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THE UNIVERSITY OF WESTERN ONTARIO
LONDON CANADA

School of Health Studies

Health Sciences 3801B
Measurement and Analysis in the Health Sciences

CALENDAR 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.

Antirequisite(s): Biology 2244A/B, Economics 2122A/B, Economics 2222A/B, Geography 2210A/B, MOS 2242A/B, Kinesiology 3032A/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, Statistical Sciences 2037A/B if taken prior to Fall 2010.

Prerequisite(s): Health Sciences 2801A/B.

COURSE INFORMATION

Instructor:	Dr. Andrew Johnson ajohnson@uwo.ca
Lecture Time/Location:	Fridays, 9:30am to 11:30am [redacted]
Office Hours:	By appointment and via Zoom (see OWL signup for details)
Course Website:	https://owl.uwo.ca

TEXTBOOKS

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 OBJECTIVES

In this course, you will be introduced to statistical analyses in the health sciences, 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).

EVALUATION

Optional Online Quizzes	throughout the course	2% each quiz
Midterm	2024.03.02	35%
Final Exam	TBA (during final exam period)	45%

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 2% 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 all of the optional online quizzes). ***This means that you do not need to seek academic considerations 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).***

Midterm: The midterm for this course will cover all course material (in readings, supplemental materials presented through OWL, or in lecture videos) presented between 2024.01.12 and 2024.02.16 (i.e., up to and including our unit on correlation and regression). This test will consist of some combination of multiple-choice questions, short-answer questions, and calculation questions, with details as to the content of the test provided through OWL in advance of the assessment. 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.

Final Exam: The final exam for this course will cover **all** material presented throughout the term. The exam will consist of some combination of multiple-choice questions, short-answer questions, and calculation questions. Details as to the content of the exam will be provided through OWL in advance of the assessment. You will need a calculator for the exam. You will have three hours to compete 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 exam 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

MAKEUP EXAM DATES / LOCATIONS

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. See the end of this outline for information concerning acceptable documentation of illness.

The makeup for the midterm will be held on Friday, March 8th, between 9am and 12pm. The room number for this makeup exam will be posted closer to the time of the makeup.

Retroactive exam accommodation (i.e., for exams or tests that have been written) will not generally be granted. Makeup evaluations for the midterm and final will consist of some combination of multiple choice questions, essay questions, and computational questions. ***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 the midterm will be shifted to the final examination.***

LECTURE / LAB SCHEDULE

	Lecture Topics	Online Quiz Due
2024.01.12	Describing Data	2024.01.18
2024.01.19	Hypothesis Testing	2024.01.25
2024.01.26	Single Sample Inference	2024.02.01
2024.02.02	Independent Groups t-test	2024.02.08
2024.02.09	Dependent Groups t-test	2024.02.15
2024.02.16	Correlation & Regression	2024.02.29
2024.02.23	*No class – Reading Week*	
2024.03.01	Univariate Count Data	2024.03.07
2024.03.08	Bivariate Count Data	2024.03.14
2024.03.15	ANOVA, Independent Groups	2024.03.21
2024.03.22	ANOVA Dependent Groups	2024.03.28
2024.03.29	*No class – University Closed*	
2024.04.05	Catch-up & Review	

HEALTH AND WELLNESS

The undergraduate experience is rewarding and challenging socially, emotionally, and intellectually. Finding ways to balance scholarly life with our personal lives can be tough, but it's important to learn how to manage stress. Western provides several health and wellness-related services to students. You can also check out the Campus Recreation Centre or the McIntosh Gallery, for alternative spaces to reconnect with your bodies and restore your spirit. You may also want to access local resources that are closer to where you are living during the school year. Recalibrating ourselves emotionally begins with slowing down, reminding ourselves that we are ok, and taking a few deep, slow breaths. This remarkably effective strategy brings the body from stress mode into a more relaxed state.

If you are in emotional or mental distress please reach out to Mental Health@Western for a list of options about how to obtain help. Alternatively, you may reach out to Family Service Thames Valley, a Western-endorsed provider within the community. It's also advisable to have a wellness safety plan if you don't want to reach out to formal services. Having the numbers of a few trusted individuals is another strategy.

COMMON COURSE POLICIES, FACULTY OF HEALTH SCIENCES

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.

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

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.**

Personal Response Systems ("clickers") may be used in some classes. For those classes in which we use this technology, it is your responsibility to ensure that the device is activated and functional. You must speak with the course instructor immediately, if you have any concerns about whether or not your clicker is malfunctioning.
You must use only your own clicker. For all components of this course in which clicker records are used to compute a portion of the grade:

- The use of somebody else's clicker in class constitutes a scholastic offence;
- The possession of a clicker belonging to another student will be interpreted as an attempt to commit a scholastic offense

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 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.

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 counsellors within five (5) business days of their return to academic responsibilities. 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 counseling, 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 an event 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

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).