WESTERN UNIVERSITY
LONDON CANADA

Department of Psychology
Fall 2026

Psychology 2811A Section 200
Statistics for Psychology I

1 Calendar Description

This course introduces students to the basics of data analysis for psychological research. Topics include probability, sampling, estimation, data visualization, and the conduct and interpretation of basic statistical analyses. Throughout the term, students will gain experience in computer-based data analytic methods.

Antirequisite(s): Biology 2244A/B, Economics 2122A/B, Economics 2222A/B, Geography and Environment 2210A/B, Health Sciences 3801A/B, MOS 2242A/B, the former Psychology 2810, the former Psychology 2820E, Psychology 2830A/B, Psychology 2850A/B, Psychology 2851A/B, Sociology 2205A/B, Statistical Sciences 2035, Statistical Sciences 2141A/B, Statistical Sciences 2143A/B, Statistical Sciences 2244A/B, Statistical Sciences 2858A/B, the former Social Work 2207A/B.

Prerequisite(s): At least 60% in 1.0 course of Psychology at the 1000 level; a passing grade (i.e., at least 50%) in Data Science 1000A/B and a passing grade (i.e., at least 50%) in 0.5 course of Year 1 Math from among the following courses: Calculus 1000A/B, Calculus 1301A/B, Calculus 1500A/B, Calculus 1501A/B, Mathematics 1225A/B, Mathematics 1228A/B, Mathematics 1229A/B, Mathematics 1600A/B, or Applied Mathematics 1201A/B. Students without Data Science 1000A/B may enrol with Applied Mathematics 1201A/B, Computer Science 1026A/B, and Calculus 1000A/B with a grade of at least 60% in each. Students who have completed Statistical Sciences 1024A/B (or other introductory statistics course, in addition to 0.5 course of Year 1 Math) may enrol after completing an introductory programming class from the following list: Computer Science 1025A/B, Computer Science 1026A/B, Computer Science 2120A/B, Data Science 1200A/B, Digital Humanities 2220A/B, or Engineering Science 1036A/B. Data Science 2000A/B may be substituted for Data Science 1000A/B for students entering the program with 1.0 Year 1 Math courses.

2 lecture hours; 2 laboratory hours; Course Weight: 0.5

Unless otherwise stated, students are responsible for ensuring that they have successfully completed all prerequisites prior to enrolling. Where prerequisites have not been met, the instructor may require the student to withdraw from the course. In accordance with Western policy, this decision is not subject to appeal.

In the event of a discrepancy between this outline and Senate or University policies, the latter shall prevail. The instructor reserves the right to modify elements of this course outline for

pedagogical or operational reasons. Any such changes will be communicated to students in a timely manner.

2 Course Information

COURSE STAFF:

Instructor: Dr. Erin Heerey
Email: eheerey@uwo.ca
Office Hours: TBD

TAs: See information on OWL for names, email addresses and office hours.

TIME AND LOCATION OF CLASSES:	***** *Both sessions are required* *****
In Person/Synchronous session:	Wednesdays, 11:30AM to 1:30PM Location: see timetable
Online/Asynchronous session:	New material will be posted at 9am Mondays (see course schedule below for details)

3 Course Materials

Students must have a reliable internet connection and computer that are compatible with online/technical learning elements.

There is no specific textbook for this course. Instead, readings will be drawn from a number of sources – mainly online textbooks but sometimes blog posts and other resources. All of these sources are freely available online. The links for each reading appear in the course reading list.

4 Course Objectives and Learning Outcomes

The aim of this course is to develop students' basic data literacy skills by learning to use a data-driven approach to think critically about data. Students will develop statistical knowledge via sampling data from real and simulated datasets, visualizing their results, testing for relationships in their data, and interpreting the patterns they see. The class will extend basic data science training by teaching students to code their own statistical tests and visualizations in Python.

Learning Outcome	Learning Activity	Assessment
Depth and Breadth of Knowledge.		
Demonstrate basic knowledge of probability as it applies to sampling and statistics.	Lectures; readings; lab activities	Homework; Exams; Quizzes
Describe the logic and basic elements of null hypothesis significance testing.	Lectures; readings; lab activities	Homework; Exams; Quizzes

Understand, describe, and interpret basic statistical procedures and what these procedures tell us.	Lectures; readings; lab activities	Homework; Exams; Quizzes
Application of Knowledge. Produce appropriate statistics to describe sample data.	Lab activities	Homework; Exams; Quizzes
Plot sampling distributions and graphs that show the relationships between different types of variables.	Lab activities	Homework; Exams; Quizzes
Interpret both graphical and statistical evidence to make conclusions about data.	Lectures; readings; lab activities	Homework; Media v Science Project; Exams; Quizzes
Recognize from data and/or study design descriptions which statistical tests should be used.	Lectures; readings; lab activities	Homework; Exams; Quizzes
Application of Methodologies. Produce code in Jupyter Notebook to calculate statistical tests and data visualizations.	Lectures; readings; lab activities	Homework; Exams; Quizzes
Demonstrate basic data wrangling skills including outlier exclusion, data cleaning and transformation.	Lab activities	Homework; Exams; Quizzes

5 Evaluation

Lab/Homework Assignments	7%
Lab/Homework Quizzes (in class)	8%
Media v Science Project	15%
Midterm Exam	32%
Final Exam	38%

The evaluation and testing formats for this course were created to assess the learning objectives as listed in section 4 and are necessary for meeting these learning objectives. All evaluations listed in this course outline are required components of the course and together account for 100% of the final grade. Weightings and assessment formats may be adjusted where required to support course learning objectives, with appropriate notice to students.

Bi-weekly Lab/Homework Assignments (7%):

**** This assessment has built-in flexibility. It is exempt from the academic considerations policy. ****

For each assignment, you will complete a set of lab/homework problems in a Jupyter Notebook. The lab elements will be guided by video tutorial. The homework problems you will do on your own. The homework problems will relate to the corresponding lab material. The Jupyter Notebook with the lab/homework assignment will be released on OWL on the same day as the

video tutorial it corresponds with (Mondays of the release week at 9:00am). It will be due 8 days later, on Tuesday at 9:00am. You must upload the Notebook ('.ipynb' extension) to the assignment portal on Gradescope. **You are responsible for uploading the correct file, in the correct format, to the correct portal on Gradescope. If you upload the file incorrectly, you will receive a mark of 0.** It is your own responsibility to check that you have uploaded the assignment correctly. There are a total of 6 assignments that you will complete over the course of the term. *I will drop your lowest score, which means that you can skip one assignment without penalty.* Each of the remaining 5 assignments will count toward your grade. This assignment has a 24-hour grace period. ***The grace period extends from Tuesday at 9:00am to Wednesday at 9:00am*.** If your assignment has not been submitted by this time, you will receive a grade of 0. There will be absolutely no exceptions to this policy.

Bi-weekly Lab/Homework Quizzes (8%):

**** This assessment has built-in flexibility. It is exempt from the academic considerations policy. ****

Starting with the Lab/Homework 2, the synchronous class period that occurs the day the Lab/Homework grace period ends will include a quiz in the first 60 minutes of class (see schedule below for exact dates). To complete the quiz, you will need your laptop, and Jupyter Notebook. You will also need to be present in the classroom. At the start of the class period, OWL will release a Jupyter notebook that you will download, open, and analyze in class. The quiz questions will be based on analysis steps within the Jupyter notebook homework. You will have a chance to ask questions and interact with the instructor before answering each quiz question. The quiz questions will only be presented in person. You must upload your completed notebook to the assignment portal to receive full credit for the quiz. There are a total of 5 quizzes that you will complete over the course of the term. *I will drop your lowest score, which means that you can skip one quiz without penalty.* Each of the remaining 4 quizzes will count toward your grade. There will be absolutely no exceptions to this policy.

Media v Science Project (15%):

*** You MAY use your self-attested absence on this course element. ***

We frequently see statistics reported in the news. But have you stopped to consider where those statistics come from what they really mean? The goal of this assignment is to critically evaluate how a research study, as reported in a media outlet, compares with its original source. You should select a recent news article (no more than 1 year old). The article should report on a peer-reviewed research article published in a scientific journal. You should then critically evaluate the news article, as well as the original source article, using evidence from both sources. You will write a 500-word critical analysis of the media and the scientific source article. You must document your work-flow on this assignment. To support this, there will be a series of interim due dates (see schedule on OWL). Additional details and rubrics are available on OWL.

Exams (70%): There will be two proctored exams in the course. These exams will take place in person. The midterm will cover the course material from weeks 1-5. The final will be cumulative (all course materials).

****** Final Exams are always exempt from the academic considerations policy. ******

****** The Midterm Exam is the designated course component that is exempt from the academic considerations policy. ******

Both exams will be closed book/closed note. No calculators or other devices will be allowed. You will be allowed one "cheat sheet" of notes for the midterm and two cheat sheets for the final exam. Your cheat-sheet(s) may include any course material that you think will help you on the relevant exam and you may use both the front and back sides of each paper. Each cheat sheet may not include more than a single piece of "letter" sized paper (no stapled, glued, or taped elements are allowed). Your cheat sheet(s) will be checked by the proctors. If they are found to be in violation of the requirements the proctors may confiscate them during the exam. The exams will include multiple-choice/select all that apply/matching/fill in the blank questions, along with several short answer, and graph/code interpretation questions.

The midterm will be completed during the synchronous class period (see schedule below). You will have 100 minutes to complete it. The final exam will be scheduled by the registrar during the **end of semester exam period**. It will be 3 hours long. If you are an accommodated student, your time will be adjusted according to the time listed in your official accommodation if and only if you request an exam via the accessible education office. You MUST take the exams independently. The answers on the exam must be entirely your own work. If there is evidence that you worked with another student on the exam or that the work is not entirely your own, you will receive a score of 0.

Extra Credit (OPTIONAL; up to +3%): Statistics is a discipline that relies on the analysis of empirical data. You have the chance to participate in this process by helping to generate research data and to see the data analysis from the data creation side. To take part, you will be given access to the SONA system, and you may participate in any "for credit" studies that you wish. You will receive bonus credits added to your overall course grade for each SONA credit you earn, to a maximum of 6.0 SONA credits (50% of these credits must be earned in-person). Note that if you sign up for a study and then fail to attend, you will receive a penalty equal to the number of study-credits the original study was worth. This penalty will count against your earned credits until it is made up.

The SONA system will track the studies you complete, and the course instructor will be given this information at the end of the term. This is an opportunity to earn extra credits and is not required as part of your normal grade, you will not lose any marks if you do not participate in research studies. The maximum number of bonus credits you may earn is 6.0. For each credit you earn, you will receive an additional 0.5% in the gradebook. All extra credits must be completed by **11:55AM** (just before noon) on **the last day of term** to count toward your grade. Because this item is extra credit and will never count against you, there will be absolutely **no exceptions to this deadline**.

****** Because this is not an official assessment, is not required, and is subject to the SONA credit deadline, it is exempt from the academic considerations policy. ******

Policy on Missing Coursework

Lab/Homework Assignments: Assignments are due at 9:00am on Tuesday of the week they are due (see schedule below). The 24-hour grace period for assignment submission lasts until Wednesday at 9:00am in the week they are due. Please ensure that you give yourself enough

time to complete your submission by this time. There is no need to email the course staff about late homework, as the submission portal will remain available until the grace period closes (Wednesday of the relevant week at 9:00am). If your assignment has not been completed and correctly uploaded by the time the assignment portal closes, it will receive a score of 0. Because the assignments are worth < 2% each, there is a grace period between the due date and assignment submission portal closure, and the lowest score is dropped, **absolutely no excuses will be accepted for missed assignments**.

Lab/Homework Quizzes: Beginning with Homework 2, each homework will be associated with an in-class quiz. The quiz will involve a Jupyter notebook that you will complete in class (see schedule below). The Jupyter notebook will be based on the relevant lab/homework you completed. The quiz will be given via Qualtrics. You must be present in class to take the quiz. If your work has not been completed and correctly uploaded by the time the answer key is released, it will receive a score of 0. Because the assignments are worth 2% each and the lowest score is dropped, **absolutely no excuses will be accepted for missed quizzes**.

Media v Science Project: The final project will be due at **11:55pm on Wednesday 3 December**. This assignment also has interim deadlines (e.g., annotated articles are the first submitted project element; see schedule below for more information). If you wish to attest to an illness or other extenuating circumstance, you may do so using the appropriate reporting portal. You may use your single self-attested absence for any of the assignment deadlines, as you wish. **If you attest to an illness or other short-term extenuating circumstance, your assignment will be due 24 hours after the deadline to make an attestation.** A chart with the relevant attested-absence due dates is posted on OWL in the Media v Science tab. **You must upload the completed element to the correct assignment portal before the deadline, or you will receive a score of 0 on that element.**

Exams: If you need to miss an exam due to illness or other issue, you MUST request relief from academic counselling. Without an approved consideration from academic counselling, you will receive a score of 0 on the exam. You will be given an **opportunity to make up the final exam**. The make-up final exam will be held in-person on a date and time that will be announced on OWL. Note that the make-up exam may include new test questions and/or the analysis and interpretation of a dataset. The make-up exam may include an oral exam (conducted in-person) on the course material. If you do not take the final exam or make-up exam, you will receive a 0 for this course component.

You will **NOT have an opportunity to make up the midterm exam**. Instead, if you have an approved consideration for the midterm, you will receive a midterm score based on the items on the final exam that cover the same content as the midterm. Your proportion correct on these items will be used to calculate a midterm score for you. Your final exam score will then be calculated based on the proportion of items you get correct that cover content from the second part of the course.

Students who encounter extenuating circumstances affecting their academic responsibilities may submit a request for academic consideration in accordance with Western University's Academic

Consideration policies. Requests must be submitted through the Student Absence Portal and may require supporting documentation.

Course grades within the Psychology Department are expected to be distributed around the following averages:

70% 1000-level to 2099-level courses
72% 2100-2999-level courses
75% 3000-level courses
80% 4000-level courses

In the event that course grades are significantly higher or lower than these averages, instructors may be required to make adjustments to course grades. Such adjustment might include the normalization of one or more course components and/or the re-weighting of various course components.

Policy on Grade Rounding

Course grades are rounded to the nearest whole number. No additional assignments will be offered to enhance a final grade. Requests to change a grade because it is needed for a future program will not be considered.

6 Assessment/Evaluation Schedule

- **Bi-Weekly Lab/Homework Assignments:** Due approximately every other week, **Tuesday at 9:00am**. See exact schedule below.
- **Bi-Weekly Lab/Homework Quizzes:** Begin at **start of class**, after a homework is completed (except Homework 1). See schedule below.
- **Media v Science Project:**
  - **Article Annotations:** *Wednesday, 4 November at 11:55pm*
  - **Comparison Chart:** *Wednesday, 18 November at 11:55pm*
  - **Final Project:** *Wednesday, 9 December at 11:55pm*
- **Midterm Exam:** **Wednesday, 28 Oct 11:30am**
- **Final Exam:** **TBA (December Exam Period)**

7 Class Schedule (see note below)

Class	Lecture Topic	Lab Topic
1 *9 Sept*	Course introduction and descriptive statistics	Introduction to Jupyter / Python; Descriptive statistics *Lab/Homework 1 Assigned (Mon)*
2 *16 Sept*	Sampling distributions	*Lab/Homework 1 Due (Tues)*

3 *23 Sept*	Probability	Distributions and sampling*;* Probability *Lab/Homework 2 Assigned (Mon)*
4 *30 Sept**	Estimation, effect size and precision *(Truth & Reconciliation Day: no in-person class)*	*Lab/Homework 2 Due (Tues)* *Lab/Homework Quiz (Opens Wed, 11:30am; Closes Fri, 11:30am) *See note below*
5 *7 Oct*	Null hypothesis significance testing (NHST)	Estimating differences; NHST basics and limitations *Lab/Homework 3 Assigned (Mon)*
6 *14 Oct*	Reading week: No class	No Lab
7 *21 Oct**	Exam Review via video *(Instructor away: no in-person class)*	*Lab/Homework 3 Due (Tues)* *Lab/Homework Quiz (Opens Wed, 11:30am; Closes Fri, 11:30am) *See note below*
8 *28 Oct*	***Midterm (pencil and paper format)*** *Exam tests content from weeks 1-5*	No Lab
9 *4 Nov*	Tests of association: Continuous data & Categorical data	Simple Correlation/Regression & Chi-squared tests *Lab/Homework 4 Assigned (Mon)* *Article Annotations (Media v Science) Due (Wed, 11:55pm)*
10 *11 Nov*	Single sample tests	*Lab/Homework 4 Due (Tues)* *Lab/Homework Quiz (Wed, 11:30am)*
11 *18 Nov*	Two-sample tests	Z-tests, t-tests; Simple group comparisons *Lab/Homework 5 Assigned (Mon)* *Comparison Chart (Media v Science) Due (Wed, 11:55pm)*
12 *25 Nov*	One-way ANOVA	*Lab/Homework 5 Due (Tues)* *Lab/Homework Quiz (Wed, 11:30am)*
13 *2 Dec*	Correlated samples tests	Comparing multiple groups; Non-independent data *Lab/Homework 6 Assigned (Mon)*
14 *9 Dec*	Exam review and open Q&A	*Lab/Homework 6 Due (Tues)* *Lab/Homework Quiz (Wed, 11:30am)* *Media v Science Project Due (Wed, 11:55pm)*
Exam Period	***Final (pencil and paper format)*** *Exam tests all course content*	***Time:*** *TBA* ***Location:*** *TBA*

*** NOTE:** Wednesday, 30 Sept is Truth and Reconciliation Day (a non-instructional day in Western's calendar). Wednesday 21 October the course instructor is away at a conference. A quiz is scheduled for both of these days. These (and ONLY these) quizzes will take place ONLINE and ASYCHONROUSLY (they will open during the normal start of class and will be due 48 hours later, on the Friday at 11:30am).

8 Academic Integrity

Scholastic offences are treated seriously at Western University. Students are expected to understand and comply with the University's standards of academic integrity. Scholastic offences may result in penalties up to and including expulsion from the University. Please read Western's Scholastic Offences policy for definitions and examples of Scholastic offences.

Statement on Use of Electronic Devices
No electronic devices of any type may be used during exams. You may use any electronic devices you wish in all other class periods.

Plagiarism Detection Software
All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between Western and Turnitin.com.

Use of AI
Responsible use of artificial intelligence (AI) tools is **permitted** in this course as a support for learning, not as a substitute for critical thinking or scholarly work. All use of artificial intelligence tools must comply with Western University's academic integrity standards.

Students may use AI tools (e.g., ChatGPT, Claude, Copilot) for:

- Brainstorming ideas or refining research questions
- Improving clarity, grammar, or organization
- Preliminary or background exploration of topics

AI must not be used to:

- Generate full drafts or final versions of assignments
- Replace analysis, interpretation, or synthesis
- Fabricate, misrepresent, or cite sources that the student has not independently consulted
- Bypass engagement with course materials

You are ultimately responsible for all work submitted under your name. AI output should be critically evaluated, substantially revised, and integrated thoughtfully, not copied verbatim.

All written assignments must include a brief AI Usage Statement, indicating:

- Which tools were used (if any)
- The purpose for which they were used
- How the output was modified and incorporated

Assignments submitted without an AI Usage Statement will not be accepted. Misuse of AI or failure to disclose its use may constitute a scholastic offence and will be addressed in accordance with Western University's academic integrity policies. Students are responsible for ensuring that all work complies with Western's scholastic integrity standards.

Multiple Choice Exams

Computer-marked multiple-choice tests and/or exams will be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

9 Academic Accommodations and Accessible Education

Western University is committed to providing an accessible learning environment. Students with disabilities or medical conditions requiring accommodation are encouraged to contact Accessible Education as early as possible Accommodations will be implemented in accordance with University policy. Please review Western's policy on academic accommodations for student with disabilities. Accessible Education provides supports and services to students with disabilities at Western. If you think you may qualify for ongoing accommodation that will be recognized in all your courses, visit Accessible Education for more information. Email: aew@uwo.ca Phone: 519 661-2147

10 Absence & Academic Consideration

Please review Western's policy on Academic Considerations:

11 Other Information

Helpful Websites

- Western's academic policies are available at the Office of the Registrar.
- Departmental policies are available at the Psychology Department website.
- Learning supports available at Learning Development & Success.

Well-being

Western University provides a range of supports to promote student well-being. Students are encouraged to seek assistance when needed. Students who are in emotional/mental distress

should refer to Health and Wellness at Western for a complete list of options about how to obtain help. Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you.

Grade Appeals

If you wish to appeal a grade, please read the policy documentation on requests for relief. Please first contact the course instructor. If your issue is not resolved, you may make your appeal in writing to the Undergraduate Chair in Psychology (psyugrd@uwo.ca).

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