School of Health Studies

Western HealthSciences

HS 3801B: Measurement and Analysis

Winter | 2026

Prerequisites: Health Sciences 2800 or Health Sciences 2801A/B or Foods and Nutrition 2032A/B or Kinesiology 2032A/B. Anti-requisite(s): Biology 2244A/B, Economics 2122A/B, Economics 2222A/B, Foods and Nutrition 3032A/B, Geography 2210A/B, Kinesiology 3032A/B, MOS 2242A/B, Psychology 2811A/B, 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 Foods and Nutrition 3390W/X, the former Psychology 2810, the former Psychology 2820E, the former Social Work 2207A/B.

Note: Unless you have either the requisites for this course or written special permission from your Dean to enroll 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. ***If you wish to enroll in this course without the stated pre-requisite(s), you must obtain written approval from the course instructor. The approval should then be forwarded to your academic counsellor.***

Course Information

Andrew Johnson, PhD
Course Coordinator
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Office Hours: By Appointment
Lectures: Blended

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HS 3801B Instructor
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Land Acknowledgement

We acknowledge that Western University is located on the traditional territories of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Chonnonton Nations, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum. This land continues to be home to diverse Indigenous Peoples whom we recognize as contemporary stewards of the land and vital contributors of our society.

Accessibility Acknowledgement

Meaningful ways to incorporate equity into the student experience are important to the School of Health studies. To that end, we honour all manner of differences inherent within the student population and incorporate accessible options for inclusion to the best of our abilities in each course offering.

Course Description

An introduction to measurement and analysis in health sciences research, covering topics such as validity, reliability, standard errors, confidence intervals, tests of means, correlation, and linear regression.



Delivery Mode: Blended

This is a "flipped classroom" course. Asynchronous lecture videos will be provided weekly, to prepare you for our weekly debriefing session. This debriefing session will be held weekly, on Wednesdays, between 4:30pm and 6:30pm in HSB40. It is expected that you will watch the video before coming to class.

Attendance will not be taken, but this weekly session should not be taken to be "optional". This is your primary opportunity to review content, ask questions, and interact with the instructor.

Learning Objectives

In this course, you will be introduced to some of the most common statistical analyses applied within the literature, with an emphasis on learning how the analyses are conducted by hand. By the end of the course, you will be comfortable with the theory and mechanics of calculating measures of central tendency and dispersion, standard scores, t-tests (both independent and dependent), bivariate correlation and regression, simple chi-square calculations for frequency distributions, and simple ANOVAs (both independent and dependent).

Course Format and Timetable

Note: timetable is tentative and subject to change

Week	Date(s)	Topic	Online Quiz Due
1	2026.01.07	Describing Data	2026.01.16
2	2026.01.14	Hypothesis Testing	2026.01.23
3	2026.01.21	Single Sample Inference	2026.01.30
4	2026.01.28	Independent Groups t-test	2026.02.06
5	2026.02.04	Dependent Groups t-test	2026.02.13
6	2026.02.11	Correlation & Regression	2026.02.27
	2026.02.18	***Reading Week***	
7	2026.02.25	Univariate Count Data	2026.03.13
8	2026.03.04	Review of Midterm	
9	2026.03.11	Bivariate Count Data	2026.03.20

10	2026.03.18	Independent Groups ANOVA	2026.03.27
11	2026.03.25	Dependent Groups ANOVA	2026.04.02
12	2026.04.01	Review for Final (online)	
	2026.04.10-11	***Study Days***	
	2026.04.12-30	***Exam Period***	

Evaluation

Below is the evaluation breakdown for the course. Any deviations will be communicated.

Assessment	Format	Weight[1]	Due Date	Flexibility
Quizzes	Multiple choice	3% each	Throughout	All quizzes are optional
Peerwise Part 1	Multiple choice	2.5%	2026.02.27	Optional assignment
Peerwise Part 2	Multiple choice	2.5%	2026.04.09	Optional assignment
Midterm	Multiple choice	32.5%	2026.02.28	None
Final Exam	Multiple choice	32.5%	TBA	None

Assessment Descriptions

Optional Online Quizzes

I have posted ten (10) online quizzes to help you review exam material. These online quizzes will be multiple-choice and are (obviously) open-book examinations. You should plan to use a calculator for all of these quizzes. My expectation is that you will do these quizzes individually, and not with your classmates. You will have 30 minutes to complete each quiz, starting from the time you first open the quiz. Each quiz may be submitted only once. Quizzes are due at 9:55pm on the dates noted within the course schedule. Late quizzes will not be accepted, nor will makeup tests be given, as question-level feedback will be released the day after each quiz is due. These quizzes are wholly optional. Each quiz that you complete is worth 3% of your final grade. The value of any missed quizzes will be distributed amongst all other assessments in the course (i.e., not just amongst the optional online quizzes). *This means that you cannot seek academic consideration for missed online quizzes, because academic consideration will automatically be applied to any missed quiz (in the form of re-weighting the remainder of your assessments).*

Optional Peerwise Assignment

One of the most frequent requests that I receive from students is for more sample questions. To address this need, we will be using PeerWise as a place for you to create, share and evaluate assessment questions with your classmates. There are two opportunities to earn grades through the use of PeerWise in this course. The first Peerwise assignment is due on February 27th and the second is due on April 9th. Both are due at 9:55pm.

Start by visiting PeerWise. If you have not used PeerWise before, just click the "Registration" link and follow the prompts to choose a username and a password for your account. If you have used PeerWise before, simply log in and then select "Join course" from the Home menu.

To access our course, "HS 3801B (January to April, 2026)", you will need to enter two pieces of information:

1. *Course ID = 28260*
2. *Identifier = your UWO username (the part before the "@uwo.ca")*
   You don't need to (and probably shouldn't) use your UWO password when registering.

Note that the Peerwise Assignment does not open until January 16, 2026.

Participation in the Peerwise Assignment is wholly optional. Each of the assignments are worth 2.5%

1. This weighting is the "initial weighting" of each component. If you miss optional quizzes or Peerwise Assignments, the weight of these assessment items is spread across all completed evaluations. The weight of a missed midterm is **always** shifted directly to the final exam.

of your final grade. You will earn full marks by contributing 5 questions to the Peerwise question bank *AND* answering 5 of the questions posted by your classmates. Failure to complete either of these activities (i.e., contributing questions or answering questions) will lead to you receiving no credit for participation in this assessment. Late contributions will not be considered for course credit, and the value of any missed grading components will be distributed amongst all other assessments in the course (i.e., not just amongst the optional Peerwise Assignment components). *This means that you cannot seek academic consideration for any part of this assignment, because academic consideration will automatically be applied to any component (in the form of re-weighting the remainder of your assessments).*

Note that each of the Peerwise assignments are separate – you must contribute 5 questions and answer 5 questions within each section of the course (i.e., before the midterm, and after the midterm).

Midterm

The midterm for this course will cover all course material (in readings, supplemental materials presented through OWL, lecture videos, and in tutorials) presented in weeks 1 through 6 (i.e., up to and including our unit on correlation and regression). Questions will not be grouped by course unit, and the ordering of questions on the exam will not follow the chronology of the units as taught in the course. This test will consist solely of multiple-choice questions. You will probably want to have a calculator for this exam. You will have two hours to complete the test. This test is not open book, but you will be provided with a formula sheet and statistical tables with your testing package. This assessment is not optional – but you **may** use an undocumented absence request when seeking permission to miss the evaluation. All academic considerations must be requested through the Student Absence portal within 48 hours of the end of the midterm.

There is no makeup for this midterm. If you miss this evaluation, you will write a special version of the final exam that is four hours long, and fully cumulative (i.e., it will contain roughly equivalent amounts of content from each week of the course). This fully cumulative final exam will be worth 65% of your final grade.

Final Exam

For students who write the midterm, the final exam will cover all course material presented in weeks 7 through 10 (in readings, supplemental materials presented through OWL, lecture videos, and in tutorials). This exam will consist solely of multiple-choice questions. You will need a calculator for this exam. You will have two hours to complete the examination, and it will be held during the final exam period. This exam is not open book, but you will be provided with a formula sheet and statistical tables with your testing package.

For students who did not write the midterm, the final exam will cover ALL course material presented throughout the term. The exam will consist solely of multiple-choice questions. You will need a calculator for this exam. You will have four hours to complete the examination, and it will be held during the final exam period. This exam is not open book, but you will be provided with a formula sheet and statistical tables with your testing package.

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

The makeup for the final exam will be held in May. The date, time, and location of this Special Exam will be posted to Brightspace in April.

Rounding of Grades (for example, bumping a 79 to 80%)

This is a practice some students request. The final grade documented is the grade that you have achieved. There is no rounding to the next grade level, or 'giving away' of marks. Please don't ask me to do this for you; the response will be "please review the course outline where this is presented".

Notes on Assessments:

☑ Any grade appeals on term work must be initiated with the instructor within 3 weeks of the grade being posted. See the University Policy on Undergraduate Student Appeals for more information

☑ You must pass the final exam to pass the course

INC (Incomplete Standing): If you are approved by the Academic Advising Office to complete term work at a later date, an INC will be assigned. Students with INC will have their course load in subsequent terms reduced to allow them to complete outstanding course work. Students may request permission from Academic Advising to carry a full course load for the term the incomplete course work is scheduled.

SPC (Special Examination): If you are approved by the Academic Advising Office to write a Special Examination and the final exam is the only outstanding course component, an SPC will be assigned. The Special Examination (i.e., makeup final exam) for this course will be written in May. If you miss this exam for reasons approved by the Academic Advising Office, you will be offered an opportunity to write the exam the next time the course is offered. Outstanding SPCs will reduce the course load for the term to which the exam is deferred, as outlined in Types of Examinations policy.

The table below outlines University-wide grade descriptors.

Letter grade	Number grade	Description
A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work which is clearly above average
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	below 50	Fail

Textbook and Other Learning Materials

There are no *required* textbooks for this course. If you wish to have a textbook for the course, I recommend the OpenStax text by Illowsky et al. The PDF of this text is available for free through the bookstore, or you may purchase a professionally bound copy for approximately $40.00 through Amazon.com. More information can be found here: https://openstax.org/details/introductory-statistics.

You will need a calculator with a "stats mode" for this course. The device should be easy to use – I would recommend that you avoid calculators that have functions and capabilities that are not required for this course. A calculator sufficient for this course should cost approximately $15.00 to $35.00. It is advisable to have your calculator available for all lectures, homework assignments, tests, quizzes, and assignments.

NOTE: All course information including grades, assignment outlines, deadlines, etc. are available via OWL Brightspace. Download the Brightspace Pulse App to stay up-to-date on course communication and enable your notification settings within "Communications" in the top toolbar. Check the website regularly for course announcements. If you need assistance, visit OWL Brightspace Help or contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

Course/University Policies

Support Services

There are various support services around campus and these include, but are not limited to:

1. Academic Support and Engagement - http://academicsupport.uwo.ca
2. Wellness and Well-being - https://www.uwo.ca/health/
3. Registrar's Office -- http://www.registrar.uwo.ca/
4. Ombuds Office -- http://www.uwo.ca/ombuds/

The websites for Registrarial Services (http://www.registrar.uwo.ca), and the same for affiliated university colleges when appropriate, and any appropriate Student Support Services (including the services provided by the USC listed here: http://westernusc.ca/services/) and the Student Development Services, should be provided for easy access.

Students who are in emotional/mental distress should refer to Mental Health@Western (https://www.uwo.ca/health/) for a complete list of options about how to obtain help.

Statement on Gender-Based and Sexual Violence

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at: https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

Student Code of Conduct

The purpose of the Code of Student Conduct is to define the general standard of conduct expected of students registered at Western University, provide examples of behaviour that constitutes a breach of this standard of conduct, provide examples of sanctions that may be imposed and set out the disciplinary procedures that the University will follow. For more information, visit https://www.uwo.ca/univsec/pdf/board/code.pdf

Absence from Course Commitments

Students must familiarize themselves with the Policy on Academic Consideration – Undergraduate Students in First Entry Programs

Students missing course work for medical, compassionate, or extenuating circumstances can request academic consideration by completing a request through the central academic consideration portal (Student Absence Portal). Students are permitted one academic consideration request per course per term **without** supporting documentation. Note that supporting documentation is **always** required for academic consideration requests for examinations scheduled by the office of the registrar (e.g., December and April exams) and for practical laboratory and performance tests (typically scheduled during the last week of the term).

Students should also note that the instructor may **designate** one assessment per course per term that requires supporting documentation. This designated assessment is described elsewhere in this document. Academic consideration requests may be denied when flexibility in assessment has already been included. Examples of flexibility in assessment include when there are assessments not required for calculation of the final grade (e.g. 8 out of 10 quizzes), when there is flexibility in

the submission timeframe (e.g. 72 hour no late penalty period), or when timed assessments (e.g., quizzes) are available over an extended period of time (e.g., when you are given a 72 hour time period to start – and finish – the assessment).

Please note that any academic considerations granted in this course will be determined by the instructor of this course, in consultation with the academic advisors in your Faculty of Registration, in accordance with information presented in this course syllabus. Supporting documentation for academic considerations for absences due to illness should use the Student Medical Certificate or, where that is not possible, equivalent documentation by a health care practitioner.

Accommodation for Religious Holidays
Students should review the policy for Accommodation for Religious Holidays. Where a student will be unable to write examinations and term tests due to a conflicting religious holiday, they should inform their instructors as soon as possible but not later than two weeks prior to writing the examination/term test. In the case of conflict with a midterm test, students should inform their instructor as soon as possible but not later than one week prior to the midterm.

Special Examinations
A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents. To provide an opportunity for students to recover from the circumstances resulting in a Special Examination, the University has implemented Special Examination dates. The Faculty of Health Sciences has set School-specific dates for these Special Examinations. Please speak with your instructor about the date on which the Special Examination for this course will be held.

Academic Offences
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 website: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

Plagiarism
Student work is expected to be original. Plagiarism is a serious academic offence and could lead to a zero on the assignment in question, a zero in this course, or your expulsion from the university. You are plagiarizing if you insert a phrase, sentence or paragraph taken directly from another author without acknowledging that the work belongs to him/her. Similarly, you are plagiarizing if you paraphrase or summarize another author's ideas without acknowledging that the ideas belong to someone else. All 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 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 University and Turnitin.com (www.turnitin.com).

Use of Artificial Intelligence for the Completion of Course Work
Within this course, you may only use artificial intelligence tools (e.g., "ChatGPT") in ways that are specifically authorized by the course instructor. All submitted work must reflect your own thoughts and independent written work.

Re-submission of Previously Graded Material
Without the explicit written permission of the instructor, you may not submit any academic work for which credit has been obtained previously, or for which credit is being sought, in another course or program of study in the University or elsewhere.

Use of Statistical Pattern Recognition on Multiple Choice Exams
Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Accessibility Statement
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. You may also wish to contact Accessible Education (AE) at 661-2111 x 82147 for any specific question regarding an accommodation or review The policy on Accommodation for Students with Disabilities

Correspondence Statement
The centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner. Students are further expected to attend to announcements presented through Brightspace, and to read emails generated in this way.

Use of Electronic Devices

During Exams
Unless you have medical accommodations that require you to do so, or explicit permission from the instructor of the course, you may not use any electronic devices (e.g., cell phones, tablets, cameras, smart glass, smart watches, or iPods) during ANY tests, quizzes, midterms, examinations, or other in-class evaluations. **These devices MUST either be left at home or with your belongings at the front of the room. They MUST NOT be at your test/exam desk or in your pocket. Any student found with a prohibited device will receive an automatic grade of zero on the test or exam.**

During Lectures and Tutorials
Although you are welcome to use a computer during lecture and tutorial periods, you are expected to use the computer for scholastic purposes only, and refrain from engaging in any activities that may distract other students from learning. From time to time, your professor may ask the class to turn off all computers, to facilitate learning or discussion of the material presented in a particular class.

Copyright and Audio/Video Recording Statement
Course material produced by faculty is copyrighted and to reproduce this material for any purposes other than your own educational use contravenes Canadian Copyright Laws. Unless explicitly noted otherwise, you may not make audio or video recordings of lectures – nor may you edit, re-use, distribute, or re-broadcast any of the material posted to the course website.

Contingency Plan for an In-Person Class Pivoting to 100% Online Learning
In the event of a situation that requires this course to pivot to online content delivery, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in

the timetable) or asynchronously (e.g., posted on Brightspace for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

Online Proctoring

Tests and examinations in this course may be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: https://remoteproctoring.uwo.ca.

Appealing a Grade Within this Course

You have the right to appeal any grade within this course. The grounds for a grade appeal may be one or more of: medical or compassionate circumstances, extenuating circumstances beyond the student's control, bias, inaccuracy, or unfairness. All grounds advanced in a request for relief must be supported by a clear and detailed explanation of the reasons for the request together with all supporting documentation.

Appeals generally proceed in this order:

1. Course instructor (informal consultation)
2. Department Chair (submission of written request)
3. The Dean of the Faculty (submission of written request)

In the case of perceived procedural unfairness, steps 2 and 3 are carried out within the Department and Faculty offering the course. In the case of extenuating medical or compassionate circumstances that impact on a grade, steps 2 and 3 are carried out within a student's Home Department and Faculty.

A request for relief against a mark or grade must be initiated with the instructor as soon as possible after the mark is issued. In the event that the instructor is not available to the student, or fails to act, or if the matter is not resolved satisfactorily with the instructor, a written request for relief must be submitted to the Chair of the Department within three weeks of the date that the mark was issued. In the case of a final grade in a course, the written request for relief must be submitted to the Chair of the department by January 31st (for first-term half courses) or June 30th (for second-term half courses or full-year courses).