UNIVERSITY OF ALBERTA

PSYCH 213: Introduction to Data Analysis in Psychology I
B2 — Winter 2025

Instructor Information

   Name: Dr. Jeffrey M. Pisklak (he/him)
   Office: BS-P535
   Email: pisklak@ualberta.ca
   Office Hours: Fridays 11:00 - 12:00 (in person)

Class Information

   Class Dates: Jan 6 - April 9
   Lecture Days and Times: Tuesday and Thursday at 15:30 - 16:50
   Classroom: CCIS 1-160
   Course Website: https://jpisklak.github.io/courses/PSYCH_213/index.html

Teaching Assistant

   Teaching Assistant: Tamari Shalamberidze
   Email: shalambe@ualberta.ca

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1   Territorial Acknowledgement

The University of Alberta respectfully acknowledges that we are situated on Treaty 6 territory, traditional lands of First Nations and Métis people.

   The University of Alberta acknowledges that we are located on Treaty 6 territory, and respects the histories, languages, and cultures of First Nations, Métis, Inuit, and all First Peoples of Canada, whose presence continues to enrich our vibrant community.

   The University of Alberta respectfully acknowledges that we are located on Treaty 6 territory, a traditional gathering place for diverse Indigenous peoples including the Cree, Blackfoot, Métis, Nakota Sioux, Iroquois, Dene, Ojibway/ Saulteaux/Anishinaabe, Inuit, and many others whose histories, languages, and cultures continue to influence our vibrant community.

2   Course Calendar Description

Introduces basic analytical concepts and methods used in conducting and interpreting psychological research. Students will begin to learn how to summarize, interpret, and draw inferences from psychological data. This course covers quantitative and qualitative forms of data and data management; explores fundamental principles used in psychometric, neuroscientific, and behavioural analyses; and examines analytical

techniques necessary for assessing frequency, associative, and causal claims. Fulfilment of the 1 hour lab component typically involves the completion of analysis assignments.

Prerequisites

PSYCH 104 or PSYCH 105. [Faculty of Science] Note: This course may not be taken for credit if credit has been obtained in STAT 151 or 161, KIN 109, PEDS 109, PTHER 352, or SOC 210.

3   Course Objectives & Expected Learning Outcomes

This course is designed to introduce students to the fundamental analytical concepts and methods used by researchers in psychology. It emphasizes the use of these techniques as essential tools in the scientific process, focusing on mastering the concepts and logic underlying analyses to test frequency, association, and causal claims.

In addition to traditional statistical concepts, this course also introduces the equally important field of open-access statistical computing using the ℝ programming language. Unlike many traditional statistics courses, which often treat statistical computing as an afterthought (or neglect it entirely), this course operates on the premise that statistical computing is not just a supplement to statistical theory but a vital complement of it.

The ability to analyse and interpret data is a critical skill across numerous disciplines, and statistical computing equips students with the tools necessary to handle complex data sets, draw meaningful conclusions, and make informed decisions. This approach is grounded in ethical principles and aligns with the ideals of "Open Science," ensuring that students are not beholden to expensive proprietary software and formatting schemes. Whether students are pursuing a career in science, business, social sciences, or technology, proficiency in statistical computing allows them to uncover patterns, test hypotheses, and present data compellingly. Moreover, as the demand for data literacy continues to grow, mastering statistical computing will not only enhance their academic pursuits but also significantly boost their prospects in an increasingly competitive job market.

3.1   By the end of this course, you should . . .

- Not be afraid of statistics or data - ℝ will be your sword and shield.

- Be able to manage, summarize, and describe different forms of data with large data sets.

- Appreciate core principles of data analysis to better understand how human and non-human animal behaviour is studied.

- Be able to design a coherent and (most importantly) analyzable experiment/study.

- Have learned foundational skills needed to approach more advanced analytical methods in Psychology.

- Develop a growing sense of why "robustness" is an important concept in statistics and science.

- Feel more confident that you have the tools and background to *learn* new statistical concepts when the need arises.

- Have improved your computer literacy.

- Worship at the altar of ℝ and understand the majesty that is open-access statistical computing — an essential element of all modern research.

4   OMG! WHY DOES THIS COURSE USE R?!
(My friend didn't have to learn that in their stats course!)

The decision to use **R** (a programming language) in a Psychology focused course may seem strange, but there are many compelling reasons to learn it in place of the kinds of proprietary software (e.g., SPSS) that have been traditionally employed (and justifiably disliked by students) in these types of courses.

- **Free and Open Source:** R is open-source software, meaning students can not only access it for free, there is a wealth of complementary open-source packages freely available for specialized analyses and tasks.

- **Versatility in Data Analysis:** R is a powerful tool and was literally developed for conducting statistical analysis, data visualization, and data manipulation. It is used widely across academia and various other fields such as business, healthcare, and government.

- **Strong Community Support:** R has a large and active community that contributes to a vast array of impressive packages, tools, and resources. This means students can easily source help, tutorials, and code examples for almost any task.

- **Reproducible Research:** Aligned with open-science principles, R is built for reproducible research—a crucial aspect in both academic and professional environments. It enables students to create scripts that can be easily shared, reviewed, and rerun, ensuring their work is transparent, accurate, and reliable.

- **Integration with Other Tools:** R can easily integrate with other software and programming languages, such as Python, SQL, HTML, LaTeX, and even (ugh) Excel. This makes it a valuable tool for working in diverse computational environments.

- **Growing Demand in the Job Market:** R is highly valued in the job market, especially in data science, analytics, and research roles. Learning R can open up numerous career opportunities for students.

- **Advanced Statistical Capabilities:** Many of R's packages make it easy to apply best practices in statistics (e.g., the use of robust methodologies) and can readily employ newer and more complex types of analyses.

- **Enhanced Data Visualization:** R offers powerful and intuitive packages like ggplot2 for sophisticated and customizable data visualizations, helping students communicate their findings effectively.

- **Learning Curve and Educational Value:** While R has a learning curve, it is no steeper than expensive proprietary point and click programs like SPSS. Moreover, working with R teaches valuable problem-solving and programming skills that generalize to (and thus are an excellent first step towards learning) other programming languages.

5   Minimum Technology Requirements

This course introduces students to both statistics and statistical computing using the **R** programming language for statistical computing. To successfully participate in this course, it is recommended that students have, at a minimum, access to a computer with an internet connection that can support the tools and technologies the University uses to deliver content, engage with instructors, teaching assistants, fellow students, and facilitate assessments. Student access of the UofA library computer labs is more than sufficient in this respect. For more details about technology access through the UofA libraries visit: https://www.library.ualberta.ca/services/technology

For an optimal learning experience, please review the University guidelines for Technology for Online Learning. If a student has any questions or concerns about these requirements/recommendations, it is highly recommended that they contact the instructor at the beginning of term.

Although bringing a personal laptop to lectures is ideal, it is not required. Access to a computer—whether at home, in campus computer labs, or in library facilities—will meet the course requirements. Please note that while tablets and Chromebooks can be used, they are not recommended, as they may pose limitations that make completing course tasks more challenging.

If you have questions or concerns about these requirements, please reach out to the instructor at the start of the term. Not addressing these issues promptly may result in a zero for assessments requiring the specified technology.

6 Required Course Materials

1. Textbook: OpenIntro Statistics (4th Edition)

    - This course uses an *open-access* textbook that is freely available online. The textbook provides essential readings and foundational materials to support your learning throughout the term. Note: in the interest of time, not all chapters of the textbook will be covered.
    - Free PDF:
        - https://jpisklak.github.io/courses/PSYCH_213/OpenIntro_Statistics_Textbook.pdf
    - Purchasable Colour Paperback Version:
        - https://a.co/d/2WU1hIb
    - Book Webpage:
        - https://www.openintro.org/book/os/

2. Achieve Online Assessments

    - To complement the textbook, this course requires the use of Achieve, a third-party service that hosts related online assessments. These assessments are designed to encourage consistent engagement with the textbook and to help you apply the concepts covered in the readings. Completing these assignments will deepen your understanding and prepare you for other course activities and assessments.
    - Access Instructions:
        - https://sites.google.com/macmillan.com/psych213pisklakw25/home

6.1 On-Line Homework Disclaimer

The textbook provides the theoretical foundation for the course, while Achieve assessments are intended to reinforce your understanding of the material through interactive exercises and assignments. The goal is to encourage regular reading and engagement with the textbook to maximize your learning.

The Achieve online assessments are an essential component of this course, provided by Macmillan Learning, a third-party organization. Please note that this platform will store assessment information, which may be linked to your account. If you have any concerns regarding the storage or use of your data, please contact the instructor promptly for assistance.

Students who are unable to afford the associated fees for the online homework must notify the instructor no later than January 21st to discuss alternative arrangements.

7 Tentative Course Schedule

1. **Course Overview: Setting the Stage for Psychological Data Analysis**

    - Introduction to the course, its expectations, and assumptions
    - The role of statistics in psychology
    - Open Science: Transparency and Reproducibility

    Required Readings: NA

2. **Getting Started with R and Google Colaboratory: Tools for Psychological Inquiry**

- Understanding R: A versatile tool for psychological data analysis
- Variable creation and manipulation: Building blocks of behavioural data
- Data frames: Organizing psychological datasets
- Pipes: Streamlining complex processes
- Packages: Extending R's capabilities for psychological research
- Loading data: Spreadsheets, CSV files, and getting big data into R
- Basics of data visualization: The cake analogy

Required Readings: NA

3. **Math Refresher for Psychology Students**

- Order of operations: Foundations of statistical computation
- Ratios, proportions, and percentages: Interpreting psychological results
- Summation notation: Simplifying patterns in behavioural data

Required Readings: NA

4. **Key Statistical Terms**

- Population vs. sample: Fundamental distinctions in research
- Variables: Definitions and types (independent, dependent, control, discrete, continuous, etc.)
- Random Sampling and random assignment as determinants of external and internal validity

Required Readings: Chapter 1

5. **Descriptive Statistics: Central Tendency**

- The relative merits of mean, median, and mode: Choosing the right measure
- Visualizing central tendencies: Barplots as a lens into behaviour

Required Readings: Chapter 2

6. **Descriptive Statistics: Variability and Individual Differences**

- Range, interquartile range, and standard deviation: Capturing the diversity in behaviour
- Visualizing variability: Boxplots, histograms, and error bars in psychological research

Required Readings: Chapter 2

7. **The Normal Distribution: A Cornerstone of Behavioural Science**

- Probability distributions in psychological data
- Sampling error: Understanding variability in experimental results
- Central Limit Theorem: A foundation for statistics
- Standard error and confidence intervals: Estimating population parameters

Required Readings: Chapter 3, 4.1, 5.1

8. **T-Distributions: Testing Psychological Hypotheses**

- One-sample T-tests: Detecting deviations in behaviour
- Effect sizes (Cohen's d and Hedge's g): Quantifying meaningful differences

Required Readings: Chapters 7.1

9. **Comparing Two Dependent Means: Within-Subjects Designs in Psychology**

- Paired-sample T-tests: Analyzing repeated measures data
- Visualizing comparisons: Depicting paired outcomes in psychological experiments
- Statistical power: Designing studies to detect meaningful effects

Required Readings: Chapter 7.2

10. **Comparing Two Independent Means: Between-Subjects Designs in Psychology**

- Independent samples T-tests: Contrasting groups in psychological research
- Effect sizes and visualizations: Communicating results effectively
- Weighing paired vs. independent designs: Psychological considerations

Required Readings: Chapter 7.3 and 7.4

11. **Ordinary Least Squares Regression: Exploring Relationships in Psychology**

- Pearson correlation: Measuring the strength and direction of relationships
- Regression models: Modeling and predicting psychological data
- Model evaluation: R-squared and inferential insights

Required Readings: Chapter 8

12. **Detecting Outliers in Psychological Data**

- Good vs bad outlier detection (masking)
- Identifying and handling outliers in behavioural datasets (dos and don'ts)
- MAD-Median Rule - A robust detection technique
- Boxplot-Rule - A convenient detection technique

Required Readings: Chapter 8.3

13. **Analyzing Categorical Variables in Psychology**

- Goodness of fit and tests of independence: Expectation vs reality
- Odds ratios: Interpreting the significant effects

Required Readings: Chapter 6.3 and 6.4

14. **Guest Lecture: Qualitative Research in Psychology**

- Contrasting qualitative and quantitative approaches
- Exploring types of data and philosophical assumptions in research
- Ensuring quality in qualitative psychological studies

Required Readings: NA

15. **Omnibus One-Way ANOVA: Exploring Multi-Group Psychological Data**

- Everything is regression - Discovering ANOVAs inside the R linear model output
- ANOVA using the Structural Model - Unpacking the classic variance-ratio logic
- Omnibus Effect sizes
- Familywise error: Why ANOVA matters

Required Readings: Chapter 7.5

Notes:

- This is a tentative lecture schedule and the order and topics covered is subject to change.
- Even though we are not covering every section of the textbook, it is nonetheless in your best interest to try and read and digest all sections of it as this will significantly enhance your grasp of the material overall. Additionally, these chapters provide foundational concepts that become increasingly relevant as you progress into more advanced statistical methodologies.

8 Important Dates

See the current Calendar for the Academic Schedule, Dates, and Deadlines, which include the Registration Add/Drop deadline and Withdrawal date: https://calendar.ualberta.ca/content.php?catoid=44&navoid=13726

- *January 6th:* Winter term classes begin
- *February 17th - 21st:* Winter term reading week - no class
- *April 9th:* Last day of winter term classes

8.1 Exam Dates

Exam	Date	Duration
Midterm	March 4th (in-class)	40 minutes*
Final	TBA	120 minutes

Table 1: Exam dates and durations.

- *Midterm duration is subject to change

- Unless otherwise specified by the instructor, exams will cover all content completed up to the date of the exam.

- Both the midterm and final exams will consist of a combination of multiple choice and numeric entry questions written in class via the Canvas LMS system. Please bring a laptop or tablet to write the exam with along with a basic or scientific hand-held calculator (see section 10.1 for details).

8.2 Term Work Dates

In addition to the two higher-stakes exams, this course consists of a variety of homework assignments, course projects, and Acheive assessments.

> *It is your responsibility to stay up to date with lectures to ensure you don't miss important announcements about upcoming assessments and deadlines.*

8.2.1 Homework Assignments

The course will include approximately seven low-stakes homework assignments geared towards the application of R and general knowledge of course concepts. These will be distributed as needed throughout the term. Each assignment will be announced during class, and **students will have two weeks from the announcement date to complete and submit their work.** Due dates will be listed on the course website as they become available. Additional information about the homework assignments can be found in section 10.2.1.

8.2.2 Course Projects

Two slightly higher-stakes course projects will be announced during class once requisite lecture material has been covered. Detailed instructions and due dates will be made available on the course webpage at that time. Additional information about the course projects can be found in section 10.2.2.

8.2.3 Achieve Assessments

Low-stakes homework assignments based on required textbook readings will be delivered through the Achieve platform. The due dates, listed below in the recommended completion order, are also found on the course website and the Achieve platform. Additional information about the Achieve assessments can be found in section 10.2.3.

Chapter Content	Name	Due Date
NA	Achieve Orientation Assignment	March 4th by 15:30
NA	Achieve Practice Assignment	March 4th by 15:30
NA	Math Review	March 4th by 15:30
Ch 1	Introduction to Data	March 4th by 15:30
Ch 2	Summarizing Data	March 4th by 15:30
Ch 3	Probability	March 4th by 15:30
Ch 4.1	Distributions of Random Variables	March 4th by 15:30
Ch 7.1 & 7.2	One-Sample and Paired t-tests	March 4th by 15:30
Ch 7.3 & 7.4	Independent t-test	April 9th by 23:59
Ch 8	Introduction to Linear Regression	April 9th by 23:59
Ch 6.3 & 6.4	Chi-Square Tests	April 9th by 23:59
Ch 7.5	Comparing Many Means with ANOVA	April 9th by 23:59

Table 2: Achieve Assessment Due Dates

8.3 Midterm and Final Exam Conflicts with Regularly Scheduled Classes

Time conflicts between regularly scheduled class periods (as listed on BearTracks) and term exams from other courses will not be accommodated. If a term exam from another course overlaps with a scheduled class time, it is the student's responsibility to contact the instructor of the intruding course to request an accommodation. As noted in the University Calendar:

> "...Students have the right to attend regularly scheduled class activities. Therefore, if a student has a conflict between a regularly scheduled class and a scheduled term examination, the instructor of the class in which there was a scheduled term examination will be required to make an accommodation for the student."

9 Grade Evaluation

Exam and assignment marks will be tallied at the end of the course (rounded to two decimal points) and converted to the 4-point/letter grade according to the table below. This course is NOT graded on a curve.

Grades reflect judgements of student achievement made by instructors and must correspond to the associated descriptor. These judgements are based on a combination of absolute achievement and relative performance in a class. Faculties may define acceptable grading practices in their disciplines. Such grading practices must align with the University of Alberta Assessment and Grading Policy and its procedures.

Letter Grade	Percentage Range	Grade Points	Interpretation
A+	95% $\geq$ 100%	4.0	Outstanding
A	90% $\geq$ 94.99%	4.0	Excellent
A-	85% $\geq$ 89.99%	3.7	Very Good
B+	75% $\geq$ 84.99%	3.3	Good
B	70% $\geq$ 74.99%	3.0	Above Average
B-	65% $\geq$ 69.99%	2.7	Average
C+	60% $\geq$ 64.99%	2.3	Satisfactory
C	55% $\geq$ 59.99%	2.0	Acceptable
C-	50% $\geq$ 54.99%	1.7	Marginal
D+	45% $\geq$ 49.99%	1.3	Poor
D	40% $\geq$ 44.99%	1.0	Very Poor
F	0% $\geq$ 39.99%	0.0	Failing

Table 3: Letter grade conversion.

This table contains an approximate guideline for the course; however, the instructor reserves the right to adjust this table to correspond to University-suggested ranges and assign appropriate grades based on relative performance.

Grades are unofficial until approved by the Department and/or Faculty offering the course.

9.1 Components of Course Grade

Assessment	Percentage Weight
Homework Assignments (all)	10%
Course Projects (all)	15%
Achieve Assessments (all)	10%
Midterm	30%
Final	35%

Table 4: Assessment weights.

- Students must verify this date on BearTracks when the Final Exam Schedule is posted.

- The relative weight of individual homework assignments and course projects may vary based on the estimated workload involved.

9.2 Re-examination

There is no possibility of a re-examination in this course.

10 Format of Assessments

10.1 Format of Exams

This course is designated as in-person, and both the midterm and final exams will be administered accordingly. Outside devices or notes are not permitted during exams, except for those explicitly approved by the instructor.

The exams will be conducted using the Canvas learning management system (LMS) and will include a mix of multiple-choice and numeric entry questions. Paper copies will be provided for students who lack access to a suitable device.

The final exam will be cumulative, with a greater emphasis on material covered in the latter half of the course. Questions will assess content from lectures and assigned textbook chapters and may be weighted based on their importance in differentiating levels of student understanding or the relative amount of work involved in solving a question.

10.1.1 Calculators

For exams, only basic or scientific calculators are permitted. Graphing calculators or programmable calculators, as well as calculators on phones or test-taking devices, are strictly prohibited.

If you are uncertain whether your calculator is permissible, please consult the instructor well in advance of an exam. A list of approved calculators can be found here: https://jpisklak.github.io/courses/PSYCH_213/calculators.html

Students are responsible for bringing their own appropriate calculator, as none will be provided during the exam. If you do not bring an eligible calculator, you will be required to complete the exam without one.

> *Using an unauthorized calculator, such as a programmable or graphing model, will be considered a violation of academic integrity and will result in a report for academic misconduct.*

10.1.2 Exam Conduct

Please refer to the Examinations section of the Academic Calendar for more details on Conduct of Exams. Some key points to be aware of:

- Your student photo ID is required at exams to verify your identity.

- Students must arrive at the specified time to take the exam. Once the exam has started, students must remain in the physical in-person or remote environment for at least 30 minutes. Students who arrive more than 30 minutes late for an in-person exam will not be permitted to take the exam. Students who arrive more than 30 minutes late for an online exam may have their exam attempt removed or disqualified by the instructor. In both cases, students may apply for a deferred examination.

- All cell phones must be turned off and stored in your bags.

- If using a tablet or laptop to write the exam, the device must be positioned upright (not flat on the desk) with the screen brightness set high enough for proctors to monitor effectively.

- If using a tablet or laptop to write the exam, no other applications or tabs may be open. The exam window must remain fully maximized, occupying the entire screen at all times.

Failure to comply with these requirements may result in the disqualification of your exam and could be reported as academic misconduct in accordance with university policies.

10.1.3 Representative Evaluative Material

Homework assignments and Achieve assessments are essential for familiarizing students with the types and styles of questions that will appear on exams. A few days before each exam, practice questions will be provided to reflect the content and format of the numeric entry questions included on the exam.

These resources collectively offer the most accurate preview of the question formats and material that students can expect on both the midterm and final exams.

10.2   Format of Term Work

Mastering statistics requires active, hands-on engagement. Homework, assessments, and course projects are carefully designed to help you apply lecture and textbook concepts, identify areas for improvement, and solidify your understanding. Completing these tasks isn't just beneficial—it's essential for success in this course.

The weight of each individual assignment may vary based on its workload. For instance, a more intensive homework task might carry greater weight than a shorter one. This structure ensures that your effort is aligned with the challenges presented, rewarding thorough and thoughtful work.

10.2.1   Homework Assignments

Most course topics (see section 7) will have a corresponding homework assignment designed to reinforce your understanding, with a focus on applying concepts using the R programming language. These assignments will consist of multiple-choice and numeric-entry questions submitted through Canvas LMS.

Key details about homework assignments:

- **Announcement and access:** Assignments will be announced in class, with links provided on the course webpage.

- **Timeline:** Students will have two weeks from the in-class announcement to complete and submit their work. Due dates will be posted on the course website as they become available. Completing assignments promptly is strongly encouraged.

- **Attempts and scoring:** Unlimited attempts are allowed within the two-week period, and your highest score will count. After each attempt, you will receive immediate feedback, including the correct answers and solutions.

These assignments are an essential part of the course, helping you solidify your skills and identify areas that need improvement. Take full advantage of the resources and feedback provided!

10.2.2   Course Projects

Two course projects will be assigned at various points in the semester once the instructor is certain that the requisite material has been covered. Each course project will come with written instructions available on the course website, and submissions will require file uploads to Canvas LMS.

10.2.3   Achieve Assessments

Carefully extracting information from textbooks, and other written content, constitutes a crucial skill in academia that is often overlooked by many students. The required textbook as an associated online service called "Achieve," which will be employed to provide targeted low-stakes learning assessments that correspond specifically to the required textbook content. These assessments will serve the purpose of encouraging active engagement with the textbook, reinforcing concepts presented in the lecture, and introducing additional information that may not receive ample coverage during class time. They also assist students in identifying areas that need improvement, helping them better prepare for higher-stakes assessments, such as the midterm.

These assessments can be completed any time prior to their due date which will is viewable on the course website and the Achieve platform itself, as well as section 8.2 of this syllabus.

10.2.4   Late Penalties

Be aware that there are no late penalties in this course. Failing to submit before a due date will result in a mark of 0. For details surrounding missed deadlines, see section 12 of the syllabus.

11   Statement of Expectations for the use of Artificial Intelligence (AI)

In this course, we are dedicated to the ethical and transparent use of advanced machine learning models (GPT-4, DALL-E, Stable Diffusion, etc.), commonly referred to as "Artificial Intelligence." While students are permitted unrestricted use of these models and associated software for assignments (not exams), it is necessary to clearly attribute and cite any AI-generated content in their work when appropriate. As an example, in the acknowledgments section of a project, they might indicate that "*This text underwent review and editing with the support of the artificial intelligence language model GPT 4.0 (OpenAI, 2025).*"

Be appreciative of the fact that, while AI is a powerful and highly useful tool, it does have many limitations. It may not always fully "understand" context or nuance, and all its outputs should be critically reviewed to ensure accuracy and relevance to the task at hand. This means that, while AI can enhance our capabilities, it should be used judiciously to maintain the integrity and quality of a persons academic work. Please note that students will be held responsible for any confusing, erroneous, false, offensive, plagiarised, or unethical content provided by the AI within their work, so exercise caution and diligence in its use.

- For details on how to cite and reference generative AI systems please see https://libguides.mcmaster. ca/cite-gen-ai/apa

11.1   Using AI in This Course: Guidelines and Best Practices

AI tools can be valuable resources for learning, but it is important to use them effectively and responsibly.

The Wrong Way to Use AI

Using AI solely to "find an answer" for coding, math problems, or homework in order to secure a good grade is counterproductive. This approach bypasses the opportunity to truly engage with the material, which can:

- Lead to gaps in comprehension, making the content increasingly difficult over time.

- Prevent you from gaining the necessary practice for high-stakes assessments, such as exams, where AI tools are not permitted.

- Leave you unable to recognize or correct errors generated by AI, further harming your performance.

You should be focused on *learning*, not getting a good grade.

The Right Way to Use AI

AI is most effective as a tutor, helping you understand concepts and guiding you through problem-solving. For instance, if you need help creating a dataframe in R, you could ask an AI tool: "*Can you explain how to create a dataframe in the R programming language?*"

This kind of targeted use can help clarify concepts, reinforce your learning, and build your skills.

Why Practice Matters

The homework and Achieve assessments provide unlimited attempts and are designed to be low-stakes, offering a safe environment for you to practice and master the material. This structure ensures you can learn from mistakes and build confidence, preparing you for higher-stakes exams and applications of these skills where you will not have AI at your disposal.

Remember, genuine effort and practice now will pay off in the long run. Use AI thoughtfully to support—not replace—your learning process.

Important

Please note that AI use is strictly prohibited in assessments and assignments not approved by the instructor. Failure to abide by this guideline may be considered an act of cheating and a violation as outlined in the relevant sections of University of Alberta's Student Academic Integrity Policy.

> While the use of AI is generally permitted in this course, students are nonetheless expected to submit work that genuinely reflects their own efforts and abilities. If, during the marking process, it becomes evident that AI has completed most or all of a submission, the student will receive a reduced mark, potentially even a zero. If a student believes this determination is incorrect and that the submission is their own work, they may request an opportunity to recover marks. In such cases, the student must meet with the instructor or marker *in person* to demonstrate their understanding of the material. This ensures that the student has actively engaged with the content and can independently explain and apply the concepts.

12   Policies for Missed Term Work

Failure to submit homework assignments, Achieve assessments, or course projects through the designated channels by the specified due dates will result in a grade of 0. However, students unable to complete these tasks due to incapacitating illness, severe domestic circumstances, or other compelling reasons may apply for an excused absence. To apply for an excused absence, a student must contact the instructor in a timely manner (see section 12.1 and 12.2 below). IF an excused absence is granted, then the weight of the assessment will be transferred to the final exam. Should a shift in weighting to the final exam increase its weight to > 40%, this does not change the original 'syllabus weight', meaning the student does not now qualify for possible re-examination. This also means that the cumulative weight of the assessment will be lower than the percentage stated in Table 4 above.

Please be aware that transferring the weight of missed work to the final exam might disqualify a student from being eligible for a deferred final examination if they have not completed at least 50% of the term's coursework.

In all cases, instructors may request adequate documentation to substantiate the reason for the absence, at their discretion. Deferral of term work is a privilege and not a right; there is no guarantee that a deferral will be granted. Misrepresentation of Facts to gain a deferral is a serious breach of the Student Academic Integrity Policy.

Deferral of term work/tests is under the discretion of the instructor; however, deferral of a final exam is determined at the Faculty level. A student must apply to their home Faculty for a deferral of a final exam, not the Faculty the course is listed in (see section 16).

12.1   Exemption Requests Relating to Non-technical Issues

Baring extreme circumstances (e.g., unexpected hospitalization or immediate death in the family), requests for exemptions related to known chronic or prolonged conditions and events (e.g., depression, anxiety, mourning, recuperation, general illness, etc.) must be submitted to the instructor at least **48 hours** before the specified due date for consideration. i.e., students are expected to be proactive about notifying the instructor in a timely manner when the circumstances allow it.

> *With rare exception, requesting exemptions moments before or after a deadline is unacceptable behaviour. People are rarely so incapacitated that they cannot send an email.*

It is important to note that it is neither within the purview nor the responsibility of the instructor to verify or handle claims related to enduring physical or psychological medical conditions (e.g., ADHD, clinical anxiety, etc.). Students seeking accommodations for such reasons must do so through appropriate university channels (i.e., Academic Success Centre).

12.2 Exemption Requests Relating to Technical issues

If students experience technical issues in the process of submitting an assignment, they are expected to document the issue by taking an appropriate video or photo with their phone or computer. Do not expect clemency for technical issues without providing at least this. They must ensure that the photo or video provides reasonable evidence of the date and time in addition to the technical issue.

A generous time frame is allotted for assignment submissions. Exemption requests related to technical issues made within the last 24 hours before a deadline will not be deemed reasonable, regardless of circumstances such as internet outages, computer crashes, or hardware failure. Assignments are expected to be completed in a timely fashion with due precautions taken, such as file backups.

> *Procrastination and last-minute completion carry inherent risks, for which responsibility rests with the student.*

13 Missed Midterm

Students are required to complete the midterm exam as scheduled. If a student is unable to attend the midterm for any reason, they will be required to write a deferred version of the exam, which will account for two-thirds of the original midterm's weight (20%). The remaining one-third (10%) will be reallocated to the final exam. The date and time for the deferred exam will be set by the instructor and announced early in the term. This date is non-negotiable. Failure to attend the deferred exam will result in a grade of 0 for the 20% allocated to it.

14 Missed Term Work or Final Exam Due to Non-medical Protected Grounds (e.g., religious beliefs)

When a term assessment or final exam presents a conflict based on non-medical protected grounds, students must apply to the Academic Success Centre for accommodations via their Register for Accommodations website. Students can review their eligibility and choose the application process specific for **Accommodations Based on Non-medical Protected Grounds**.

It is imperative that students review the dates of all course assessments upon receipt of the course syllabus, and apply **AS SOON AS POSSIBLE** to ensure the timely application of the accommodation. Students who apply later in the term may experience unavoidable delays in the processing of the application, which can affect the accommodation.

15 Re-evaluation of Term Work

Requests for re-evaluation of all graded term work must be submitted within one week of the last day of regularly scheduled class time. Requests made after this deadline will not be considered.

16 Deferred Final Examination

A student who cannot write the final examination due to incapacitating illness, severe domestic affliction or other compelling reasons can apply to their Faculty for a deferred final examination. Such an application must be made to the student's Faculty office within **two** working days of the missed examination and must be supported by appropriate documentation or a Statutory Declaration (see University Calendar for information on Attendance).

Students who cannot write a final exam due to non-medical protected grounds (e.g., religious beliefs), must apply to the Academic Success Centre **AS SOON AS POSSIBLE** for accommodations via their *Register for Accommodations* website.

Deferred examinations are a privilege and not a right; there is no guarantee that a deferred examination will be granted. The Faculty may deny deferral requests in cases where less than 50% of term work has been completed. Misrepresentation of Facts to gain a deferred examination is a serious breach of the Student Academic Integrity Policy.

17 Respect Policy

17.1 I Respect Your Time:

- *Preparedness:* I will come to each class prepared to help you understand the course material and prepare you for quizzes and exams.

- *Communication:* Communication is key. If something is unclear or you are facing challenges, please let me know. I cannot assist you if I am unaware of your concerns.

- *Support:* I am here to help you succeed. This is your time, so please communicate how I can best support your learning.

- *Flexibility:* If there is something you would like me to do differently, please share your feedback. I am open to working with you to make this class the best it can be.

17.2 Respect My Time:

- *Punctuality:* Be on time to class. Arriving late disrupts the learning process for everyone.

- *Attention:* Pay attention when I am speaking to you. Your focus is essential for your success.

- *Preparation:* Come to class prepared by completing the required work and utilizing office hours when you need additional help.

17.3 Respect Each Other:

- *Minimize Disruptions:* Do not be disruptive in class. If you need to take a call or send a text, please step outside to do so.

- *Embrace Mistakes:* Allow one another to make mistakes—this is a vital part of the learning process.

- *Respectful Communication:* Use respectful language when speaking with one another, both in and out of class.

18 Math, Stats, and Programming Help

If you need assistance, many resources are available to support you, but it is up to you to take the initiative to seek them out. Your primary point of contact is the instructor. If you are facing challenges, do not hesitate to attend office hours or send an email. It is important to address any issues, whether course-related or not, *as soon as they arise*. If you cannot attend office hours, reach out via email to arrange an alternative meeting time.

With respect to R programming specifically, the most time efficient way to seek help is to email the instructor with a brief description of the problem you are having and ensure that you have shared a copy of your R code (i.e., the .IPYNB file). This will allow the instructor to quickly run and spot issues with the code.

19 Student Responsibilities

19.1 Guidelines for Respectful Online Engagement

Students from many different backgrounds participate in courses at the University of Alberta. Sexist, racist, homophobic comments and other inflammatory remarks are not conducive to learning in our courses, and are absolutely not permitted. All participants are governed by the Student Academic Integrity Policy. Be mindful when discussions involve controversial topics or issues, and consider the possibility that members of our community have themselves experienced some of these issues and/or very different realities because of these issues. Participate in a respectful and considerate manner.

If you are witness to or the target of abusive or offensive behaviour in any course, please inform your instructor immediately. You may also contact the Psychology Undergraduate/Graduate Advisor, Associate Chair of Undergraduate/Graduate, or Chair.

19.2 Academic Integrity and Student Conduct

The University of Alberta is committed to the highest standards of academic integrity and honesty, as well as maintaining a learning environment that fosters the safety, security, and inherent dignity of each member of the community, ensuring students conduct themselves accordingly. Students are expected to be familiar with the standards of academic honesty and appropriate student conduct, and to uphold the policies of the University in this respect.

Students are particularly urged to familiarize themselves with the provisions of the Student Academic Integrity Policy and the Student Conduct Policy, and avoid any behaviour that could potentially result in suspicions of academic misconduct (e.g., cheating, plagiarism, misrepresentation of facts, participation in an offence) and non-academic misconduct (e.g., discrimination, harassment, physical assault). Academic and non-academic misconduct are taken very seriously and can result in suspension or expulsion from the University.

All students are expected to consult the Academic Integrity website for clarification on the various academic offences. All forms of academic dishonesty are unacceptable at the University. Unfamiliarity of the rules, procrastination or personal pressures are not acceptable excuses for committing an offence. Listen to your instructor, be a good person, ask for help when you need it, and do your own work – this will lead you toward a path to success. Any academic integrity concern in this course will be reported to the College of Natural and Applied Sciences.

Suspected cases of non-academic misconduct will be reported to the Dean of Students. The College, the Faculty, and the Dean of Students are committed to student rights and responsibilities, and adhere to due process and administrative fairness, as outlined in the Student Academic Integrity Policy and the Student Conduct Policy. Please refer to the policy websites for details on inappropriate behaviours and possible

sanctions.

The College of Natural and Applied Sciences (CNAS) has created an Academic Integrity for CNAS Students eClass site. Students can self enroll and review the various resources provided, including the importance of academic integrity, examples of academic misconduct and possible sanctions, and the academic misconduct and appeal process. They can also complete assessments to test their knowledge and earn a completion certificate.

"Integrity is doing the right thing, even when no one is watching" – C.S. Lewis

19.3   Contract Cheating and Misuse of University Academic Materials or Other Assets

Contract cheating describes the form of academic dishonesty where students get academic work completed on their behalf, which they submit for academic credit as if they had created it themselves. Contract cheating may or may not involve the payment of a fee to a third party, who then creates the work for the student.

Examples include:

- Getting someone to write an essay or research paper for you.

- Getting someone to complete your assignment or exam for you.

- Posting an essay, assignment, or exam question to a tutorial or study website; the question is answered by a "content expert", then you copy it and submit it as your own answer.

- Posting your solutions to a tutorial/study website, public server, or group chat and/or copying solutions that were posted to a tutorial/study website, public server, or group chat.

- Sharing your login credentials to the course management system (e.g., Canvas) and allowing someone else to complete your assignment or exam remotely.

- Using an artificial intelligence bot or text generator tool to complete your essay, research paper, assignment, or exam solutions for you (without the instructor's permission).

- Using an online grammar checker to "fix" your essay, research paper, assignment, or exam solutions for you (without the instructor's permission).

- Contract cheating companies thrive on making students believe that they cannot succeed without their help; they attempt to convince students that cheating is the only way to succeed.

Uploading the instructor's teaching materials (e.g., course outlines, lecture slides, assignment, or exam questions, etc.) to tutorial, study, or note-sharing websites or public servers is a copyright infringement and constitutes the misuse of University academic materials or other assets. Receiving assignment solutions or answers to exam questions from an unauthorized source puts you at risk of receiving inaccurate information.

20   University Policy

20.1   Withdrawals

See the University Calendar for the relevant add/drop deadlines for each term.

20.2   Course Outlines

Policy about course outlines can be found in the Academic Regulations, Evaluation Procedures and Grading section of the University Calendar.

20.3 Student Academic Integrity

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Student Academic Integrity Policy and the Student Conduct Policy (on the University of Alberta Policies and Procedures Online (UAPPOL) website) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

20.4 Recordings

Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content authors.

20.5 Accommodations for Students

In accordance with the University of Alberta's Discrimination, Harassment, and Duty to Accommodate policy, accommodation support is available to eligible students who encounter limitations or restrictions to their ability to perform the daily activities necessary to pursue studies at a post-secondary level due to medical conditions and/or non-medical protected grounds. Accommodations are coordinated through the Academic Success Centre, and students can learn more about eligibility on the Register for Accommodations website.

It is recommended that students apply **AS SOON AS POSSIBLE** in order to ensure sufficient time to complete accommodation registration and coordination. Students are advised to review and adhere to published deadlines for accommodation approval and for specific accommodation requests (e.g., exam registration submission deadlines). Students who request accommodations less than a month in advance of the academic term for which they require accommodations may experience unavoidable delays or consequences in their academic programs, and may need to consider alternative academic schedules.

21 Student Supports

21.1 The Student Service Centre

The Student Service Centre provides students with information and access to services to support academic, financial, mental, and physical well-being. Information about various student resources, including academic, financial, and health and wellness, can also be found on the Campus Life website.

21.2 Academic Success Centre

The Academic Success Centre provides professional academic support to help students strengthen their academic skills and achieve their academic goals. Individual advising, appointments, and group workshops are available year round in the areas of Accessibility, Communication, Learning, and Writing Resources. Modest fees may apply for some services.

21.3 Writing Services

Writing Services offers free one-on-one writing support to students, faculty, and staff. Students can request a consultation for a writing project at any stage of development. Instructors can request class visits and presentations.

21.4   Feeling Stressed, Anxious, or Upset?

It's normal for us to have different mental health experiences throughout the year. Know that there are people who want to help. You can reach out to your friends and access a variety of supports available on and off campus at the Need Help Now webpage or by calling the 24-hour Distress Line: 780-482-4357 (HELP). The Health and Wellness Support for Students website also contains mental and physical health resources, which are offered on-campus and in the community.

21.5   Student Self-Care Guide

This Self-Care Guide, originally designed by the Faculty of Native Studies, has broader application for use during students' learning. It provides some ideas and strategies to consider that can help navigate emotionally challenging or triggering material.

21.6   First Peoples' House

First Peoples' House provides an environment of empowerment for First Nations, Métis, and Inuit learners to achieve personal and academic growth.

21.7   Office of the Student Ombuds

The Office of the Student Ombuds is a confidential service that strives to ensure that university processes related to students operate as fairly as possible. They offer information, advice, and support to students, faculty, and staff as they deal with academic, discipline, interpersonal, and financial issues related to student programs.

22   Learning and Working Environment

The Department of Psychology, Faculty of Arts, and Faculty of Science are committed to ensuring that all students, faculty and staff are able to work and study in an environment that is safe and free from discrimination, harassment, and violence of any kind. It does not tolerate behaviour that undermines that environment. This includes virtual environments and platforms.

The Department of Psychology believes that organizational diversity and excellence go hand-in-hand. We are committed to identifying our limitations as a department in terms of equity, diversity, and inclusion and making actionable changes to overcome these limitations. We want all of our constituents to feel welcome, safe, and valued in the core activities of teaching, research, and administration. Please visit our Commitment to EDI and Indigenization in Psychology website for more information.

If you are experiencing harassment, discrimination, fraud, theft or any other issue and would like to get confidential advice, please contact any of these campus services:

- Office of Safe Disclosure & Human Rights: A safe, neutral and confidential space to disclose concerns about how the University of Alberta policies, procedures or ethical standards are being applied. They provide strategic advice and referral on matters such as discrimination, harassment, duty to accommodate and wrong-doings. Disclosures can be made in person or online using the Online Reporting Tool.

- University of Alberta Protective Services: Peace officers dedicated to ensuring the safety and security of U of A campuses and community. Staff or students can contact UAPS to make a report if they feel unsafe, threatened, or targeted on campus or by another member of the university community.

- Office of the Student Ombuds: A confidential and free service that strives to ensure that university processes related to students operate as fairly as possible. They offer information, advice, and support to students, faculty, and staff as they deal with academic, discipline, interpersonal, and financial issues related to student programs.

- Office of the Dean of Students: They can assist students in navigating services to ensure they receive appropriate and timely resources. For students who are unsure of the support they may need, are concerned about how to access services on campus, or feel like they may need interim support while you wait to access a service, the Dean of Students office is here to help.

22.1   Disclaimer

Any typographical errors in this syllabus are subject to change and will be announced in class and/or posted on the course website. The date of final examinations is set by the Registrar and takes precedence over the final examination date reported in the syllabus.

22.2   Copyright

Dr. Jeffrey M Pisklak, Department of Psychology, Faculty of Psychology, University of Alberta (2025)