

# PSYO 372: RESEARCH METHODS & STATISTICS

2020/2021 Term 1 – Online

Lecture: Mondays 5-6:30pm & Thursdays 1-2:30pm

Lab: Thursdays 2:30-5:30pm

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Professor: Leanne ten Brinke, Ph.D.  
Email: [leanne.tenbrinke@ubc.ca](mailto:leanne.tenbrinke@ubc.ca)  
Office Hours: Fridays 10-11am on Zoom (or by appointment)  
Preferred Pronouns: she/her/hers

TA (Lecture): Nina Gregoire  
Email: [nina.gregoire@ubc.ca](mailto:nina.gregoire@ubc.ca)  
Office Hours: Mondays 8:30-10am on Zoom  
(or by appointment)  
Preferred Pronouns: she/her/hers

TA (Lab): Zakary Draper  
Email: [zakary.draper@ubc.ca](mailto:zakary.draper@ubc.ca)  
Office Hours: TBD/by appointment  
Preferred Pronouns: he/him

TA (Lab): Rebecca Godard  
Email: [rjgodard@mail.ubc.ca](mailto:rjgodard@mail.ubc.ca)  
Office Hours: Mondays 1-2pm on Zoom  
Preferred Pronouns: she/her

## 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 creating and critiquing 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, 7<sup>th</sup> Edition (ISBN: 978-1-4338-3217-8). This will be critical to your preparation of written assignments.

**Course web site:** The website for this course is posted at [canvas.ubc.ca](https://canvas.ubc.ca). On the web site, you will find general announcements for the class, all documents for the course including this syllabus, readings and lecture slides, descriptions of assignments, and links to Zoom meetings. *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.

**Technology:** In order to engage fully with this course online, students are required to have a laptop or desktop computer and a stable Internet connection. Students are encouraged to check out this link: <https://keeplearning.ubc.ca/setting-up/>

We will rely heavily on technology to learn and interact during this class. There are many resources available to help you get the most out of your time on Canvas and Zoom. Here is one helpful resource, provided by UBC: <https://students.canvas.ubc.ca> A quick google search may also be helpful to resolve technical issues. We will have to be industrious when we run into roadblocks.

There are a number of supports on campus to assist students with technical issues as well. For example, see the Student Learning Hub's technical support website: <https://students.ok.ubc.ca/academic-success/learning-hub/tech-support-for-online-learning/>

**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.

**Avoiding Distractions:** The online environment is new for many of us and life may be unpredictable during this semester. I would ask that you try, to the extent possible, to find a quiet place to attend Zoom lectures and to minimize distractions around you. This will improve your learning and the learning of others in the class. We will be open and accepting of the challenges you and your classmates will face in these unusual times, but will strive to create a distraction-free lecture environment—just like we would if we were on campus.

**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 or Tests:** Accommodations (i.e., make-up tests; assignment extensions) will not be given unless there is a valid reason for missing the assignment or test. 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 test 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 missed test or 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.

**Missed Tests:** Students who miss a test must provide written documentation (i.e., doctor's note) of the absence to the instructor and must arrange to make up the test before the next scheduled class. Students who do not write the test by the next scheduled class will receive a grade of "0". If you do not have a valid reason for missing a test, you will also receive a "0".

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>.

**Technical Issues During Examinations:** As per UBC policy, all examinations must be completed during the scheduled course time. Out of fairness to all students, there are no exceptions to this policy. The instructor and/or TAs will be available during all examinations via Zoom should students encounter technical difficulties. For all examinations, it is the responsibility of the student to ensure that any technical issues are reported to the instructor immediately. If you cannot connect with the instructor, please document the issue or technical concern via a screenshot. This is the only circumstance in which it is appropriate to document (i.e., screenshot) exam material. Failing to report technical issues in a timely manner, may result in the issue not being resolved and may negatively impact your grade.

**A Note Regarding Online Learning:** 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>

**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. 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](http://students.ok.ubc.ca/hub) or contact [learning.hub@ubc.ca](mailto: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 Earlene Roberts, the Diversity Advisor for the Disability Resource Centre located in the University Centre building (UNC 214).

UNC 214 250.807.9263

email [earlene.roberts@ubc.ca](mailto:earlene.roberts@ubc.ca)

Web: [www.students.ok.ubc.ca/drc](http://www.students.ok.ubc.ca/drc)

## Assessment of Performance

Type of assessment: Winter 2020	% of grade
1.) Participation	10%
2.) Design Iteration Worksheets	15%
3.) Introduction Section	15%
4.) OSF Preregistration	10%
5.) Results & Discussion Sections	20%
6.) Lab Components (see lab outline for details)	30%

1. Participation: Students will be expected to participate fully in class activities and discussion and submit worksheets assigned during class. 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.) Design Iteration Worksheets: Groups will submit a worksheet that indicates how they would leverage a particular type of design to test their research question. One worksheet will be submitted per group. A total of 5 worksheets will be submitted; 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 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.) OSF Preregistration: Groups will complete an OSF Preregistration template that will lay out their research question, chosen method, and data analysis plan. One preregistration will be submitted per group. All students in the group will share the grade, so work together!

5.) Results and Discussion Section: Students will conduct analyses and submit a results section. This assignment will also include a discussion of the strengths/limitations of the research design and future directions. Writing the discussion section may require further literature searches of the topic. This assignment will be completed independently.

6.) Lab Components: A substantial portion of your grade will come from assignments in the statistics lab. Refer to your lab outline for additional details.

**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

Items on this syllabus are subject to change. 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 10	Research Methods: A Primer	Who are you and what are we doing here?		
Sept 14	Choosing Designs & Statistics	What is an appropriate research design and statistical test? Introduction to a useful flow-chart.		
Sept 17	Ethics	Should, or shouldn't, we do certain research?	Loftus & Pickrell (1995)	
Sept 21	Brainstorm I	Brainstorm: Identify a research area.		
Sept 24	Brainstorm II	Brainstorm: Identify your research question.		Research Question Worksheet
Sept 28	Literature Search	How to search the scientific literature.		Literature Search Worksheet
Oct 1	Research Design I	Studying categorical outcomes: chi-square.	Rogers & Milkman (2016)	
Oct 5	Reading Science	How do you read an article effectively?		
Oct 8	Research Design II	Studying frequencies: one-sample t-tests.	Lloyd, Summers, Hugenberg, & McConnell (2018)	
Oct 12	Introduction	Create an outline for your introduction.		
Oct 15	Research Design III	Simple between-groups designs: independent samples t-test.	Schroeder & Epley (2015)	
Oct 19	Preregistration I	Orienting to OSF preregistration: why and how.	Nosek et al. (2020)	Design Iteration: T-Test Due
Oct 22	Research Design IV	Research designs with a single continuous predictor.	Dawtry, Sutton, & Sibley (2015)	Introduction Section Due
Oct 26	Preregistration II	Completing OSF preregistration.		Design Iteration: Correlation Due
Oct 29	Research Design V	Research designs with multiple continuous predictors.	Tworek & Cimpian (2016)	
Nov 2	Looking to the Future	Graduate school and beyond.		Design Iteration: Regression Due

Nov 5	Research Design VI	Designs with more than two groups: ANOVA.	Bastian, Jetten, & Ferris (2014)	
Nov 9	Compare and Contrast	Choose your study design; justify that choice.		Design Iteration: ANOVA Due
Nov 12	Midterm Break			
Nov 16	Data Analysis Plan	What are you going to do with your data?		
Nov 19	Data Analysis I	Analyze your data (according to plan).		OSF Preregistration
Nov 23	Data Analysis II	Analyze your data (according to plan).		
Nov 26	Research Design VII	Studying interactions: Factorial ANOVA.	Wiggin, Reimann, & Jian (2019)	
Nov 30	Data Interpretation	What does your data mean?		Design Iteration: Factorial ANOVA Due
Dec 3	Loose Ends	All of the loose ends get tied up today.		
Dec 15	Final Paper (Results & Discussion Sections) Due			