

The University of Western Ontario

HS3801

Research Methods and Analysis in the Health Sciences

January 2022

Instructor: Michael Robinson PhD CAT(C) ATC

Lecture Location: NCB-101

Email: mrobin7@uwo.ca

Office Hours: Wednesdays from 10:00 am to 3:00 pm – Appointments must be booked 24 hours in advance: <https://michaelrobinsonuwo.youcanbook.me/>

Teaching Assistant: Lauren Kane lkane5@uwo.ca

Communication: Please communicate any questions via email FIRST to the teaching assistants then to the course instructor if required. Please allow for 72 hours for a response.

Lectures and Labs

There is one combined in-person lecture and lab per week: Friday 8:30 – 11:30.

During emergency remote teaching: The lecture will be posted via pre-recorded video and the lab will be recorded live via Zoom Friday 8:30 am and posted to OWL by the end of the day.

After emergency remote teaching: The lecture will be posted via pre-recorded video and the lab will be delivered in person (an audio recording will be made available).

Prerequisite Checking

Prerequisite(s): Health Sciences 2801 or the former Health Sciences 2800.

Antirequisite(s): Biology 2244A/B, Economics 2122A/B, Economics 2222A/B, Geography 2210A/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, Statistical Sciences 2037A/B if taken prior to Fall 2010, former Psychology 2885 (Brescia), former Statistical Sciences 2122A/B, former Social Work 2205.

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 if you are dropped from a course for failing to have the necessary prerequisites.

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.

Statement 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.

Course Materials

All course materials will be posted to OWL in advance of lectures. A reading list will be posted on OWL during the first week of the course. Lecture slides are intellectual property of the course instructor; copying without permission is copyright infringement and can constitute plagiarism.

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.

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

Attendance and Classroom Behaviour (online and/or in-person)

In the School of Health Studies, each course instructor sets specific expectations for attendance and participation that are specific to the course, teaching objectives, and learning outcomes. Regular attendance is expected and essential for all courses. **Students who miss classes, or parts of classes, are responsible for the material they have missed. Instructors are not obliged to review the contents of missed lectures.**

Methods of Evaluation

Examinations (100%):

Midterm 30% Feb 18th, 2022

Online quizzes 25%

5 quizzes at 5% each (6 total - lowest quiz mark will be dropped)

Final 45% TBD by University during the scheduled exam period.

The final exam is cumulative.

Schedule (Subject to change)

	Lecture	Optional Textbook Reference	Online Quiz Due Dates
Friday, January 14, 2022	Describing Data	Sections 1.1, 2.1-2.8, 6.1-6.4	Friday, January 21, 2022 11:59 PM EST
Friday, January 21, 2022	Hypothesis Testing	Sections 7.1-7.5, 8.1-8.6	Friday, January 28, 2022 11:59 PM EST
Friday, January 28, 2022	Single Sample Inference	Sections 9.1-9.6	Friday, February 4, 2022 11:59 PM EST
Friday, February 4, 2022	t-test	Section 10.1	Friday, February 11, 2022 11:59 PM EST
Friday, February 11, 2022	t-test	Section 10.4	Friday, March 4, 2022 11:59 PM EST
Friday, February 18, 2022	MIDTERM		
Thursday, February 24, 2022	READING WEEK		
Friday, March 4, 2022	Correlation and Regression	Sections 12.1-12.9	Friday, March 11, 2022 11:59 PM EST
Friday, March 11, 2022	Count Data	Sections 11.1-11.2, 11.3, 11.5, 11.7, 11.8	
Friday, March 18, 2022	ANOVA	Sections 13.1-13.5	
Friday, March 25, 2022	ANOVA	No Text Reference	
Friday, April 1, 2022	Pairwise comparisons	No Text Reference	

ADDITIONAL STATEMENTS

Remote 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>.

Statement on 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 Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

Accommodation for 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:

- (i) Submitting a Self-Reported Absence form, provided that the conditions for submission are met;*
- (ii) 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*
- (iii) 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;*

- *Are encouraged to make appropriate decisions, based on their specific circumstances, recognizing that minor ailments (e.g., upset stomach) or upsets (e.g., argument with a friend) are not normally an appropriate basis for a self-reported absence;*
- ***Must communicate with their instructors no later than 24 hours*** after the end of the period covered by either the self-reported absence or SMC, or immediately upon their return following a documented absence;
- ***Are advised that all necessary documentation, forms, etc. are to be submitted to academic counselling within two business days after the date specified for resuming responsibilities***

Students who experience an unexpected illness or injury or an extenuating circumstance (48 hours or less) that is sufficiently severe as to temporarily render them unable to meet academic requirements (e.g., attending lectures or labs, writing tests or midterm exams, completing and submitting assignments, participating in presentations) should self-declare using the online Self-Reported Absence portal. This option should be used in situations where the student expects to resume academic responsibilities within 48 hours or less. The following conditions are in place for self-reporting of medical or extenuating circumstances:

- Students will be allowed a maximum of two self-reported absences between September and April, and one self-reported absence between May and August;*
- The duration of the excused absence will be for a maximum of 48 hours from the time the Self-Reported Absence form is completed through the online portal, or from 8:30am the following morning if the form is submitted after 4:30pm;*
- The duration of the excused absence will terminate prior to the end of the 48 hour period, should the student undertake significant academic responsibilities (e.g., write a test, submit a paper) during that time;*
- The duration of an excused absence will terminate at 8:30am on the day following the last day of classes each semester, regardless of how many days of absence have elapsed;*
- Self-reported absences will not be allowed for scheduled final examinations; for midterm examinations scheduled during the December examination period; or for final lab examinations (i.e., “bellringers”);*
- Self-reporting may not be used for assessments (e.g., midterm exams, tests, reports, presentations, or essays) worth more than 30% of any given course;*
- Students must be in touch with their instructors no later than 24 hours after the end of the period covered by the Self-Reported Absence form, to clarify how they will be expected to fulfil the academic expectations they may have missed*

Support Services:

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

- 1. Student Development Centre -- <http://academicsupport.uwo.ca/>*

2. Student Health -- <https://www.uwo.ca/health/>
3. Registrar's Office -- <http://www.registrar.uwo.ca/>
4. Ombudsperson Office -- <http://www.uwo.ca/ombuds/>

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, which may be found at <http://www.health.uwo.ca/>. You can also check out the Campus Recreation Centre or the McIntosh Gallery (<http://www.mcintoshgallery.ca/>), 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 should refer to Mental Health@Western [Mental Health Support - Health & Wellness - Western University \(uwo.ca\)](http://www.uwo.ca/mentalhealthsupport/) for a complete list of options about how to obtain help. To help you learn more about mental health, Western has developed an interactive mental health learning module, found here: [Health & Wellness - Western University \(uwo.ca\)](http://www.uwo.ca/healthandwellness/). 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.

Grade policy:

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

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

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