style scientific manuscript describing their research question, design, analysis, results, and conclusions. This includes appropriate use of tables and figures. Students will learn to visualize data using ggplot2.

Materials

Textbook: You are required to purchase Publication Manual of the American Psychology Association, 7th Edition (ISBN: 978-1-4338-3217-8). This will be critical to your preparation of written assignments.

We will also complete readings from an online textbook: Learning Statistics with R. It can be downloaded here: https://learningstatisticswithr.com/lsr-0.6.pdf

Course web site: The website for this course is posted at canvas.ubc.ca. On the web site, you will find general announcements for the class, all documents for the course, readings and lecture slides, and descriptions of assignments. *Canvas will be essential to the course; please familiarize yourself with it.*

Course Policies

Readings: Assigned readings are indicated in the course schedule. The assigned readings provide foundational information. It is expected that all students will read the course readings prior to class and come prepared to connect the readings to the issue discussed that day.

Attendance: Your attendance is critical for your success in this course. This course will rely heavily on in-class demonstrations, activities, and discussions. Please be on time to class. If you are unable to come to class it is your responsibility to arrange to get copies of class notes from someone in the class for the day(s) that you missed class. Attendance is necessary to receive a good participation grade.

Participation and Attitude: In addition to attending class, students are expected to participate fully. This course is interactive and collaborative. You are expected to be engaged in class discussions and activities. Further, you need to bring a positive attitude to this course. Students can and will be removed from this class for having a negative attitude.

Missed/Late Assignments: Accommodations (i.e., assignment extensions) will not be given unless there is a valid reason for missing the assignment. Lack of planning, simultaneous assignments, or other conflicts do not qualify as valid reasons and instructors are not required to make allowance for any missed or incomplete assignment that is not satisfactorily accounted for. Please contact your instructor as soon as possible if you need to request an accommodation. In the occurrence of an unforeseen event (e.g. emergency hospitalization; illness; death in the family), you must contact me about the matter no longer than 24 hours after the assignment deadline. If ill health is an issue, students are encouraged to seek attention from a health professional. Campus Health and Counselling will normally provide documentation only to students who have been seen previously at these offices for treatment or counselling specific to conditions associated with their academic difficulties.

> **Late Assignments:** Assignment due dates are indicated on the course schedule. Writing assignments must be completed prior to the start of class to be considered on time. Extensions will not be given except in valid circumstances (described above). For every day that the assignment is late without a valid excuse, I will deduct 5 percentage points from your grade for that assignment. If a valid excuse is given, students will have 48 hours from the due date to submit the late assignment.

Students who feel that requests for consideration have not been dealt with fairly by their instructors may take their concerns first to the Head of the discipline, and if not resolved, to the Office of the Dean. Further information can be found at: http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,48,0,0.

Academic Integrity: The academic enterprise is founded on *honesty, civility, and integrity*. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. In this course, submitting material generated by ChatGPT and/or other AI tools as part of your written assignments is prohibited, and will be treated as academic misconduct.

Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President's Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

A more detailed description of academic integrity, including the University's policies and procedures, may be found in the Academic Calendar at http://okanagan.students.ubc.ca/calendar/index.cfm?tree=3,54,111,0.

Plagiarism: For this course, some of your assignments will be assessed for potential plagiarism by Turnitin.com. This service ensures academic integrity by scanning submitted papers for material copied from a variety of sources (including public websites, paper mills, essays/assignments previously submitted and published works, such as journals and books). For more information on the UBC policy regarding the Turnitin service, see the webpage at Turnitin | Teaching with Technology

Inclusive Learning Environments: In this class, we will work together to develop a learning community that is inclusive and respectful. Our diversity may be reflected by differences in race, culture, age, religion, sexual orientation, socioeconomic background, and myriad other social identities and life experiences. The goal of inclusiveness, in a diverse community, encourages and appreciates expressions of different ideas, opinions, and beliefs, so that conversations and interactions that could potentially be divisive turn instead into opportunities for intellectual and personal enrichment.

A dedication to inclusiveness requires respecting what others say, their right to say it, and the thoughtful consideration of others' communication. Both speaking up and listening are valuable tools for furthering thoughtful, enlightening dialogue. Respecting one another's individual differences is critical in transforming a collection of diverse individuals into an inclusive, collaborative and excellent learning community. Our core commitment shapes our core expectation for behavior inside and outside of the classroom.

Student Learning Hub: Improve your writing with free support from the Student Learning Hub—now online and flexible to meet your remote learning needs! Undergraduate students from every discipline, working on any type of written course assignment (or presentation), are welcome. They support writers at all stages of the writing process, from getting started and planning to drafting and revising. Peer writing consultants focus on your needs as a writer—they don't "edit" or "proofread." Instead, they listen, read, ask questions, and share strategies for doing it yourself, allowing you to explore your innate writing talents and discover a path to academic success that is uniquely yours. Don't wait—successful learners access support early and often. Visit students.ok.ubc.ca/hub or contact learning.hub@ubc.ca

UBC Okanagan Disability Resource Centre: The Disability Resource Centre ensures educational equity for students with disabilities and chronic medical conditions. If you are disabled, have an injury or illness and require academic accommodations to meet the course objectives, please contact Earllene Roberts, the Diversity Advisor for the Disability Resource Centre located in the University Centre building (UNC 214).
UNC 214 250.807.9263
email earllene.roberts@ubc.ca

Assessment of Performance

Type of assessment: Winter 2020	% of grade
1.) Participation	10%
2.) Statistics Worksheets	15%
3.) Introduction Section	15%
4.) Methods Section	5%
5.) Final Paper	25%
6.) Lab Components (see lab outline for details)	30%

1. Participation: Students will be expected to participate fully in class activities and discussion. Further, students are expected to bring a positive and inclusive attitude to class and group work. Half of this grade (i.e., 5% of the overall grade) will be determined based on (anonymous) feedback from group members on your involvement, attitude, and performance in the group project.

2.) Statistics Worksheets: Groups will submit statistics worksheets on most weeks that we cover a new statistical test. One worksheet will be submitted per group. A total of 6 worksheets will be submitted. The lowest grade will be dropped. Of the remaining worksheets, each will be worth 3% of the final grade for a total of 15%. All students in the group will share the grade, so work together!

3.) Introduction Section: Students will write an APA-style introduction to their research paper which lays out relevant published research and the rationale for their group's research question. This assignment will be completed independently.

4.) Methods Section: Groups will complete an APA-style Methods section that will describe the participants, stimuli, and procedure used to produce data by Sprigings et al. (2023). One Methods section will be submitted per group. All students in the group will share the grade, so work together!

5.) Final Paper: Students will submit a complete APA-style, incorporating feedback from their previous Introduction and Methods section assignments. This assignment will also include a Results section and a Discussion of the strengths/limitations of the research and future directions. This assignment will be completed independently.

6.) Lab Components: A substantial portion of your grade will come from assignments in the statistics lab. The lab is an additional three-hour component of this course—it is a VERY IMPORTANT part of this class. Refer to your lab outline for additional details on assignments and quizzes.

Additional Notes About Grades: Final grades will be based on the evaluations listed above and the final grade will be assigned according to the standardized grading system outlined in the UBC Okanagan Calendar.

Please note I do not "round up" final grades. It is policy in this course that final grades cannot be adjusted (through extra assignments or otherwise) in order to achieve a passing mark, higher letter grade etc. In order to maintain fairness within this course, requests for additional assignments as well as requests to round or "bump up" final grades will be denied.

Barber School reserves the right to scale grades in order to maintain equity among sections and conformity to University, faculty, department, or the school norms. Students should therefore note that an unofficial grade given by an instructor might be changed by the faculty, department, or school (http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,90,1014).

TOPICS, READINGS, AND ASSIGNMENTS

<u>Items on this syllabus are subject to change.</u> Research doesn't always go as planned and we will update the schedule accordingly. Changes will be announced in class and on Canvas. It is your responsibility to keep up to date on assignment due dates, as well as changes in the syllabus.

Date	Topic	Questions to be addressed	Reading	Work Due
Sept 3	Getting Started	Who are you and what are we doing here?		
Sept 4	No lab quite yet.			
Sept 5	Research Methods: A Refresher	What kinds of research designs do we use in psychology? Benefits and drawbacks.		
Sept 10	Statistics: A Refresher	How do you identify appropriate statistical tests for your design/data? Introduction to a useful flow-chart.		
Sept 11	Lab	Introduction to R I		
Sept 12	A Deception Primer	An introduction to human deception and deception detection.	Sprigings, Brown, & ten Brinke (2023)	
Sept 17	Brainstorm	Brainstorm: Identify your research question.		
Sept 18	Lab	Introduction to R II		
Sept 19	Literature Search	How to search the scientific literature.		
Sept 24	Introduction I	Create an outline for your Introduction.		
Sept 25	Lab	Data Cleaning and Visualization		
Sept 26	Introduction II	More tips for writing an introduction.		
Oct 1	Ethics	Should, or shouldn't, we do certain research?	Loftus & Pickrell (1995)	
Oct 2	Lab	Lab Quiz #1		
Oct 3	Methods	What goes in a Methods section? Committing to clarity and transparency through preregistration.	Nosek et al. (2020)	
Oct 8	Research Design I	Studying categorical outcomes: chi-square.	Learning Stats with R (pp. 351-371); Rogers & Milkman (2016)	Introduction Section
Oct 9	Lab	Frequency tables, chi squared test, and the odds ratio		
Oct 10	Research Design II	Studying frequencies: one-sample t-tests.	Learning Stats with R (pp. 379-389); Lloyd et al. (2018)	One-Sample t-test Worksheet

Oct 15	Research Design III	Simple within-subjects designs: paired samples t-test.	Learning Stats with R (pp. 398-404; 410-415); Mehr, Song, & Spelke (2016)	Paired-samples t-test Worksheet
Oct 16	Lab	t-Tests: Single, paired, and independent samples		
Oct 17	Research Design IV	Simple between-groups designs: independent samples t-test.	Learning Stats with R (pp. 389-400); Schroeder & Epley (2015)	Methods Section Independent-samples t-test Worksheet
Oct 22	Research Design V	Research designs with a single continuous predictor.	Learning Stats with R (pp. 139-149); Dawtry, Sutton, & Sibley (2015)	Correlation Worksheet
Oct 23	Lab	Linear Regression: t-Tests computed as regression, continuous independent variables, and model assumptions		
Oct 24	Looking to the Future	Graduate school and beyond.		
Oct 29	Research Design VI	Designs with more than two groups: ANOVA.	Learning Stats with R (pp. 425-432, 437-444, 446-450); Bastian, Jetten, & Ferris (2014)	ANOVA Worksheet
Oct 30	Lab	Linear Regression: Correlation, and dichotomous dependent variables		
Oct 31	Research Design VII	Studying interactions: Factorial ANOVA.		
Nov 5	Research Design VIII	Studying interactions: Factorial ANOVA.	Learning Stats with R (pp. 497-518); Wiggin, Reimann, & Jian (2019)	Factorial ANOVA Worksheet
Nov 6	Lab	ANOVA		
Nov 7	Data Analysis Plan	How are you going to test your hypothesis?		
Nov 12	Midterm Break – No lecture.			
Nov 13	Midterm Break – No lab.			
Nov 14	Midterm Break – No lecture.			
Nov 19	Data Analysis & Interpretation	What do your findings mean?		
Nov 20	Lab	Factorial ANOVA		
Nov 21	Discussion	What goes in a Discussion? Create an outline.		
Nov 26	Writing Workshop	Get help with writing your final paper.		

Nov 27	Lab	Revision Q&A, and special topics lecture		
Nov 28	Abstract	The shortest section, and often the hardest to write! Until you have this formula.		
Dec 3	Loose Ends	All of the loose ends get tied up today.		
Dec 4	Lab	Lab Quiz # 2		
Dec 5	Publication	The inside scoop on publishing research.		
Dec 12	Final Paper Due			