

**Western University
Faculty of Health Sciences
School of Health Studies**

**Health Sciences 3801B (Measurement and Analysis in Health Sciences)
Winter 2025**

Instructor: Dr. Andrew Johnson, PhD (he/him) Email ajohnson@uwo.ca Office Hrs: By appointment and via Zoom (see Brightspace for details) TAs: TBA	Lectures: Online Instruction Mode: Blended (online lectures / in-person tutorials)
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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.

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.

Antirequisite(s): [Biology 2244A/B](#), [Economics 2122A/B](#), [Economics 2222A/B](#), [Geography 2210A/B](#), [Kinesiology 3032A/B](#), [MOS 2242A/B](#), Psychology 2810, Psychology 2820E, [Psychology 2830A/B](#), [Psychology 2850A/B](#), [Psychology 2851A/B](#), Social Work 2207A/B, [Sociology 2205A/B](#), [Statistical Sciences 2035](#), [Statistical Sciences 2141A/B](#), [Statistical Sciences 2143A/B](#), [Statistical Sciences 2244A/B](#), [Statistical Sciences 2858A/B](#).

Prerequisite(s): [Health Sciences 2800](#) or [Health Sciences 2801A/B](#).

Statement on Prerequisite Checking

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

NOTE: 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.

Land Acknowledgement

I acknowledge that Western University is located on the traditional lands of the Anishinaabek (Ah-nish-in-a-bek), Haudenosaunee (Ho-den-no-show-nee), Lūnaapéewak (Len-ahpay-wuk) and Attawandaron (Add-a-won-da-run) peoples, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum.

With this, I respect the longstanding relationships that Indigenous Nations have to this land, as they are the original caretakers. We acknowledge historical and ongoing injustices that Indigenous Peoples (e.g. First Nations, Métis and Inuit) endure in Canada, and we accept responsibility as a public institution to contribute toward revealing and correcting miseducation as well as renewing respectful relationships with Indigenous communities through our teaching, research and community service.

Statement on Gender-Based and Sexual Violence

Western is committed to reducing incidents of gender-based and sexual violence (GBSV) and providing compassionate support to anyone who is going through or has gone through these traumatic events. If you are experiencing or have experienced GBSV (either recently or in the past), you will find information about support services for survivors, including emergency contacts, at the following website: <https://www.uwo.ca/health/gbsv/support/>. To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Learning Outcomes:

In this course, you will be introduced to statistical analyses in Health Sciences research, 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).

Required Course Materials:

Textbook

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 through Amazon.com. More information can be found here:

<https://openstax.org/details/introductory-statistics>

Calculator

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 to \$35. It is advisable to have your calculator available for all lectures, homework assignments, tests, quizzes, and assignments.

Course Assessments:

Optional Online Quizzes	throughout the course	3% each quiz
Optional Peerwise Assignment		
Part 1	2025.02.27	2.5%
Part 2	2025.03.27	2.5%
Midterm	2025.03.01	25%
Final Exam*	TBA (during final exam period)	40%

*** you must achieve a passing grade on the final exam to pass the course**

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 March 27th. 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 3032B (January to April, 2025)", you will need to enter two pieces of information:

1. *Course ID = 27278*
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.

Participation in the Peerwise Assignment is wholly optional. Both of the assignments are worth 2.5% 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).*

Midterm

The midterm for this course will cover all course material (in readings, supplemental materials presented through OWL, lecture videos, and in tutorials) presented between 2025.01.06 and 2025.02.14 (i.e., up to and including our unit on correlation and regression). This test will consist solely of multiple-choice questions. You will probably want to have a calculator for this exam. You will have three 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. I have not designated this assessment to be an assessment for which documentation is required. Thus, you may miss this midterm without documentation. Please be advised, however, that if you miss the midterm without documentation, you will need documentation to miss the makeup test specified under "Makeup Exam Dates."

Final Exam

The final exam for this course will cover all material presented throughout the term (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 three 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. **You must achieve a passing grade on this assessment, in order to pass the course.**

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

Makeup Exams

You must have a valid medical or compassionate reason for missing the midterm or the final exam, and you must seek an academic consideration for either of these evaluations through academic advising within the School of Health Studies.

The makeup for the midterm will be held on Sunday, March 9th, between 12pm and 3pm. The room number for this makeup exam will be posted closer to the time of the makeup. *NOTE: There is no second makeup examination for the midterm in this course. If you are unable to write the midterm makeup (for any reason) the value of your midterm will be shifted to your final exam.*

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.

LECTURE SCHEDULE

Week of:	Lecture Topic(s)	Online Quiz Due
2025.01.06	Describing Data	2025.01.16
2025.01.13	Hypothesis Testing	2025.01.23
2025.01.20	Single Sample Inference	2025.01.30
2025.01.27	Independent Groups t-test	2025.02.06
2025.02.03	Dependent Groups t-test	2025.02.13
2025.02.10	Correlation & Regression	2025.02.27
2025.02.17	<i>No class – Reading Week</i>	
2025.02.24	Univariate Count Data	2025.03.06
2025.03.03	Bivariate Count Data	2025.03.13
2025.03.10	Midterm Review (in tutorials)	
2025.03.17	ANOVA Independent Groups	2025.03.27
2025.03.24	ANOVA Dependent Groups	2025.04.03
2025.03.31	Catch-up & Review	

Course/University Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with [policy](#), 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 his/her official university address is attended to in a timely manner.

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/>

In accordance with [policy](#), 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 his/her official university address is attended to in a timely manner.

Health and Wellness

As part of a successful undergraduate experience at Western, we encourage you to make your health and wellness a priority. Western provides several on-campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your degree. For example, to support physical activity, all students receive membership in Western's Campus Recreation Centre as part of their registration fees. Numerous cultural events are offered throughout the year. Please check out the Faculty of Music web page (<http://www.music.uwo.ca/>), or the McIntosh Gallery (<http://mcintoshgallery.ca/>). Further information regarding health and wellness-related services available to students may be found at <https://www.uwo.ca/health/>.

If you are in emotional or mental distress, please visit Western Psychological Services (<https://www.uwo.ca/health/psych>) for a list of options for obtaining help.

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, in the [Academic Calendar](#) (<westerncalendar.uwo.ca>).

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).

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 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.

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.

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 during ANY tests, quizzes, midterms, examinations, or other in-class evaluations.

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. **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.**

Academic Considerations and Absences from Lectures and Assessments

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request (in writing) any necessary academic considerations at least two weeks prior to the holiday to the academic counsellors in their Home Department. Additional information is provided in the [Western Multicultural Calendar](#).

Academic Accommodation

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. Students with ongoing accommodation needs within this course are also encouraged to contact [Accessible Education](#), which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found [here](#).

Academic Consideration

The University recognizes that a student’s ability to meet their academic responsibilities may, on occasion, be impaired by extenuating circumstances that are medical or compassionate in nature. These extenuating circumstances may be acute (short term), or it may be chronic (long term), or chronic with acute episodes. In all cases, students are advised to consult with the academic counsellors in their home units, at their earliest opportunity. Academic counsellors may refer students to [Accessible Education](#) for ongoing academic accommodations.

Most forms of academic consideration require documentation, and this documentation is to be submitted to academic advisors within 48 hours of the missed assessment. Any such documents will be retained in the student's file, and will be held in confidence in accordance with the University's [Official Student Record Information Privacy Policy](#). Once the petition and supporting documents have been received and assessed, appropriate academic considerations shall be determined by academic advising, in consultation with the student's instructor(s). Academic considerations may include extension of deadlines, waiver of attendance requirements for classes/labs/tutorials, arranging Special Exams or Incompletes, re-weighting course requirements, or granting late withdrawals without academic penalty. Academic considerations shall be granted only where the documentation indicates that the onset, duration and severity of the illness are such that the student could not reasonably be expected to complete their academic responsibilities. (Note – it will not be sufficient to provide documentation indicating simply that the student “was seen for a medical reason” or “was ill.”).

Whenever possible, students who require academic considerations should provide notification and documentation in advance of due dates, examinations, etc. Under no circumstances are students expected to submit rationales for (or documentation of) any absences, to course instructors. Students are, however, required to follow-up with course instructors, in a timely fashion, to identify the ways in which the academic consideration will be implemented.

Examination Conflicts

A student completing tests or examinations with flexible submission times (e.g., where one or more evaluation is a take-home assessment) cannot request alternative arrangements unless a conflict cannot be avoided by rescheduling writing the exam to a different time within the window specified by the instructor. This applies to direct conflicts as well as “heavy load” conflicts (e.g., three exams within a 23-hour period). The student should discuss any concerns about a potential conflict and/or request academic considerations with their academic counselling unit prior to the deadline to drop a course without academic penalty

In the case of online tests and examinations, use of a “Conflict Room,” wherein student can write two proctored exams concurrently, will be interpreted as arrangements for continuous proctoring.

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 OWL 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)

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>