

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

**2.0 COURSE INFORMATION**

*Instructor:* Dr. Andrew Johnson  
Elborn College, Room 2531  
[ajohnson@uwo.ca](mailto:ajohnson@uwo.ca)

*Office Hours:* Thursdays, 10:30am to 11:30pm

*Course Website:* <https://owl.uwo.ca>

*Times and Location of Lectures:*

Thursdays 12:30pm to 2:30pm Natural Sciences, Room 1

**3.1 TEXTBOOKS**

*There are no required textbooks for this course. Where appropriate, practice questions and data will be posted to the web.*

**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 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).

**5.1 EVALUATION**

Exam #1	(2011.03.03)	40%
Online Quizzes	(all quizzes go offline on 2011.03.17)	20%
Exam #2	(TBA)	40%

*Online Quizzes:* Throughout the course, you will be given an opportunity to complete seven online quizzes, each of which will be weighted evenly in deriving the grade for this portion of your final mark. You may complete the quizzes at your own pace, but all quizzes will go offline at 11:59pm, on 2011.03.17. The quizzes will go online after class on the following days:

2011.01.13	<i>Describing Data</i>
2011.01.20	<i>Standard Scores</i>
2011.01.20	<i>Hypothesis Testing</i>
2011.01.27	<i>Single Sample Inference</i>
2011.02.03	<i>Correlation and Regression</i>
2011.02.10	<i>Univariate Chi-square</i>
2011.02.17	<i>Cross-tabulation</i>

*Exam #1:* The first exam for this course will cover course material presented (either in class, or through WebCT) between 2011.01.06 and 2011.02.17 (inclusive). The test will consist solely of multiple-choice questions, and will be closed-book (although you will be provided with a formula sheet during the exam). You will need a calculator for the exam. This exam will be held during class on March 3<sup>rd</sup>, 2011. You will be notified via WebCT as to where you will be writing the exam.

*Exam #2:* The second (and final) exam for this course will cover course material presented (either in class, or through WebCT) between 2011.03.10 and 2011.04.07. The test will consist solely of multiple-choice questions, and will be closed-book (although you will be provided with a formula sheet during the exam). You will need a calculator for the exam. This exam will be held during the final exam period in April. You will be notified via WebCT as to when and where you will be writing the exam.

*Important Note Regarding the Use of Electronic Devices During Examinations:* You will need a calculator for both examinations, and there are no restrictions on the type of calculator that may be used. Unless you have medical accommodations that require you to do so, you may not use any of the following electronic devices during the examinations: cellphones, smart phones, audio players or recorders of any sort, video cameras, video games, DVD players, televisions, laptop/notebook/netbook computers, desktop computers, flashlights, laser pointers, or power tools of any sort.

## 5.2 EXAM DATES / LOCATIONS

	<u>Location</u>	<u>Date</u>	<u>Time</u>
Exam #1 (covers 2011.01.06 to 2011.02.17)	TBA	2011.03.03	12:30pm to 2:30pm (during class)
Exam #2 (covers 2011.03.10 to 2011.04.07)	TBA	TBA	TBA

## 5.3 MAKEUP EXAM DATES / LOCATIONS

You must have a valid medical or compassionate reason for missing a scheduled examination, 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.

It is the general policy of this course to disallow late submissions of assignments (including online quizzes). Students without a bonafide medical or compassionate reason for handing an assignment in late will be given a grade of zero. If you have a medical or compassionate reason that you feel may impact on your ability to hand your assignment in on time, you must present your documentation to the academic counselors in the School of Health Studies main office, before the due date of the assignment. They will inform me of their decision, and I will provide you with an appropriate extension. As with examinations, retroactive accommodations will not generally be granted – nor will last minute requests for extensions.

	<u>Location</u>	<u>Date</u>	<u>Time</u>
Makeup for Exam #1	EC2155	2011.03.10	12:30pm to 2:30pm
Makeup for Exam #2	HSB236	2011.05.02	9:30am to 12:30pm

*There is no second makeup examination for Exam #1. Students that are unable to write the makeup examination on 2011.03.10 (for any reason) will have their final exam re-weighted to be worth 60% of their final grade. Students that are unable to write the makeup examination for Exam #2, on 2011.05.02, will be given an opportunity to write a makeup examination during the December 2011 exam period.*

## 6.0 LECTURE / LAB SCHEDULE

	Lecture Topics
2011.01.06	Course Introduction
2011.01.13	Summarizing Data
2011.01.20	Introduction to Hypothesis Testing
2011.01.27	Single Sample Inference
2011.02.03	Correlation and Regression
2011.02.10	Analysis of Count Data I
2011.02.17	Analysis of Count Data II
2011.03.03	<b>Midterm Examination</b>
2011.03.10	Two Sample Inference I
2011.03.17	Two Sample Inference II
2011.03.24	ANOVA (Independent)
2011.03.31	ANOVA (Dependent)
2011.04.07	Pairwise Comparisons

## 7.1 GENERAL COURSE POLICIES AND PROCEDURES

### *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 the course website (using the “My Grades” tool) – I cannot, under any circumstance, convey grades via email, or over the phone.

### *Bulletin Board*

A bulletin board has been set-up on the course website, and you are encouraged to use this resource to locate and set-up study groups, and to ask questions regarding course content and procedures.

### *Email*

I am happy to answer your questions via email. You must, however, use your UWO email address for all correspondence regarding this course. Because the University ‘anti-spam’ programs often reject email from Hotmail, Yahoo, and other public email addresses, there is no guarantee that I will receive your emails if you send them from a public email program – or from any off-campus server, when sending email using any method other than the university’s webmail system. That said, I will do my best to answer your emails promptly. Please limit your questions to administrative matters only – detailed questions on course content should be: (a) raised during lab sessions, (b) asked during office hours, or (c) posted to the bulletin board maintained on the course website.

### *Lecture Attendance*

You are expected to attend every class, as some material that is covered during lecture will not be in the course notes.

### *Eating and Drinking in Class*

Out of consideration for your fellow students, please refrain from eating during class (lidded beverages are acceptable).

### *Grade Adjustments*

Final grades in this course will be taken to the closest integer (i.e., I will “round off” decimals). Exam grades will be calculated out of 100% to one decimal place. I will not, under any circumstances, “bump up” your grade (i.e., to facilitate professional school applications etc.). This includes grades that end in a “9”. Along similar lines, I will not reweight examinations for reasons other than those outlined in section 5.3. In other words – I will not alter exam weights for evaluations that you have already written.

### *Use of Cellphones During Class*

Please ensure that any cellphones, pagers, or other communication devices on your person are turned off, or have their ringers silenced (or turned to vibrate) during lectures and labs.

### *Use of Laptops During Class*

If you plan to bring your laptop to class, please restrict your computer use to course-related activities, and refrain from using instant messaging clients, video games, or other software packages that might be distracting to students sitting near you.

### *Recording Lectures*

Please do not create audio or video recordings of my lectures.

## **7.2 POLICY REGARDING ILLNESS**

The University recognizes that a student's ability to meet his/her academic responsibilities may, on occasion, be impaired by medical illness. Illness may be acute (short term), or it may be chronic (long term), or chronic with acute episodes. The University further recognizes that medical situations are deeply personal, and respects the need for privacy and confidentiality in these matters. However, in order to ensure fairness and consistency for all students, academic accommodation shall be granted only in those cases where there is documentation indicating that the student was seriously affected by illness and could not reasonably be expected to meet his/her academic responsibilities. Documentation shall be submitted, as soon as possible, to the appropriate academic counselors (the Office of the Dean of the student's Faculty of registration/home Faculty) together with a request for relief specifying the nature of the accommodation being requested. For this course, you are to contact the academic counselors in the main office of the School of Health Studies. Documents submitted in this fashion will be retained in your file, and will be held in confidence in accordance with the University's Official Student Record Information Privacy Policy [<http://www.uwo.ca/univsec/handbook/general/privacy.pdf>].

Once the petition and supporting documents have been received and assessed, appropriate academic accommodation shall be determined by the Dean's Office (Academic Counsellor) in consultation your instructor. Academic accommodation 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 accommodation shall be granted only where the documentation indicates that the onset, duration and severity of the illness are such that you could not reasonably be expected to complete your academic responsibilities. **Note** – it will not be sufficient to provide documentation indicating simply that you were “seen for a medical reason” or “were ill.” Whenever possible, students who require academic accommodation should provide notification and documentation in advance of due dates, examinations, etc. You must follow up with your professors and the Academic Counseling office in a timely manner.

### *Documentation from Family Physicians and Walk-In Clinics*

A UWO Student Medical Certificate (SMC) is required whenever you seek academic accommodation. This documentation should be obtained at the time of the initial consultation with the physician or walk-in clinic. An SMC can be downloaded under the Medical Documentation heading of the following website: <https://studentservices.uwo.ca/secure/index.cfm>. Hard copies are available from Academic Counseling.

### *Documentation from Student Health Services*

Students obtaining documentation from Student Health Services should sign a “release of information.” This form authorizes Student Health Services to provide information to your Academic Counselors. Release of information forms are available from, and can be arranged through, the Academic Counselors in the School of Health Studies.

### *Documentation from Hospital Urgent Care Centres or Emergency Departments*

Students should request that an SMC be filled out. You may take this form with them, or request alternative Emergency Department documentation. Documentation should be secured at the time of the initial visit to the Emergency Department. Where it is not possible for you to have an SMC completed by the attending physician, you must request documentation sufficient to demonstrate that your ability to meet your academic responsibilities was seriously affected.

## **7.3 POLICY ON CHEATING & ACADEMIC MISCONDUCT**

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.

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/handbook/appeals/scholoff.pdf>.

## **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 Program Director. 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.