



Land Acknowledgement

We respectfully acknowledge the Syilx Okanagan Nation and their peoples, in whose traditional, ancestral, unceded territory UBC Okanagan is situated.

PSYO 271: Introduction to Data Analysis

Irving K. Barber Faculty of Arts and Social Sciences: Psychology

Instructor: Tareq Yousef, PhD

Duration: Term 2 Winter 2022

Delivery Modality: In-Person

All Course Materials (including the [open educational resource](#) text) and Grades: <https://canvas.ubc.ca>

Course Location: SCI 333

Course Days: Wed/Fri

Class Hours: 12:30 PM - 2:00 PM

Office hours: Office hours in-person (ART 312) Tuesdays 10:00 AM - 12:00 PM or by email appointment.

Prior to sending emails to Dr. Yousef (tareq.yousef@ubc.ca), please check the course announcements on Canvas for relevant updates. *Please include '271' in the subject line.*

Teaching Assistants: see Canvas for details.

Course Description

Introduction to behavioural data analysis focusing on the use of inferential statistics in psychology and the conceptual interpretation of data as related to basic experimental designs (laboratory, field research methods). A required course for students majoring in Psychology. STAT 121 is recommended. Credits: 3. Pre-reqs: [PSYO 270](#). This course is restricted to students in one of these programs: BA-O, BSC-O with one of these specializations: MAJ PSYC.

Frequently Asked Questions

I am struggling with understanding content in the course. What can I do?

Make sure that you are completing the readings. **Check [Canvas](#)** for up-to-date supplementary materials and readings. Make use of the office hours and reach out to Dr. Yousef or our course TAs. We are here to help you succeed! It is felt strongly that time put into this course will equal benefits received.

I missed a reading quiz! What do I do?

The lowest 2 of 10 reading quiz marks will be dropped. See Page 7.

How do I study for the exam?

If you are familiar with readings and you can integrate this knowledge with the quiz questions and in class problems we go through, you will be successful. In total, it is expected that it may take approximately **5 hours a week to study for this course outside of class-time** (readings and review... this is like watching an episode of a TV show every day, just over 50 minutes a day per week!). Most importantly of all, **do lots of practice questions!** More information is available on Canvas.

I am going to miss an exam! What can I do?

Get in touch **prior to the exam date** to make alternate arrangements. 😊 See page 7.

Course Overview, Content, and Objectives

Leave your fear of math behind! In this course we will learn about the foundations and basic applications of statistics as it pertains to the study of the behavioural sciences. Mathematics is just a (powerful) tool to help us apply statistical knowledge. As you will see, this helps us with critical decision making, a necessary skill in any scientific field.

The textbook for this course was chosen for a few reasons. First, it is a recently written work. It was also written as a comprehensive introduction particularly for psychology students with care toward the American Psychological Association's guidelines for statistics. This means that if you continue in the field of psychology, this will be a great primer that will afford you the ability to communicate with your colleagues using common language. Maybe most importantly, the textbook is an open educational resource. This means that you can access the online version of this text for free.

The textbook comes with practice questions—you are encouraged to do all of these! Further, in class, we will go through many problem sets together. However, I encourage you to seek out other problem sets online. There are many! Sometimes, the notation (aka symbols) will be slightly different (e.g., mean is represented as M using APA notation and in our course text, but may be represented by \bar{x} in other places even though it means the same thing). Links for problem sets can be found on Canvas.

Assessment Methods
First exam (20%), February 15 (in-person)
Cumulative second exam (25%), March 22 (in-person)
Cumulative final exam (30%), Exam period (April 17 – 28) (in-person)
Reading quizzes (25%) (See course schedule for due dates. Submitted via Canvas)
Open educational resource (OER) assignment (2 bonus points available), Feb 17 and Apr 6 (Submitted via Canvas) OR Sona research participation (2 bonus points, with the written assignment option due at least 14 days before the end of term).

Learning Outcomes
Define and explain the relationships between major statistical concepts (e.g., alpha, power, effect size, sample size) (<i>assessed via examinations, quizzes, and open educational resources assignment</i>)
Carry out common statistical procedures and explain the theory underlying them (<i>assessed via examinations & quizzes</i>)
Differentiate between statistical tests to develop appropriate analysis strategies (<i>assessed via examinations and reading quizzes</i>)
Draw conclusions about scientific hypotheses by examining the results of statistical tests (<i>assessed via examinations and reading quizzes</i>)
Describe the usage of basic statistical methodology in scientific literature (<i>assessed via examinations and reading quizzes</i>)

A note on equity, diversity, and inclusion: Black people, Indigenous people, people of colour and various marginalized communities continue to face obstacles in the scientific world in the form of denial of access to equitable opportunities. Psychology and neuroscience are no exception. Of note is that psychology and neuroscience also have a history of misogyny, ableism, and anti-LGBTQIA2S+ discrimination.

Disaggregation of data by race, ethnicity, and other demographics is a complex issue that, when done equitably, allows for statistics to convey important information about systemic barriers. This course will be developed with these systemic barriers in mind. I will strive to provide safe and welcoming opportunities to learn about the science behind these issues and discuss equitable ways forward when appropriate. Let us make the world a better place to live!

Learning Materials

The textbook we will use for this course is available (free of charge) via the [University of Missouri-St. Louis Libraries website: https://irl.umsl.edu/oer/25](https://irl.umsl.edu/oer/25) where you can download a PDF copy of the book. A web version of the same text can be found at its [Pressbooks website: https://umsystem.pressbooks.pub/isps/](https://umsystem.pressbooks.pub/isps/)

Cote, Linda R.; Gordon, Rupa; Randell, Chrislyn E.; Schmitt, Judy; and Marvin, Helena, "Introduction to Statistics in the Psychological Sciences" (2021). Open Educational Resources Collection. 25. Available at: <https://irl.umsl.edu/oer/25>

You will need a simple calculator that can compute exponents (i.e., x^3) and square roots (i.e., \sqrt{x}). These are available in many shops and in the on-campus bookstore. **Cell phone calculators are not permitted during exams and you must bring your own calculator to all exams.**

Course Format

There will be **three (closed book) exams in this course (cumulative) worth 20%, 25%, and 30%**. These exams may consist of multiple choice, fill in the blank, true or false, matching, short answer, and long answer questions. Some questions may ask you to interpret or label diagrams. Exams will be cumulative, which means they will cover all the material covered in the course prior to the date of the exam. This does mean that previously tested content could be tested on again. This because statistical knowledge builds on itself in a very meaningful way. **Exams will not be reweighted.**

Ten reading quizzes, covering the required readings in the course schedule, will be administered. The lowest two marks will be dropped and each of the remaining 8 quizzes will be worth 3.125% each (total 25%). Reading quizzes are meant to be thought-provoking (slightly challenging), but not difficult, to help prepare you for the exams. Reading quizzes will be due at the end of the week in which they are noted in the Course Schedule. Though the readings are chosen because of their accessibility to these topics, it is understandable that it may take time to digest some of the topics and, possibly, to get used to the readings. Therefore, you are not expected to have done the readings prior to each class, but rather, **you should have the associated readings done prior to completing the scheduled reading quizzes. Please note that sometimes the quiz may be due prior to the end of the unit.**

2 bonus points (2% on top of your final course grade) are available for an Open Educational Resources assignment OR for Sona research participation.

For the **Open Educational Resources assignment**, you will be tasked with finding helpful, free-to-access, educational resources covering any of the units discussed in our course (see the course schedule below) and will provide a reflection on the utility of this resource for use in the course. Information is available on Canvas.

OR you can complete the following for (2%) Sona research participation. You cannot complete both the open educational resource assignments and the Sona research participation. Only grades from one will be accepted.

Research Participation In Online Research System (Option 1)

As a participant in one of the numerous research studies posted at <http://ubco.sona-systems.com/>, you will obtain 0.5% credit for each 0.5 hour of participation. Hence, studies requiring a 1-hour time commitment provides a credit of 1%, 1.5 hours provides a credit of 1.5%, and 2 hours provides a credit of 2.0%, etc.

Important Requirements

You may participate in more than one study in order to earn credits. It is important to sign up for studies early in the semester in order to increase the odds that a timeslot is available. If you wait until later in the semester, timeslots may no longer be available.

Logging On To The System

Sona is only open for those students who are registered in a psychology course offering Sona credit points. Please only use the request account option if you have never used the Sona system before. If you have used the Sona system before, please use the most recent login information you remember to log in.

Missed Appointments & Penalties

Missed appointments (i.e., failure to cancel the appointment at least 3 hours prior to the session) will be tracked. The consequence will be that you will not receive credit for participation in the study and you will be assigned an unexcused no-show. The unexcused no-show designation will cause you to lose the credit value of the study from the total possible credit points you can earn for your course. For example, if you are in PSYO 111 (or 121), you can earn up to 4.0 credits. If you miss an hour-long session that you signed up for (i.e., 1.0 credit) and don't cancel it in advance, the maximum credits that you can now earn for your course is 3.0, regardless of how many studies you complete.

If, after consenting to participate and starting a session (or survey), you decide to withdraw your consent, to avoid receiving an unexcused no-show on Sona, you must do one of the following:

- if it is an online study, you must cancel your Sona sign-up and/or contact Shirley (psyc.ubco.research@ubc.ca) if you are unable to cancel your sign-up;
- if it is an in-person study, you must let the researcher know directly. Their email can be found on the main description page for the study (little envelope icon). Depending upon the study, they will either cancel your session or assign you an excused no-show (meaning that you will not be penalized).

Your ability to withdraw your data will depend upon the study. Instructions for withdrawing your data (including limitations) will be described in the study's consent form.

Please email psyc.ubco.research@ubc.ca with any questions or concerns that you may have regarding the Sona system. Your professor or instructor does NOT have access to this information.

Research Summary Assignment (Option 2)

As an alternative to participating in research studies, you may obtain Sona credit points by completing library-writing projects to a satisfactory level. Each library-writing project is worth a total of two credits.

Important Requirements

1. This project consists of reading and summarizing (in written form) a recent, peer-reviewed, primary research article.

- A “recent” article has been published within the past 12 months.
- A “peer reviewed” article is one that has been reviewed by other scholars before it is accepted – for example, it **cannot** be a news item, an article from a popular magazine, a notice, or a letter to the editor.
- A “primary” research article describes an experiment or study where data are collected by the authors. In other words, the article you choose to review **cannot** be a book review, literature review, or summary article.

2. You must choose an article published by one of the following agencies:

- The American Psychological Society - *Psychological Science*, *Current Directions in Psychological Science*, *Psychological Science in the Public Interest*, or *Perspectives on Psychological Science*.
- The American Psychological Association - www.apa.org/journals/by_title.html has a full listing.
- The Canadian Psychological Association - *Canadian Psychology*, *Canadian Journal of Behavioural Science*, or *Canadian Journal of Experimental Psychology*.
- The Psychonomic Society - *Behavior Research Methods, Cognitive, Affective, & Behavioral Neuroscience*, *Learning & Behavior*, *Memory & Cognition*, *Perception & Psychophysics*, or *Psychonomic Bulletin & Review*.

3. Other Assignment Guidelines

The summary should be about 300-500 words in length. The source must be cited and referenced in accordance with the *Publication Manual of the American Psychological Association*. The review will be graded on a pass – fail basis (2% or 0%). At least **14 days before the end of classes** each term, submit the following to the course instructor via tareq.yousef@ubc.ca

- the article summary
- a copy of the article
- a cover page that specifies your name, student number, email address, and word count of the summary.
- the course title and number

Submitting the assignment 14 days in advance is necessary to ensure that you have an opportunity to make corrections, if required. If you do not check your email frequently, provide a phone number on the cover page.

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. The Barber School reserves the right to scale grades to maintain equity among sections and conformity to university, faculty, department, or the school norms.

Students should note that an unofficial grade given by an instructor might be changed by the faculty, department, or school. Learn more about this university policy [here](#).

Course schedule

Class Dates	Unit Topics	Readings (more info on Canvas)	Reading quiz due dates Fridays at 11:59 PM PST *Except certain dates
Jan 11, 13	Welcome, syllabus, & Introduction to statistics	Chapter 1	
Jan 18, 20	Describing data using distributions and graphs	Chapter 2	Quiz #1 (Chapter 1, Jan 20)
Jan 25, 27	Measures of central tendency and spread	Chapter 3	Quiz #2 (Chapter 2 & 3, Jan 27)
Feb 1, 3	z scores and the standard normal distribution	Chapter 4	Quiz #3 (Chapter 4, Feb 3)
Feb 8, 10	Probability	Chapter 5	Quiz #4 (Chapter 5, Feb 10)
Feb 15	Exam #1		
Feb 17	Sampling distributions	Chapter 6	Quiz #5 (Chapter 6) & OER Bonus Assignment #1 (Feb 17)
Feb 20 – 24	No classes		
Mar 1, Mar 3	Introduction to hypothesis testing	Chapter 7	Quiz #6 (Chapter 7, Mar 3)
Mar 8, 10	Introduction to t tests	Chapter 8	Quiz #7 (Chapter 8, Mar 10)
Mar 15, 17	Related samples & Independent samples	Chapter 9 Chapter 10	Quiz #8 (Chapter 9 & 10, Mar 17)
Mar 22	Cumulative Exam #2		
Mar 24 Mar 29, 31	Analysis of variance	Chapter 11	Quiz #9 (Chapter 11, Mar 31)
Apr 5	Correlations	Chapter 12	Quiz #10 (Chapter 12) & OER Bonus Assignment #2 (Apr 6*)
Apr 7, 10	No classes		
Apr 12	Linear regression	Chapter 13	
Apr 17 – 28	Cumulative Final – Exam Period – Exam date TBD		

Please note that slight changes to the schedule may occur throughout the semester. Flex time is built into the course to allow us to extend some sections.

Reading quizzes will be released approximately 1-week prior to the deadline.

Late Policy

Reading quizzes will receive a “0” if not submitted by the due date. The lowest two reading quiz marks will be dropped.

OER assignments can be handed in at any point during the term. Late assignments will not be accepted and will receive a “0”.

Missed exam policy

Students who miss an examination must provide written documentation (i.e., doctor’s note) of the absence to their instructor and must arrange to make up the exam before the next scheduled class. **Arrangements must be made at least 24 hours prior to the next scheduled class.** Students who do not write the exam by the next scheduled class will receive a “0” for the exam unless other arrangements have been made with the instructor.

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. 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 [here](#).

It is the responsibility of the student to stay up to date with the course content and to monitor Canvas for important announcements. A discussion board will be enabled on Canvas to allow students to communicate with fellow classmates and the instructor.

Missed Activity Policy

Quizzes will receive a “0” if not submitted by the due date. The lowest two reading quiz marks will be dropped.

OER assignments can be handed in at any point during the term. Late assignments will not be accepted and will receive a “0”.

Passing/Grading Criteria

Your final grade will be determined based on UBC grading practices. 90–100 A+, 85–89 A, 80–84 A-, 76–79 B+, 72–75 B, 68–71 B-, 64–67 C+, 60–63 C, 55–59 C-, 50–54 D. 0–49 Fail

Other Course Policies

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 usually result in a failing grade or mark of zero on the assignment or in the course.** Careful records are kept to monitor and prevent recidivism.

A more detailed description of academic integrity, including the University's policies and procedures, may be found in the Academic Calendar at:

<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,54,111,0>

Final Examinations

You can find the [Senate-approved term and examination dates here](#). Except in the case of examination clashes and hardships (three or more formal examinations scheduled within a 27-hour period) or unforeseen events, students will be permitted to apply for out-of-time final examinations only if they are representing the University, the province, or the country in a competition or performance; serving in the Canadian military; observing a religious rite; working to support themselves or their family; or caring for a family member. Unforeseen events include (but may not be limited to) the following: ill health or other personal challenges that arise during a term and changes in the requirements of an ongoing job.

Further information on Academic Concession can be found under Policies and Regulation in the Okanagan Academic Calendar <http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,48,0,0>

Grading Practices

Faculties, departments, and schools reserve the right to scale grades in order to maintain equity among sections and conformity to University, faculty, department, or school norms. Students should therefore note that an unofficial grade given by an instructor might be changed by the faculty, department, or school. Grades are not official until they appear on a student's academic record.

<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,90,1014>

Student Service Resources: Below are common resources that are available to you:

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 Manager for the Disability Resource Centre located in the University Centre building (UNC 215).

UNC 215 250.807.8053

email: drc.questions@ubc.ca

Web: <http://www.students.ok.ubc.ca/academic-success/disability-resources/>

UBC Okanagan Equity and Inclusion Office

Through leadership, vision, and collaborative action, the Equity & Inclusion Office (EIO) develops action strategies in support of efforts to embed equity and inclusion in the daily operations across the campus. The EIO provides education and training from cultivating respectful, inclusive spaces and communities to understanding unconscious/implicit bias and its operation within in campus environments. UBC Policy 3 prohibits discrimination and harassment on the basis of BC's Human Rights Code. If you require assistance related to an issue of equity, educational programs, discrimination or harassment please contact the EIO.

UNC 325H 250.807.9291

email: equity.ubco@ubc.ca

Web: www.equity.ok.ubc.ca

Health and Wellness

At UBC Okanagan health services to students are provided by Student Wellness. Nurses, physicians and counsellors provide health care and counselling related to physical health, emotional/mental health and sexual/reproductive health concerns. As well, health promotion, education and research activities are provided to the campus community. If you require assistance with your health, please contact Student Wellness for more information or to book an appointment.

UNC 337 250.807.9270

email: healthwellness.okanagan@ubc.ca

Web: www.students.ok.ubc.ca/health-wellness

Office of the Ombudsperson

The Office of the Ombudsperson for Students is an independent, confidential and impartial resource to ensure students are treated fairly. The Ombuds Office helps students navigate campus-related fairness concerns. They work with UBC community members individually and at the systemic level to ensure students are treated fairly and can learn, work and live in a fair, equitable and respectful environment. Ombuds helps students gain clarity on UBC policies and procedures, explore options, identify next steps, recommend resources, plan strategies and receive objective feedback to promote constructive problem solving. If you require assistance, please feel free to reach out for more information or to arrange an appointment.

UNC 328 250.807.9818

email: ombuds.office.ok@ubc.ca

Web: www.ombudsoffice.ubc.ca

Student Learning Hub

The Student Learning Hub is your go-to resource for free math, science, writing, and language learning support. The Hub welcomes undergraduate students from all disciplines and year levels to access a range of supports that include **tutoring in math, sciences, languages, and writing, as well as help with study skills and learning strategies.**

LIB 237 250.807.8491

email: learning.hub@ubc.ca

Web: <http://www.students.ok.ubc.ca/academic-success/learning-hub/>

The Global Engagement Office

The Global Engagement Office provides advising and resources to assist International students in navigating immigration, health insurance, and settlement matters, as well as opportunities for intercultural learning, and resources for Go Global experiences available to all UBC Okanagan students, and more.

Come and see us – we are here to help! You may also contact geo.ubco@ubc.ca

Safewalk

*Don't want to walk alone at night? Not too sure how to get somewhere on campus? Call Safewalk at **250-807-8076.***

For more information, see: www.security.ok.ubc.ca

Sexual Violence Prevention and Response Office (SVPRO)

A safe and confidential place for UBC students, staff, and faculty who have experienced sexual violence regardless of when or where it took place. Just want to talk? We are here to listen and help you explore your options. We can help you find a safe place to stay, explain your reporting options (UBC or police), accompany you to the hospital, or support you with academic accommodations. You have the right to choose what happens next. We support your decision, whatever you decide.

Visit svpro.ok.ubc.ca or call 250.807.9640.

Independent Investigations Office (IIO)

If you or someone you know has experienced sexual assault or some other form of sexual misconduct by a UBC community member and you want the Independent Investigations Office (IIO) at UBC to investigate, please contact the IIO. Investigations are conducted in a trauma informed, confidential, and respectful manner in accordance with the principles of procedural fairness.

You can report your experience directly to the IIO via email: director.of.investigations@ubc.ca or by calling 604.827.2060 or online by visiting investigationsoffice.ubc.ca

The UBC Emergency First Response Team (EFRT)

The UBC EFRT is a group of volunteer student responders who shift 24/7 to provide emergency medical first-aid services at the UBC Okanagan campus. The organization is run alongside security and supports the campus community on a day-to-day basis as well as at various campus activities and events. Our responders can be on scene within minutes and can be called through Campus Security's emergency line at [250-807-8111](tel:250-807-8111) in case of any emergency.

To learn more about who we are, how we recruit new responders, and stay up to date, follow us on Instagram or Facebook @ubcefrt. Need medical support at your event? Check out our website at <https://efrt.ok.ubc.ca/>, or email us any further questions at ubcefrt@gmail.com

© Copyright Statement

All materials of this course (course handouts, lecture slides, assessments, course readings, etc.) are the intellectual property of the Course Instructor or licensed to be used in this course by the copyright owner. Redistribution of these materials by any means without permission of the copyright holder(s) constitutes a breach of copyright and may lead to academic discipline.