



# PSYCH 213: Introduction to Data Analysis in Psychology I

## A2 — Fall 2025

### Instructor Information

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### Class Information

**Class Dates:** September 2 - December 8  
**Lecture Days and Times:** Tuesday and Thursday at 14:00 - 15:20  
**Classroom:** CSC B-10 (Computing Science Centre)  
**Course Website:** [https://jpisklak.github.io/courses/PSYCH\\_213\\_fa2025/index.html](https://jpisklak.github.io/courses/PSYCH_213_fa2025/index.html)

### Teaching Assistant

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## 1 Territorial Acknowledgement

The University of Alberta, its buildings, laboratories, and research stations are primarily located on the territory of the Nêhiyaw (Cree), Niitsitapi (Blackfoot), Métis, Nakoda (Stoney), Dene, Haudenosaunee (Iroquois) and Anishinaabe (Ojibway/Saulteaux), lands that are now known as part of Treaties 6, 7 and 8 and homeland of the Métis. The University of Alberta respects the sovereignty, lands, histories, languages, knowledge systems, and cultures of all First Nations, Métis, and Inuit nations whose 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, PHER 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  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 -  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  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  (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,  $\text{\LaTeX}$ , 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 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  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.

## 6 Minimum Technology Requirements

This course introduces students to both statistics and statistical computing using the  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's minimum technology specifications](#).

Although bringing a personal laptop to lectures is ideal, it is not strictly 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 a student has questions or concerns about these requirements, they should 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.

## 7 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\\_fa2025/docs/OpenIntro\\_Statistics\\_Textbook.pdf](https://jpisklak.github.io/courses/PSYCH_213_fa2025/docs/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/213pisklak2025/home>

### 7.1 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 September 15th to discuss alternative arrangements.

## 8 Tentative Lecture Schedule

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=56&navoid=17524>

| Week | Dates           | Topic   |
|------|-----------------|---|
| 1    | Sep 01 - 05     | <i>Labour Day (Canada) (Mon)</i><br>- Course Overview<br>- Getting Started with R   |
| 2    | Sep 08 - 12     | - Getting Started with R<br>- Math Refresher<br>- Core Statistical Concepts   |
| 3    | Sep 15 - 19     | <i>Fall add/drop deadline</i><br>- Descriptive Statistics I: Central Tendency<br>- Descriptive Statistics II: Variability |
| 4    | Sep 22 - 26     | - Descriptive Statistics II: Variability<br>- The Normal Distribution and Sampling  |
| 5    | Sep 29 - Oct 03 | <i>National Day for Truth and Reconciliation (Tues)</i><br>- The Normal Distribution and Sampling                         |
| 6    | Oct 06 - 10     | One-Sample t-Test   |
| 7    | Oct 13 - 17     | <i>Thanksgiving (Mon)</i><br>- One-Sample t-Test<br><i>Course Project I Instructions</i>                                  |
| 8    | Oct 20 - 24     | - Paired-Samples t-Test   |
| 9    | Oct 27 - 31     | - Independent samples t-test<br><i>Course Project II Instructions</i>   |
| 10   | Nov 03 - 07     | - Regression and Correlation<br><b>First 8 Achieve Assessments Due (Nov 6)</b><br><b>Midterm exam (Nov 6, 40 minutes)</b> |
| 11   | Nov 10 - 14     | <i>Reading Week</i>   |
| 12   | Nov 17 - 21     | - Regression and Correlation<br>- Detecting Outliers  |
| 13   | Nov 24 - 28     | - Categorical Data Analysis   |
| 14   | Dec 01 - 05     | <b>Last 4 Achieve Assessments Due (Dec 8)</b><br>- ANOVA: Multi-Group Comparisons   |
|      | Dec 11          | <b>Final Exam at 13:00 (120 minutes)</b>  |

Notes:

- Schedule is (very) tentative; topics and order may change.
- Not all textbook sections will be covered, but reading them strengthens understanding and foundations.
- Midterm duration may change.
- Exams cover all material up to the exam date (unless noted otherwise in class).
- Midterm and final include multiple choice and numeric entry on Canvas; bring a laptop/tablet and basic or scientific calculator (see Section 10.1).
- Confirm final exam date and time on BearTracks once posted.

*It is the student's responsibility to stay up to date with lectures to ensure they do not miss important announcements about upcoming assessments, deadlines, and schedule changes.*

## 8.1 Topic Breakdown

1. **Course Overview: Statistics in Psychology**  
*Topics:* course expectations, role of statistics, open science.  
*Readings:* NA
2. **Getting Started with R (via Google Colab)**  
*Topics:* basics of R, variables, data frames, pipes, packages, importing data.  
*Readings:* NA
3. **Math Refresher**  
*Topics:* order of operations, ratios and proportions, percentages, probabilities, summation notation.  
*Readings:* NA
4. **Core Statistical Concepts**  
*Topics:* populations vs. samples, types of variables, random sampling vs. random assignment, internal vs. external validity.  
*Readings:* Chapter 1
5. **Descriptive Statistics I: Central Tendency**  
*Topics:* mean, median, mode, when to use each; visualizing with barplots.  
*Readings:* Chapter 2
6. **Descriptive Statistics II: Variability**  
*Topics:* range, interquartile range, standard deviation; visualizing with boxplots, histograms, error bars; standardization and transformations.  
*Readings:* Chapter 2
7. **The Normal Distribution and Sampling**  
*Topics:* probability distributions, sampling error, Central Limit Theorem, standard error, confidence intervals.  
*Readings:* Chapter 3, 4.1, 5.1
8. **One-Sample t-Test**  
*Topics:* comparing a sample mean to a reference value; effect sizes (Cohen's  $d$ , Hedges'  $g$ ).  
*Readings:* Chapter 7.1
9. **Paired-Samples t-Test**  
*Topics:* comparing two dependent means; visualizations, effect sizes, statistical power, study design.  
*Readings:* Chapter 7.2
10. **Independent-Samples t-Test**  
*Topics:* comparing two independent groups; effect sizes, visualizations, dependent vs. independent designs.  
*Readings:* Chapter 7.3–7.4
11. **Regression and Correlation**  
*Topics:* Pearson correlation, simple linear regression, model evaluation (R-squared, inference).  
*Readings:* Chapter 8
12. **Detecting Outliers**  
*Topics:* principles of outlier detection; Hampel's Identifier (robust); boxplot rule (convenient).  
*Readings:* Chapter 8.3
13. **Categorical Data Analysis**  
*Topics:* chi-square goodness-of-fit, test of independence.  
*Readings:* Chapter 6.3–6.4
14. **Guest Lecture: Qualitative Research**  
*Topics:* contrasting qualitative and quantitative methods; data types and philosophical assumptions; ensuring quality.  
*Readings:* NA
15. **ANOVA: Multi-Group Comparisons (Time Permitting)**  
*Topics:* ANOVA as regression, structural model logic, effect sizes, familywise error.  
*Readings:* Chapter 7.5

## 8.2 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

To ensure fairness across assessments of varying difficulty, and to give students an accurate and intuitive sense of their standing, each assessment's score is rescaled using a robust standardization method that sets a consistent centre and spread. Specifically:

- The **median** score, a robust measure of the class average, is set to 50. By design, this corresponds to a B– letter grade (see Table 2). The University of Alberta employs a 12-letter grading system, whose midpoint lies between C+ and B–; anchoring the median here aligns with University expectations.
- Scores are then scaled by the **normalized median absolute deviation (MADN)**, a measure of variability analogous to the standard deviation but less affected by outliers. On this standardized scale, one MADN equals 25 points.
- This process is mathematically similar to converting raw scores into *z*-scores, but it uses the median and MADN instead of the mean and standard deviation, making it more stable under skewed or irregular distributions.
- The resulting scale is designed to feel intuitive: values near 0 represent very low performance, values near 100 represent very high performance, and 50 represents the class average. Thus, scores above 50 indicate above-average performance; scores below 50 indicate below-average performance.

After rescaling, assessments are combined according to the weights listed in Table 3. The overall course total is then rescaled one final time so that the class median is again anchored at 50 (B–), with the same spread convention. This prevents natural drift in the weighted totals.

Your final letter grade is determined by comparing your overall standardized score to a fixed set of grade boundaries (see Table 2). These boundaries were established in advance, informed by historical student performance and instructor judgment. They **do not** and **cannot** enforce a predetermined distribution of grades. Each student's grade depends only on their own performance relative to the class median and spread, not on how many classmates fall into each category.

| Standardized Score | Interpretation | Grade Points | Letter Grade |
|--------------------|----------------|--------------|--------------|
| 82.19 < ∞          | Outstanding    | 4.0          | A+           |
| 77.01 < 82.19      | Excellent      | 4.0          | A            |
| 71.15 < 77.01      | Very Good      | 3.7          | A–           |
| 66.06 < 71.15      | Good           | 3.3          | B+           |
| 57.12 < 66.06      | Above Average  | 3.0          | B            |
| 50.00 < 57.12      | Average        | 2.7          | B–           |
| 42.27 < 50.00      | Satisfactory   | 2.3          | C+           |
| 32.41 < 42.27      | Acceptable     | 2.0          | C            |
| 20.85 < 32.41      | Marginal       | 1.7          | C–           |
| 14.05 < 20.85      | Poor           | 1.3          | D+           |
| 0.58 < 14.05       | Minimal Pass   | 1.0          | D            |
| –∞ < 0.58          | Failure        | 0.0          | F            |

Table 2: Letter Grade Boundaries. Each grade covers scores from its listed lower limit up to (but not including) the upper limit. Table values are displayed rounded to two decimal places. Actual cutoffs are more precise.

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.

## FAQ about Grade Evaluation

- **Q: Is this the same as “grading on a curve”?**

**A:** No. A curve predetermines how many students can receive each letter grade, often based on a fixed distribution (e.g., only the top 5% of students get an A+). This course uses no quotas. The number of A’s, B’s, C’s, etc., emerges from the class’s actual performance, not an imposed formula — fully in line with University policy prohibiting mandatory curves. See [University of Alberta Assessment and Grading Policy](#).

- **Q: Why don’t you just use the percentage scores like most classes?**

**A:** Raw percentages can be misleading, because the same number can mean very different things depending on how hard the assessment is. For example, a score of 60% might be excellent on a very difficult exam, while 85% might be only average on an easier one. Using raw percentages would then force the instructor to set arbitrary and sometimes confusing letter boundaries. By standardizing scores instead, the scale is consistent and unambiguous: 50 always represents the class average, higher values reflect above-average performance, and lower values reflect below-average performance. This ensures that a very hard exam does not drag the entire class down, and an easy exam does not inflate everyone’s grades—the standardized scale keeps grades tied to their intended meaning.

- **Q: Is this grading system competitive?**

**A:** Not in the sense of fixed quotas or forced scarcity. Your grade does not depend on “beating” a certain number of classmates, and there is no preset limit on how many A’s, B’s, or C’s can be awarded. That being said, strong performance is still rewarded: students who consistently perform well above the average earn higher standardized scores and thus higher letter grades.

- **Q: Can everyone get an A?**

**A:** Not realistically. An A or A+ is meant to signal *extraordinary* performance — achievement that clearly stands out from the rest of the class. If everyone earned the same top grade, then by definition no one’s performance would be extraordinary (it would be ordinary), and the grade would lose its meaning. Because scores are standardized around the class median, only those who perform well above that



benchmark end up in the A range. In practice, this means that while many students can do well, top grades remain a mark of truly exceptional achievement.

- **Q: If the median is always set to 50 (B–), does that mean half the class will fail?**

**A:** No. The median is simply an anchor point for the scale. Students above 50 are above average and may receive grades ranging from B– to A+; students below 50 are below average but may still earn passing grades (C’s and D’s). In most classes, the majority of students pass. The exact distribution of grades depends on how the whole class performs, not on a fixed quota.

- **Q: Does this system disadvantage strong students?**

**A:** No. Because ranks are preserved, students who perform well compared to their peers will always receive higher standardized scores and higher letter grades.

- **Q: What does it mean that the grading method is “robust”?**

**A:** In statistics, “robust” means that the method is not thrown off by unusual values or outliers. For example, if one student happens to score extremely low or extremely high, a robust method won’t let that single score shift the whole class’s average or spread. That’s why this system uses the median (the middle score) instead of the mean (the arithmetic average), and the MADN (a spread measure based on the median) instead of the standard deviation. These choices make the standardized scale more stable and fair, especially in classes where exams or assignments occasionally produce extreme results.

- **Q: How can I estimate my standing during the term?**

**A:** After each assessment, you will receive both your raw score and your standardized score. The standardized score is the one that counts toward your final grade. By comparing your standardized score to the published letter grade boundaries in Table 2, you can track your progress throughout the term.

- **Q: What is the formula to convert a raw score to a standardized value? Can you show an example?**

**A:** Yes. The standardized score is calculated in a way similar to a  $z$ -score, but it uses the class median and the normalized median absolute deviation (MADN). The formula is:

$$s = \left( \frac{x - m}{\text{MADN}} \right) \times 25 + 50$$

where  $x$  is the raw score,  $m$  is the class median, and MADN measures the spread. The constants 25 and 50 set the scale so that one MADN corresponds to 25 points, and the class median corresponds to 50.

1. Suppose the class median on an assignment is  $m = 72$ .
2. Suppose  $\text{MADN} = 11.9$ .
3. For a student with a raw score of  $x = 88$ , we compute:

$$s = \left( \frac{88 - 72}{11.9} \right) \times 25 + 50$$
$$\approx 83.6$$

So in this example, a raw score of 88 converts to a standardized score of about 83.6. This indicates performance well above the class average (50), and it would then be compared to the fixed letter grade boundaries in Table 2.

## 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 3: Assessment weights.

- 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.

Exams will be administered through the Canvas learning management system (LMS) and will consist of a combination of multiple-choice and numeric entry questions. Paper copies will be available for students who do not have access to a suitable device; however, writing on paper is strongly discouraged, as completed paper exams cannot be reviewed online and may only be viewed later during instructor office hours.

Unless otherwise specified by the instructor, the exams will cover all content completed up to the date of the exam. 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 some approved calculators can be found here: [https://jpisklak.github.io/courses/PSYCH\\_213\\_fa2025/calculators.html](https://jpisklak.github.io/courses/PSYCH_213_fa2025/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.*

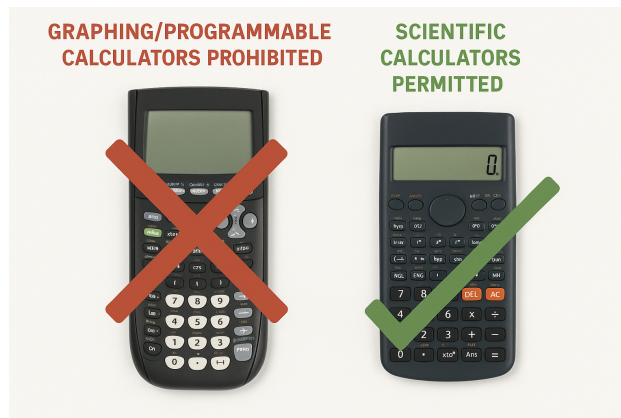


Figure 1: Calculator policy: Graphing/programmable calculators are prohibited; scientific calculators are permitted.

### 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.
- Any student who leaves the examination room for a washroom break must record their name, departure time, and return time on the designated exam log. Prior to exiting, the student must deposit their mobile phone at the front of the room; students without a phone will be required to present empty pockets for verification. Time spent outside the examination room will not result in any extension of the allotted examination period.

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 style 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, Achieve 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 [8.1](#)) 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 has 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 be viewable on the course website and the Achieve platform itself, as well as section [8](#) 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, the use of AI tools (e.g., GPT-5, DALL-E, Stable Diffusion) is permitted, provided it is **ethical, transparent, and responsible**. If AI has contributed in a *significant* way to your submitted work—such as drafting text, generating substantial code, or outlining a problem solution—you must acknowledge that contribution. Minor or incidental uses (e.g., asking for a syntax reminder, checking a small calculation) do not require formal citation, but you are still responsible for the accuracy and integrity of the result. For guidance on formal citation when needed, see the U of A Library's [How to Cite AI](#).

Using AI to gain an unfair advantage undermines both your learning and the integrity of the academic community, and may violate U of A policy. See [Section 3, Student Academic Integrity Policy Appendix A: Academic Misconduct](#).

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 person's academic work. Please note that students will be held responsible for any confusing, erroneous, false, offensive, plagiarised, or unethical content provided by AI within their work, so exercise caution and diligence in its use.

### 11.1 Using AI in This Course: Guidelines and Best Practices

AI can support and enhance your learning if used wisely. It should **complement** your own thinking, not replace it.

#### The Wrong Way to Use AI

Relying on AI solely to “get the answer” for coding, math problems, or other assignments will:

- Create gaps in your understanding, making future learning harder.
- Leave you unprepared for exams or other assessments where AI is not permitted.
- Prevent you from spotting or correcting AI-generated mistakes.
- Constitute a form of academic misconduct.

Your focus should be on **learning**, not just earning a grade.

#### The Right Way to Use AI

AI works best as a tutor or guide. For example:

*“Can you explain how to create a dataframe in R?”*

Such targeted questions can clarify concepts, reinforce understanding, and help you develop problem-solving skills.

Use AI to deepen your engagement with the material. The more you practice independently, the more confident you will be when it matters.

*AI use is permitted in this course, but with important conditions: all submitted work must reflect your own understanding and abilities. Occasional, well-judged use of AI to support your learning is fine; relying on it to produce your work is not. If it appears that AI has completed most or all of a submission, marks may be reduced—potentially to zero. If you believe this determination is incorrect, you may request a reassessment by meeting with the instructor or marker **in person** to demonstrate your grasp of the material. This ensures you can explain and apply the concepts independently.*

## 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 3 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

Barring 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., 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. The date, time, and location for the deferred exam will be listed on the course website once a suitable time and location can be procured. This date is non-negotiable. By missing the midterm, the means to avoid scheduling conflicts with other classes was forfeited. Failure to attend the deferred exam will result in a score of 0 for the midterm exam's full original weight, as specified in Table 3 of the syllabus.

## 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

Students who wish to request a re-evaluation of their graded term work must do so in a timely manner (e.g., within one week) after the grade has been posted and *before* final course grades are submitted.

Requests must include a clear and specific justification. Re-evaluations will only be considered if the rationale provided is deemed reasonable by the marker. General requests for “another look” without a substantive explanation will not be granted.

## 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 Student Responsibilities

### 18.1 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.

## 18.2 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 [Student Academic Integrity Policy](#) 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

## 18.3 Inappropriate Collaboration:

Students need to be able to recognize when they have crossed the line between appropriate collaboration and inappropriate collaboration. If students are unsure, they need to ask instructors to clarify what is allowed and what is not allowed. Here are some tips to avoid copying on assessments:

- Do not write down something that you cannot explain to your instructor.
- When you are helping other students, avoid showing them your work directly. Instead, explain your solution verbally. Allowing your work to be copied is also considered inappropriate collaboration.
- It is also possible that verbally discussing the solution in too much detail may result in written responses that are too similar. Try to keep discussions at a general or higher level.
- If you find yourself reading another student's solution, do not write anything down. Once you understand how to solve the problem, remove the other person's work from your sight and then write up the solution

to the question yourself. Looking back and forth between someone else's work and your own work is almost certainly copying and considered inappropriate collaboration.

- If the instructor or TA writes down part of a solution in order to help explain it to you or the class, you cannot copy it and hand it in for credit. Treat it the same way you would treat another student's work with respect to copying, that is, remove the explanation from your sight and then write up the solution yourself.
- There is often more than one way to solve a problem. Choose the method that makes the most sense to you rather than the method that other students happen to use. If none of the ideas in your solution are your own, there is a good chance it will be flagged as copying.

## **18.4 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.

## **18.5 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.

## 19 Student Supports

### 19.1 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.

### 19.2 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](#).

### 19.3 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.

### 19.4 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.

### 19.5 First Peoples' House

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

### 19.6 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.

### 19.7 Health and Wellness Support

There are many health and community services available to current students. For more information, visit the [Health and Wellness Support for Students website](#).

## 19.8 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.

## 20 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.

### 20.1 Course Outlines

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

### 20.2 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.

## **20.3 Copyright**

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