

Math 0212 SDE

Quantitative Methods for the Health Scientist

LAKEHEAD UNIVERSITY
SPRING 2026 COURSE SYLLABUS

Course Instructor

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Course Information

Class & Lab Meetings

- Monday to Friday: 8:30am to 11:30am on Zoom

Course Description

Math 0212 is an introduction to statistical methods used in the health sciences. As per the calendar description, we will be studying: An introduction to probability; random variables; discrete distributions; analysis of data: measures of dispersion and location; normal, t -, χ^2 -, and F - tests, contingency tables, analysis of variance; linear regression and correlation.

Prerequisites & Restrictions

Prerequisites: None

Restrictions: This course is not acceptable for credit in Mathematics or Computer Science programs. Students in other programs can receive credit for only one of the following courses or combinations of courses: Math 0210; Math 0212; Math 4030; Math 2310 and Math 2311; and Math 3332 and 3334.

Textbooks

The **required** textbook package for this course is:

- Bluman: Ebook + ALEKS Access For Elementary Statistics 360 Day Acces Ed: 9

You must purchase it (\$109) through the university bookstore, as all graded components will be administered through the ALEKS platform.

Topics We Plan to Cover & Learning Objectives

- Beginnings of Statistical Analysis
 - Understand the difference between descriptive and inferential statistics
 - Interpret frequency tables and graphs and use them to summarize various data sets
- Probability
 - Understand the notion of a sample space, event, and compound event
 - Compute classical and empirical probabilities
 - Identify mutually exclusive and independent events
 - Apply the Addition and Multiplication Rules to compute probabilities
 - Understand and be able to compute conditional probabilities
 - Apply counting rules to compute probabilities of more complex events
- Random Variables and Probability Distributions
 - Understand the notion of a (discrete/continuous) random variable and probability distribution
 - Calculate the measures of central tendency (mean median and mode) and measures of variation (variance, standard deviation) for data sets
 - Use z -scores and percentiles to identify the position of a data value in relation to its data set
 - Be familiar with binomial distributions and compute corresponding binomial probabilities
 - Be familiar with the normal distribution and the corresponding empirical rules
 - Use tables to compute probabilities and z -scores associated with normal distribution
 - Use the normal distribution to approximate binomial probabilities on large data sets
- Central Limit Theorem and Statistical Inference
 - Use the Central Limit Theorem to analyze sampling distributions
 - Construct and interpret confidence intervals for population parameters and use these to make statistical inferences
 - Use the normal, t -, χ^2 -, and F -distributions, and contingency tables to perform various statistical inferences
 - Use the linear correlation coefficient to determine the linear relationship between two quantitative variables
 - Use ANOVA to compare three or more population means

Depending on the time available, some of the topics may be adjusted.

Assessment

Daily ALEKS Modules

There will be an online ALEKS module associated with each of our online lectures. There will be 12 modules in total and each module will be worth 3% of your grade. The modules are due at the same time the corresponding test is due:

- Modules 1 to 5 are due on Tuesday, May 12 at 8am!
- Modules 6 to 9 are due on Wednesday, May 20 at 8am!
- Modules 10 to 12 are due on Saturday, May 23 at 11:59pm!

Due to the incredibly fast-pasted nature of the course, extensions on the modules will not be granted.

Tests and Module Due Dates

There will be two midterm tests and one final test. You will have 3 hours to take each of these tests. You must take these tests independently on ALEKS during the provided window (highlighted below). Once you begin your test, you will have 3 hours to complete it. You may use your notes, textbooks, and the ALEKS calculator when completing these tests, but any other form of assistance is strictly prohibited (This includes AI, phone a friend, asking someone online, etc.). The windows for these tests are:

- Test 1 Window (Monday, May 11, 10am to Tuesday, May 12, 8am)
- Test 2 Window (Tuesday, May 19, 10am to Wednesday, May 20, 8am)
- Final Test Window (Saturday, May 23, 10am to 11:59pm)

It is your responsibility to ensure that you complete the test during the provided test window. **If you miss a test for whatever reason, please e-mail me ASAP.** If you miss the test for a valid reason, the weight of the test will be transferred to the final exam. You will be required to provide adequate documentation detailing the reason for your absence and inability to take the test (doctor's note, etc.). Without adequate documentation, you will likely receive a grade of 0 for that test. Note that to ensure that you have the allotted 3 hours to complete each test, you must begin the test at least 3 hours before the end of the test window.

Grading Scheme

Your final numerical grade will be determined by the following categories:

- 36% ALEKS Modules
- 20% Test 1
- 20% Test 2
- 24% Final Test

How to Succeed in Math 0210/0212

Attend Class

The Zoom lectures will be recorded, but I strongly encourage you to attend the online classes, as this gives you an opportunity to ask questions in real time and to get help on the modules.

Ask Questions During Class

Please ask questions during class! If there is anything that you are struggling with or are confused about in our class or on the homework, that's what I'm here for. There is no such thing as a bad question. I will try to do my best to help you! I will also stick around a bit after every class in case you have any questions about the ALEKS modules.

Don't be Afraid to Make Mistakes

Making mistakes is the most important part of doing mathematics! It is an integral part of the learning process. Never hesitate to share your reasoning (even if you think it's incorrect)—we cannot arrive at a correct answer if we don't understand why the incorrect ones don't work.