WESTERN UNIVERSITY
LONDON CANADA

Department of Psychology
Fall/Winter 2026

Psychology 3801F Section 001

Statistics for Psychology III

1 Calendar Description

This course extends beyond traditional single-sample datasets. Students work with data on a larger scale by examining population data and implementing basic meta-analyses using a modern coding language. In addition, students extend their knowledge of statistical decision-making by learning to apply basic Bayesian models of statistical decision-making. Antirequisite(s): the former Psychology 3800F/G.

Extra Information: 2 lecture hours/week and 2 laboratory hours/week.

Antirequisites are courses that overlap sufficiently in content that only one can be taken for credit. If you take a course that is an antirequisite to a course previously taken, you will lose credit for the earlier course, regardless of the grade achieved in the most recent course.

RESTRICTED TO MAIN CAMPUS HONS SPECIALIZATION IN PSYCH, DEVELOPMENTAL COGNITIVE NEUROSCIENCE, AND ANIMAL BEHAVIOUR.

WAIT LIST OPTION AVAILABLE.

REQUISITES: Prerequisite(s): At least 75% in Psychology 2802F/G and Psychology 2812A/B, plus registration in third or fourth year Honours Specialization in Psychology or Honours Specialization in Developmental Cognitive Neuroscience, or Honours Specialization in Animal Behaviour.

Course Weight: 0.5

Unless you have either the prerequisites for this course or written special permission from your Dean to enrol in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

2 Course Information

Instructor: J Bruce Morton
Office: WIRB5178
Office Hours: By appointment
Email: bmorton3@uwo.ca

Teaching Assistants: Utkarsh Shukla & Antonious Tam
Office: WIRB
Office hours: By appointment
Email: ushukla@uwo.ca, stam96@uwo.ca

Time and Location of Classes and Tutorials:

LECTURE:
Wednesdays 9:30am to 11:30am – NCB114

TUTORIAL 1:
Thursdays @ 12:30pm to 2:30pm – UC2110

TUTORIAL 2:
Fridays @ 9:30am to 11:30am – UC2110

3 Course Materials

Lecture slides for PSY3801 are available in the Resources folder of the OWL Brightspace website for the course.

Required readings for PSY3801 are available in the Resources folder of the OWL Brightspace website for the course.

Software for PSY3801 is R. Required packages are available on the internet for free and can be installed within R-studio.

Assignments will be posted and submitted on Brightspace.

Practice Quizzes will be posted on Brightspace and will be available strictly as a learning resource.

4 Course Objectives and Learning Outcomes

The primary goal of PSY3801 is to provide students with logical and statistical skills required to critically evaluate data and research literature. It will achieve this goal by providing students with an in-depth introduction to two advanced statistical procedures: Bayesian analysis and meta-analysis. Through lectures, tutorials, readings, and homework assignments, students will learn the underlying rationale for both procedures, work with sample data sets in R to acquire a basic mastery of core techniques, learn basic diagnostic procedures, and learn to report the results of their analyses in written text and basic tables. Upon completing the course, students will: understand the difference between null hypothesis significance testing (NHST) and Bayesian inference; be capable of critically evaluating research literature by identifying uncertainties surrounding prevailing psychological theories and detecting biases in the reporting of evidence; and be capable of interpreting and producing written reports of Bayesian and meta-analytical statistical analyses. These skills will help students recognize the limits of scientific knowledge.

After successfully completing this course, students should be able to:

Learning Outcome	Learning Activity	Assessment
Depth and Breadth of Knowledge. • Understand the difference between null hypothesis significance testing and Bayesian inference • Identify and evaluate discrepant findings in research literature	Lectures Readings	Assignments Exams
Knowledge of Methodologies. • Read and use R scripts for implementing basic Bayesian procedures • Read and use R scripts for implementing basic meta-analytic procedures	Lectures Readings Coding and analysis assignments	Assignments Exams
Application of Knowledge. • Apply Bayesian analysis to sample data sets • Apply meta-analysis to sample data sets	Coding and analysis assignments	Assignments Exams
Communication Skills. • Read and write a report of a Bayesian analysis • Read and write a report of a meta-analysis	Readings Coding and analysis assignments	Assignments Exams
Awareness of Limits of Knowledge. • Understand the Bayesian interpretation of probability as an index of credibility • Recognize uncertainty surrounding prevailing psychological theories	Lectures Readings	Assignments Exams

Autonomy and Professional Capacity. • Apply knowledge responsibly	Lectures	

5 Evaluation & Policy on Missing Coursework

The evaluation and testing formats for this course were created to assess the learning objectives as listed in section 4.0 and are considered necessary for meeting these learning objectives. The evaluation components of the course consist of the following:

Assignments: 4 x 1.25 = 5% of final mark
Midterm = 47.5% of final mark
Final exam = 47.5% of final mark

Assignments help students learn lecture materials through practicing sample problems. Therefore, due dates for and grading of the Assignments are flexible. Students have 9 days to complete each Assignment but can take up to an additional week to submit their work. As well, students receive 1.25 marks for each submitted assignment regardless of the correctness of their work. *Please note that because the submission deadline for Assignments already includes flexibility in the form of a 1-week grace period, the instructor reserves the right to deny academic consideration for assignments which are submitted following the end of the period of flexibility. Late Assignments <u>without</u> academic consideration following the period designated above will be subject to a late penalty of 5%/day.*

The **Midterm** will consist of SA questions based on readings and lectures pertaining to Bayesian statistics. For the Midterm exam, students will be allowed to use R and scripts that have been distributed in class. Additional notes that you have added to your scripts as comments are allowable but must be limited to text-based comments in the R-script we use together in class and tutorials. Any additional annotations to R-scripts, or additional scripts you have written independently, are NOT permitted for use during the Midterm exam. Laptop computers cannot be connected to the internet during the exam. *Please note that this assessment is central to the learning objectives for this course. Accordingly, students seeking academic consideration for this assessment will be required to provide formal supporting documentation. Students who are granted academic consideration for this assessment will be provided one opportunity write a make-up exam no more than 1 week following the scheduled Midterm exam.*

The **Final exam** will consist of SA questions based on readings and lectures pertaining to meta-analysis. For the Final exam, students will be allowed to use R and scripts that have been distributed in class. Additional notes that you have added to your scripts as comments are allowable but must be limited to text-based comments in the R-script we use together in class and tutorials. Any additional annotations to R-scripts, or additional scripts you have written independently, are NOT permitted for use during the Final exam. Laptop computers cannot be connected to the internet during the exam. *Please note that this assessment will be scheduled by the Office of the Registrar and that supporting documentation is **always***

required for academic consideration requests for examinations scheduled by the office of the registrar. Students who are granted academic consideration for this assessment will be provided one opportunity write a make-up exam no more than 1 week following the scheduled Final exam.

This course is exempt from the Senate requirement that students receive assessment of their work accounting for at least 15% of their final grade at least three full days before the date of the deadline for withdrawal from a course without academic penalty.

The Psychology Department follows Western's grading guidelines:
https://www.uwo.ca/univsec/pdf/academic_policies/general/grades_undergrad.pdf

The expectation for course grades within the Psychology Department is that they will 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

Please note that although course grades within the Psychology Department are rounded to the nearest whole number, no further grade rounding will be done. No additional assignments will be offered to enhance a final grade; nor will requests to change a grade because it is needed for a future program be considered.

6 Assessment/Evaluation Schedule

Assignment due dates: September 25; October 30; November 20; December 4

MIDTERM exam: In class on November 4, 2026.

FINAL: to be scheduled by the Registrar's Office

7 Class Schedule

LECTURE #/DATE	TOPIC	QUIZZES/ASSIGNMENTS	READINGS
L1: Week of Sept 9	Introduction		

L2: Week of Sept 16	Introduction to Bayes	ASSIGNMENT 1 assigned	Navarro, D. J. (2018). Learning statistics with R: A tutorial for psychology students and other beginners. Ch 17.5 McClave & Sincich, Ch 3.5
L3: Week of Sept 23	Bayes Theorem	ASSIGNMENT 1 due Sept 25	McClave & Sincich, Ch 4.2, 4.4, Ch5 (optional) Coghlan, A. (2017) "A little book of R…"
L4: Week of Sept 30	Bayesian estimation		
L5: Week of Oct 7	Bayesian model comparison I	ASSIGNMENT 2 assigned	Navarro, D. J. (2018). Learning statistics with R: A tutorial for psychology students and other beginners. Ch 17.2; 17.7 https://easystats.github.io/bayestestR/articles/bayes_factors.html
Week of Oct 14		READING WEEK	
L6: Week of Oct 21	Bayesian model comparison II		Navarro, D. J. (2018). Learning statistics with R: A tutorial for psychology students and other beginners. Ch 17.8 https://easystats.github.io/bayestestR/articles/bayes_factors.html
L7: Week of Oct 28	Bayesian model comparison III	ASSIGNMENT 2 due Oct 30	https://easystats.github.io/bayestestR/articles/bayes_factors.html
Nov 4		MIDTERM	
L8: Week of Nov 11	Meta-analysis: Intro	ASSIGNMENT 3 assigned	Lowe et al., (2021). The bilingual advantage in children's executive functioning is not related to language status. *Psych Science*
L9: Week of Nov 18	Meta-analysis: modelling effect sizes	ASSIGNMENT 3 due Nov 20	
L10: Week of Nov 25	Meta-analysis: effect size heterogeneity and moderation analysis	ASSIGNMENT 4 assigned	
L10: Week of Dec 2	Meta-analysis: publication bias	ASSIGNMENT 4 due Dec 4	

8 Academic Integrity

Scholastic offences are taken seriously, and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Possible penalties for a scholastic offence include failure of the assignment/exam, failure of the course, suspension from the University, and expulsion from the University.

Statement on Use of Electronic Devices

For both the Midterm and Final exams, students will be allowed to use R and scripts that have been distributed in class. Additional notes that you have added to your scripts as comments are allowable but must be limited to text-based comments in the R-script we use together in class and tutorials. Any additional annotations to R-scripts, or additional scripts you have written independently, are NOT permitted for use during quizzes and exams. Laptop computers cannot be connected to the internet during any exam.

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

The use of generative AI tools such as ChatGPT to produce written work is not permitted unless permission is granted by the instructor for specific circumstances. Any work submitted must be the work of the student in its entirety unless otherwise disclosed. When used, AI tools should be used ethically and responsibly, and students must cite or credit the tools used in line with the expectation to use AI as a tool to learn, not to produce content.

AI Policy for Psychology

Responsible use of AI is allowed in Psychology. This includes using AI for brainstorming, improving grammar, or doing preliminary/background research on a topic.

AI is **not** to be used in place of critical thinking.

The misuse of AI undermines the academic values of this course. Relying on AI to create full drafts or fabricate sources is prohibited. You are ultimately responsible for any work submitted, so it is highly advised that you critically review your Generative AI output before incorporating this information into your assignments.

If you use AI, you must clearly explain its role in your work. All written assignments will require an AI Usage Statement, in which you will indicate what tools you have used, what you have used them for, and (broadly) how you have modified this information. Assignments without an AI Usage Statement will not be accepted.

Violations of this policy will be handled according to Western's scholastic offense policies.

Exam Proctoring Software

Tests and examinations for online courses may be conducted using a remote proctoring service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote
Proctoring website at: https://remoteproctoring.uwo.ca.

Personal Response Systems ("Clickers")

In classes that involve the use of a personal response system, data collected will only be used in a manner consistent to that described in this outline. It is the instructor's responsibility to make every effort to ensure that data remain confidential. However, students should be aware that as with all forms of electronic communication, privacy is not guaranteed.

9 Academic Accommodations and Accessible Education

View Western's policy on academic accommodations for student with disabilities at this link.

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

Academic Considerations:
https://registrar.uwo.ca/academics/academic_considerations/index.html

11 Other Information

- Office of the Registrar: https://registrar.uwo.ca
- Student Development Services: www.sdc.uwo.ca
- Psychology Undergraduate Program: https://www.psychology.uwo.ca/undergraduate/index.html

Students who are in emotional/mental distress should refer to Health and Wellness@Western https://www.uwo.ca/health/ 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.

If you wish to appeal a grade, please read the policy documentation at: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/appealsundergrad.pdf. 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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