Math 2310
Elementary Probability and Statistics

Lakehead University – Orillia Campus
Fall 2025 Course Syllabus

Course Instructor

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Course Information

Class & Lab Meetings

- Lectures: Tuesdays & Thursdays: 5:30pm – 7:00pm in OA1022
- Lab: Fridays: 3:30pm – 4:30pm in OA2017

Class & Lab Format

Class meetings will be interactive! Each class will have lecturing components, in which we cover new material, together with opportunities for student work/engagement, where you will get a chance to answer questions to solidify your understanding and clarify misconceptions. You will also have more opportunities to work on problems during the weekly labs.

Course Description

Math 2310 is an introduction to elementary probability and statistics. As per the calendar description, we will be studying: Sample space and events, elementary probability. Descriptive statistics using tables and charts. Measures of central tendency, variability and association. Basic discrete and continuous distributions. Hypothesis testing and confidence intervals. Simple linear regression and correlation.

Prerequisites & Restrictions

Prerequisites: MHF4U or one FCE in Mathematics
Restrictions: Not recognized as a mathematics credit for Mathematics majors. Students may only receive credit for one of the following courses or combinations of courses: Math 0210; Math 0212; Math 4030; Math 2310 and Math 2311; and Math 3332 and Math 3334.

Textbooks

The free textbook for this course is:

- (*Free!*) Illowski & Dean: Introductory Statistics: 2Ed
- (Extra Resource) Bluman: Elementary Statistics

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
- Elementary 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
  - Utilize basic discrete distributions (binomial, Poisson, hypergeometric) to compute corresponding probabilities
  - Utilize basic continuous distributions (uniform, normal) to compute corresponding probabilities
  - Use z-scores and percentiles to identify the position of a data value in relation to its data set
  - Be familiar with empirical rules for the 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 and t-distribution to perform various statistical inferences
  - Use the linear correlation coefficient to determine the linear relationship between two quantitative variables

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

Assessment

Assignments

There will be weekly homework assignments on WebWork due on Thursdays. These assignments assess your ability to use the material that we learned in class to solve problems. You are encouraged to work on the problems together with your peers, so long as you submit your solutions independently. There will be no extensions granted on the assignments. However, given that people get sick and face other extenuating circumstances and might not able to meet the deadline every week, I will drop the two lowest homework scores for everyone. You do not need to e-mail me to request that the score be dropped—it will be automatic.

Quizzes

There will be short weekly quizzes during our Lab meetings on Fridays. These quizzes will assess your understanding of recent material, and will be graded both for completion and correctness. There will be no make-up quizzes, but your lowest quiz grade will be dropped.

Tests and Exams

There will be two midterm tests during class and one final exam. The tentative dates for the midterms are:

- Midterm 1: Thursday, October 2, 2025
- Midterm 2: Thursday, November 6, 2025

It is your responsibility to ensure that you are in class during the dates of the test. **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 midterm 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.

Grading Scheme

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

- 10% WebWorks
- 12% Quizzes
- 17.5% Midterm 1
- 17.5% Midterm 2
- 35% Final Exam
- 8% Best grade among Midterm 1, Midterm 2, Final Exam

Resources

Office Hours

Please come to my office hours! Do you want to say hello? Do you have a question about the course—even the tiniest thing? If there is anything that you are struggling with in our class or on the homework, that's what I'm here for. I'd love for you to come by. There is no such thing as a bad question. I will try to do my best to help you! You are also encouraged to work on the assignments during office hours, and just ask questions as they arise! Tentatively, office hours are scheduled for:

- Tuesdays from 2:00pm to 4:00pm (in OA3027)
- Thursdays from 2:00pm to 4:00pm (in OA3027)
- Fridays from 1:15pm to 2:15pm (in OA3027)

If you cannot make any of the above times for whatever reason, send me an e-mail and we can try to find another time to talk.

Calculator Policy

You are allowed and encouraged to use a scientific calculator to help you with your calculations.

How to Succeed in Math 0210/0212

Come to Class Ready to Work

Mathematics is best learned by actively working through problem—something we will spend a lot of classtime doing. Coming to class ready to engage with the material will ensure that you get the most out of it.

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.

Work Together and Come To Office Hours

Working with your peers in class and on homework assignments can be very helpful. Two brains are better than one and having multiple perspectives when tackling a problem provides additional insight for it. Also, come to office hours—if I understand what you are having difficulties with, I can try to help make the course better.