

THE UNIVERSITY OF WESTERN ONTARIO
LONDON CANADA

School of Health Studies

Health Sciences 3801B
Research Methods and Analysis in the Health Sciences

1.0 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.

Prerequisites: Health Sciences 2801a/b or equivalent

Antirequisites: All other University-level statistics courses at the 2000-level or above

Note regarding 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.

2.0 COURSE INFORMATION

Instructor: Dr. Andrew Johnson
Arthur and Sonia Labatt Health Sciences Building, Room 330
ajohnson@uwo.ca

Office Hours: By appointment (see OWL sig.18j.198201insto19:30am)R 3 0 T378.48.12B

Times and Location of Lectures:

Fridays 9:30am to 11:30am

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3.1 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., and wherever possible, I've provided you with appropriate page ranges for our topics. The PDF of this text is available for free through OpenStax.org, 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>

3.2 CALCULATOR

You will need a calculator with a “stats mode” for this course. You should choose a calculator that is easy to use, rather than one that has a lot of functions not needed for this course. A calculator sufficient for this course should cost approximately \$15 to \$35. If you currently have a calculator, and are unsure if it is adequate, you may show it to me after a lecture, or during office hours. Bring your calculator to all lectures, labs, and tests. Some calculators are quite complex – it is a good idea to hang onto the instruction manual until you are sure that you know how to use it.

4.0 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 deviation, confidence intervals, hypothesis testing (t-tests, independent and dependent), bivariate correlation and regression, simple chi-square tests, and ANOVA.

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5.2 EXAM DATES / LOCATIONS

	<u>Location</u>	<u>Date</u>	<u>Time</u>
Midterm (covers 2020.01.10 to 2020.01.31)	TBA	2020.02.14	9:30am to 11:15am
Final Exam (covers 2020.01.10 to 2020.04.03)	TBA (<i>held during final exam period</i>)		

5.3 MAKEUP EXAM DATES / LOCATIONS

You must have a valid medical or compassionate reason for missing a scheduled evaluation, and documentation for your absence must be filed with the main office of the School of Health Studies. See section 7.2 of this outline for information concerning acceptable documentation of illness.

Retroactive exam accommodation (i.e., for exams that have been written) will not generally be granted.

Makeup examinations will consist of some combination of multiple choice questions, essay questions, and computational questions. **Makeup examinations are scheduled by the School of Health Studies. You will be given information as to the date, time, and location of the makeup examination after you have been granted permission to write the examination. NOTE: There is no second makeup examination for the midterm in this course. Students that are unable to write the makeup examination as scheduled by the School (for any reason) will have the value of that exam shifted to the final examination (i.e., the final examination will account for 85% of your grade in the course).**

6.0 LECTURE / LAB SCHEDULE

	Lecture Topics	OPTIONAL Text Reference	Online Quiz(zes) Due
2020.01.10	Describing Data	Sections 1.1, 2.1-2.8, 6.1-6.4	2020.01.17
2020.01.17	Hypothesis Testing	Sections 7.1-7.5, 8.1-8.6	2020.01.24
2020.01.24	Single Sample Inference	Sections 9.1-9.6	2020.01.31
2020.01.31	Correlation & Regression	Sections 12.1-12.9	2020.02.07
2020.02.07	Count Data	Sections 11.1-11.2, 11.3, 11.5, 11.7, 11.8	2020.02.28
2020.02.14	Midterm		
2020.02.21	<i>No class – Reading Week</i>		
2020.02.28	Independent Groups t-test	Section 10.1	2020.03.06
2020.03.06	Dependent Groups t-test	Section 10.4	2020.03.13
2020.03.13	ANOVA, Independent Groups	Sections 13.1-13.5	
2020.03.20	ANOVA, Dependent Groups	No Text Reference	
2020.03.27	Pairwise Comparisons	No Text Reference	
2020.04.03	General Review (Q & A)		

Note: lecture / lab schedule subject to change

7.1 GENERAL COURSE NOTES

Student Code of Conduct

You are expected to comply with the Code of Student Conduct at all times within the classroom, and when dealing with members of the instructional team. The purpose of this Code is to define the general standard of conduct expected of students registered at The University of Western Ontario, 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 <http://www.uwo.ca/univsec/pdf/board/code.pdf>.

Course Website

This course is a totally “paperless” course, and as such the course website will be your sole source for lecture overheads, readings, and course information (including this course outline). Due to privacy regulations, grades will only be provided to you through OWL – I will not, under any circumstance, convey grades via email, or over the phone.

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Policy on 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.**

7.2 POLICY REGARDING ILLNESS

The University recognizes that a student's ability to meet their academic responsibilities may, on occasion, be impaired by extenuating circumstances, including short-term illness or injury. Reasonable academic consideration is a cooperative process between the University, the student, and academic staff. All participants in the process must act in good faith, and fulfil their respective obligations, if it is to succeed.

Students who experience an extenuating circumstance (illness, injury, or other extenuating circumstance) sufficiently significant as to temporarily render them unable to meet academic requirements, may submit a request for academic consideration through the following routes:

- Submitting a Self-Reported Absence form, provided that the conditions for submission are met;
- For medical absences, submitting a Student Medical Certificate (SMC) signed by a licensed medical or mental health practitioner, in order to be eligible for Academic Consideration; or
- For non-medical absences, submitting appropriate documentation (e.g., obituary, police report, accident report, court order, etc.) to Academic Counselling in their Faculty of registration, in order to be eligible for academic consideration.

Students seeking academic consideration:

- Are advised to consider carefully the implications of postponing tests or midterm exams or delaying handing in work;
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7.5 SUPPORT SERVICES

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

- Student Development Centre -- <http://www.sdc.uwo.ca/ssd/>
- Student Health -- <http://www.shs.uwo.ca/student/studenthealthservices.html>
- Registrar's Office -- <http://www.registrar.uwo.ca/>
- Ombuds Office -- <http://www.uwo.ca/ombuds/>

8.0 PROCEDURES FOR APPEALING ACADEMIC EVALUATIONS

In the first instance, all appeals of a grade must be made to the course instructor (informal consultation). If you are not satisfied with the decision of the course instructor, a written appeal must be sent to the Director of the School of Health Studies. If you consider this response to be unsatisfactory, you may then appeal to the Dean of the Faculty of Health Sciences. If this response is unsatisfactory, you may appeal to the Senate Review Board Academic. A Guide to Appeals is available from the Ombudsperson's Office.

The university-wide descriptor of the meaning of letter grades, as approved by Senate:

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work that 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

It is expected that the grades for this course will fall between 72 and 76. In the event that the course average falls outside this range, a constant may be added to (or subtracted from) each student's grade, by the instructor, to bring the class average in line with school policy.