PSYO 372 Lab L01
Research Methods and Statistics (Lab)
(Credits as part of PSYO 372 001)

Location: ART 215
Time: Tuesdays, 11:00am

Instructor: Dr. William Spencer Murch
Office Hours: Online, and by-appointment (email me to set a meeting)
Email: spencer@psych.ubc.ca

Hello, I'm Spencer! I am a cognitive psychologist from Vancouver. When I'm not teaching, I work as a postdoctoral fellow at Concordia University. My research works to develop artificial intelligence models that use online gambling behaviours to connect people at-risk for experiencing addiction with relevant social services.

Please contact us when you have questions.

We're here to help!

Teaching Assistant: Carlie Unrau
Email: carlie.unrau@ubc.ca
Online Office Hours: Thursdays at 11am
Office Link:
https://ubc.zoom.us/j/66850191640?pwd=OEkzWDZmL3daVjluL1M2aFlqM3BIUT09

Land Acknowledgment

As a learning community, we come together from all over the world. I would like to respectfully acknowledge the Syilx Okanagan Nation and their peoples, in whose traditional, ancestral, and unceded territory UBC Okanagan is situated.

If you live in Kelowna – like I do – then you also enjoy the privileges of living, working, and playing in Syilx Okanagan territory. I would like to encourage you to reflect on the history of this region and the self-reliant economic, social, and environmental systems that were developed and maintained here for thousands of years prior to colonization.

Regardless of where you find yourself, I would also like to encourage you to learn more about contributions made by the traditional owners and caretakers of the land or territory where you live. As you reflect on our collective human history, I ask you to please renew your personal commitment to treating others with dignity, honesty, and compassion.

Course Description

This laboratory will provide you with a detailed introduction to several research methodologies and statistical techniques in the field of Psychology. In this lab, you will get hands-on experience with one of the most commonly-used statistical analysis software packages in our field, R.

By the end of this course, you will Develop practical skills for statistical analysis and scientific writing. Specifically, you will:

1. Become familiar with the foundations of statistical programming using the coding language R, and its affiliated development software RStudio (to be renamed "Posit" in October 2022).
2. Learn to conduct statistical analyses using R and RStudio / Posit.
3. Learn to create practical interpretations of statistical results using real data.
4. Develop skills for transforming statistical outputs into APA-formatted reports.

Throughout this course, please remember:

1. Programming in R is a challenging task, but it doesn't need to be scary! We do not expect you to master the topic this semester. Just try your best.
2. If you work to keep up with the homework, and ask for help when you get stuck, you will be in a great position to succeed in this lab.

Syllabus Contents

Course Material

Readings

Your instructors have done their best to make sure that this course relies on *open source* materials. This means that every assigned reading, and every piece of software you will use, is free. All readings listed on this syllabus document are also *optional*. The readings listed on my Lab Schedule below are intended to provide additional examples for the readings and lecture material from the Lecture portion of this class taught by Dr. ten Brinke. The readings listed on the syllabus that Dr. ten Brinke gave you are *required*, and will be crucial to your success in this course.

Software

This course uses **R**, a programming language for statistical computing. R is (and will always be) free and can be downloaded here: https://cran.r-project.org/

To make life easier for ourselves, we will always run R inside of an *Integrated Development Environment* (IDE) called **RStudio** (to be renamed "Posit" in October 2022). RStudio can be downloaded here: https://www.rstudio.com/products/rstudio/download/ (make sure to select "RStudio Desktop)

For Chromebook / iPad users: I understand that R and RStudio are not available in the Apple, Microsoft, or Android app stores. In order to run RStudio on these devices, I would recommend making a free account at https://rstudio.cloud/ . This will allow you to create and work on R projects inside of your favourite web browser.

Don't worry! We will spend time setting up R and RStudio during our first class.

Portable Computer

A huge part of this lab will involve working through exercises and troubleshooting problems as a class (in fact, I can promise you that programming in R is at least 75% troubleshooting!). If you have access to one, I would like to recommend that you bring a portable computer (e.g., a laptop) to each scheduled lab. This will allow you to easily pick up wherever we left off once the lab is over.

If you do not have access to a portable computer, that's ok too! We are fortunate enough to have each lab scheduled in the Arts Computer Lab, meaning that you can still follow along with the group by logging onto one of the 40 desktop computers in the room! From there, you can always save your progress and email it to yourself for completion at a later time.

If you do not have consistent at-home access to a computer, tablet, or Chromebook, please send me (spencer@psych.ubc.ca) an email so we can find a solution.

Course Assessments

Lab Component	% of PSYO 372 Grade
Regular homework assignments (Top 4 of 6)	5% each (20% total)
Lab Quiz #1	4%
Lab Quiz #2	6%

Regular homework assignments (20% total)

The first few weeks of this lab will work towards building foundational skills for using R and RStudio. Once we start dealing with specific statistical tests like t-tests and ANOVA, I will begin assigning short, weekly homework assignments. This will help me to find any gaps or issues in my teaching, so that we can stay on course as a team. It will also give you a chance to demonstrate your effort in the lab for a portion of your final PSYO 372 grade.

Starting October 11th, Weekly homework will **become available at 11am on Tuesdays** (the start of our class), and will **be due at 11am the following Tuesday**. You will be able to access the homework assignments through your course Canvas page.

In each homework assignment, I may ask you to perform a statistical procedure using R, provide a description or interpretation of some results, or think critically about some analysis that has been conducted. The goal is to provide you with the tools and skills to work effectively and think critically using statistics.

Good news! I will only count your top four out of six homework assignments. In other words, your homework grade will come from your four best performances during the term. This means that you can skip two assignments altogether without earning a penalty against your final grade.

Lab Quizzes (10% total)

Twice during the course, we will set aside a full 3 hours of class time to work on a lab quiz. The first quiz will focus on foundational skills for managing data and creating visualizations, and the second quiz will take a broader look at all the material we worked on in the lab. You can expect that I will ask you to create an R script from scratch, conduct some kind of analysis, and answer some questions relating to your code and analyses. We do not intend for these quizzes to take the full 3 hours, but we provide lots of time so that everyone has a fair chance to demonstrate their learning.

At the end of the quiz, I will ask you to upload your answers and the code you created to our course Canvas page, where I can review your work.

These quizzes are **open book**, **open notes**, and **open internet**, **but you may not consult or work in teams with your classmates**. This will help to maintain a quiet and respectful testing environment, and will closely replicate the everyday situation where psychologists need to figure out how to do an analysis but do not have a friend or expert standing-by to help.

Course Policies

Accessibility

In accordance with the BC Human Rights Code and UBC Policy LR7, I am committed to making sure that every student has a fair chance at success in this course. The Disability Resource Centre (DRC) facilitates a wide range of accommodations for students with disabilities and ongoing medical conditions. If something is creating a barrier between you and our course content, I encourage you to register with the DRC so that we can explore ways to make the course more accessible for you. Please note that the DRC requires students to make any accommodation requests at least 7 days before any test, and 7 days before the start of the formal exam period in April.

For more information, contact Earllene Roberts – Diversity Advisor for the Disability Resource Centre, University Centre building room #214. Phone: 250-807-9263 Email: earllene.roberts@ubc.ca

Copyright Disclaimer

Diagrams and figures included in lecture presentations adhere to Copyright Guidelines for UBC Faculty, Staff and Students and UBC Fair Dealing Requirements for Faculty and Staff. Some of these figures and images are subject to copyright and will not be posted to Canvas. All material uploaded to Canvas are used with permission of the publisher; are in the public domain; are licensed by Creative Commons; meet the permitted terms of use of UBC's library license agreements for electronic items; and/or adhere to the UBC Fair Dealing Requirements for Faculty and Staff. Access to the Canvas course site is limited to students currently registered in this course. **Under no circumstance are students permitted to provide any other person with means to access this material**. Anyone violating these restrictions may be subject to legal action. Permission to electronically record any course materials must be granted by the instructor. Distribution of this material to a third party is forbidden.

Missing Homework and Quizzes

Sometimes, an acute illness or serious life event makes us unable to sit an exam or submit an assignment on time. UBC has introduced a compassionate policy for navigating these events. If you have an illness or serious life event that will prevent you from completing an exam or assignment on time, please fill out the form found on this webpage and email it to me (Spencer Murch, spencer@psych.ubc.ca) as soon as possible. This declaration does not exempt you from any exam or assignment. I will contact you to arrange a make-up exam or assignment.

Further information on Academic Concession can be found under Policies and Regulation in the Okanagan Academic Calendar.

Grading

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.

Percent Grade	Letter Grade
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	F

Reviewing Assessments

Please email me (spencer@psych.ubc.ca) to discuss any points of concern of clarification for either the lab quizzes or homework assignments.

Academic Honesty and Academic Misconduct

All UBC students are expected to behave as honest and responsible members of an academic community. While I neither want nor expect cheating or plagiarism to occur, I am prepared to take appropriate actions to ensure that all students receive the grades they have earned. Whenever you turn in an assignment or exam in this course, you can expect that I will use the best-available tools and procedures to discourage and discover academic misconduct.

All suspected cases of academic misconduct will be investigated. When the university determines that academic misconduct has occurred, the work in question is typically granted zero credit (0%). Pursuant to the Section 61 of the University Act, UBC's president has the right to impose additional penalties including a failing grade for the course, and suspension from the university.

Students are responsible for informing themselves of the applicable standards for academic honesty. All of the following activities count as academic misconduct:

♦ Plagiarism, defined as any time a student submits work done by another person.
♦ Collusion, defined as working with others to give or receive help on assessments.
♦ Submitting the same assignment to multiple classes ("self-plagiarism").
♦ Asking someone else to complete an assessment on your behalf.
♦ Completing an assessment on someone else's behalf.
♦ Searching for assessment answers on "study guide" websites.
♦ Publishing assessment answer keys to "study guide" websites.

Your instructors know that Psychology is a highly collaborative field. We encourage you to work together to understand the course material as a team. However, we expect that every graded assessment (i.e., every homework assignment and unit quiz) in this lab will be *completed independently.* In other words, although we encourage you to work together to understand the material, you must complete the homework assignments and lab quizzes **by yourself**. If you are unsure about whether a particular action constitutes academic misconduct, you must contact an instructor or teaching assistant as soon as possible.

Helpful Resources

UBC Student Learning Hub

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.

In Person: LIB room #237

Phone: 250-807-9185

Online: https://students.ok.ubc.ca/student-learning-hub/

UBC Okanagan Equity and Inclusion Office

UBC Okanagan is a place where every student, staff and faculty member should be able to study and work in an environment that is free from discrimination and harassment. UBC prohibits discrimination and harassment on the basis of the following grounds: age, ancestry, colour, family status, marital status, physical or mental disability, place of origin, political belief, race, religion, sex, sexual orientation, or unrelated criminal conviction. If you require assistance related to an issue of equity, discrimination, or harassment, or to get involved in human rights work on campus, please contact the Equity and Inclusion Office.

In Person: UNC room #216

Phone: 250-807-9291

Email: equity.ubco@ubc.ca

Online: https://equity.ok.ubc.ca/

UBC Health & Wellness

At UBC Okanagan health services to students are provided by Health and 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 Health and Wellness for more information or to book an appointment.

In Person: UNC room #337

Phone: 250-807-9270

Email: healthwellness.okanagan@ubc.ca

Online: https://students.ok.ubc.ca/health-wellness/

Office of the Ombudsperson for Students

The Office of the Ombudsperson for Students offers independent, impartial, and confidential support to students in navigating UBC policies, processes, and resources, as well as guidance in resolving concerns related to fairness.

Email: ombuds.office@ubc.ca

Online: https://ombudsoffice.ubc.ca/

Safewalk

Don't want to walk alone at night? Not too sure how to get somewhere on campus? For more information, contact Safewalk.

Phone: 250-807-8076

Online: 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? SVPRO is here to listen and help you explore your options. They 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. SVPRO supports your decision, whatever you decide.

Phone: 250-807-9640

Online: https://svpro.ok.ubc.ca/

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 them. 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.

Email: director.of.investigations@ubc.ca

Phone: 604-827-2060

Online: https://io.ubc.ca/

Lab Schedule

NOTE: the **Optional Readings** column is updated weekly. Please check Canvas for the current draft.

Week of…	Optional Readings	Lab Topics	Quizzes / Homework
Part I			
Sept. 6	*FIRST WEEK OF CLASSES - NO LAB*		
Sept. 13	**Hands-On Programming with R:** APPENDIX A, Sections 2.1–2.3, 3.2 [LINK]	-Introduction to R: Part I	
Sept. 20	**Hands-On Programming with R:** Sections 2.5–2.7, 3.1, 5.8–5.10 [LINK]	-Introduction to R: Part II	
Sept 27	**Hands-On Programming with R:** Section 3.2 [LINK] **R for Data Science:** Section 3 [LINK]	-Data Visualization	
Oct. 4			**Lab Quiz #1**
Part II			
Oct. 11	**Cookbook for R:** Section 't-tests' [LINK]	-Single-sample t-Test	
Oct. 18	**Cookbook for R:** Section 't-tests' [LINK]	-Paired-samples t-Test	Homework #1 due at 11am
Oct. 25	**Cookbook for R:** Section 't-tests' [LINK]	-Independent-samples t-Test	Homework #2 due at 11am
Nov. 1		-Correlation	Homework #3 due at 11am
Nov. 8	MIDTERM BREAK – NO LAB		
Part III			
Nov. 15		-One-way ANOVA	Homework #4 due at 11am
Nov. 22		-Factorial ANOVA -Last lecture vote	Homework #5 due at 11am
Nov. 29		-Q&A and Revision -Emerging Topics in Statistics for Psychology (voted-on by you)	Homework #6 due at 11am
Dec. 6			**Lab Quiz #2**

Potential topics for our last lecture (to be voted-on by the class):

- *Bootstrapping: A powerful tool for parametric analyses*
- *Bayesian statistics: An alternative for hypothesis testing*
- *Getting Started with Machine Learning for Scientists*