

**Course Information**  
**Mathematics for Commerce**  
**Math 1115**  
**Fall 2019**

- **Lectures**

MWF 2:35 - 3:25 (CS 127)

- **Class Instructor**

Name: Holly Steeves

Office: LSC 7088

Email: holly.steeves@dal.ca

Office hours: Monday/Wednesday 12:30 - 2:00

- **Course Description**

An Introduction to matrices, linear programming, mathematics of finance, probability and differential calculus. All topics are taught with an emphasis on applications to business. This course cannot be used to partially satisfy the BSc Mathematics requirement.

- **Course Prerequisites**

Nova Scotia Advanced Mathematics 11 or 12 or equivalent.

- **Course Objectives/Learning Outcomes**

The overarching goal of this course is for students to be able to interpret word problems and solve them using a broad range of mathematical techniques. The idea is to develop a broad mathematical toolbox with skills and knowledge that can be applied to many different real world problems.

- Chapter 5 Mathematics of Finance:

- Students will learn the time value of money under compound interest and be able to solve several real-world problems such as determining the monthly payment on a car or a mortgage, or determining the final payment required to pay off a loan.

- Chapter 6 Matrix Algebra:

- Students will learn how to solve systems of linear equations using several methods.

- Chapter 7 Linear Programming:

- Students will learn how to obtain the best outcome (i.e. maximum profit or lowest cost) for linear mathematical models with built-in restraints. For example, we will be able to determine which products a company should produce in order to make the most effective use of their assets.

- Chapter 10 Limits and Continuity:

- Students will learn the basic building blocks of calculus in order to define and use the derivative. This chapter is mostly building a foundation for the material in Chapters 11 and 13.

- Chapter 11 Differentiation:  
Differentiation is the process of finding the derivative of a function. The derivative is one of the most fundamental concepts in mathematics. Students will be able to take the derivative of a wide variety of functions.
- Chapter 13 Curve Sketching:  
Although the chapter is called curve sketching, we will only touch on curve sketching. The primary goal for us in this chapter will be to solve max/min word problems using the derivative. We will solve a wide range of problems and will often be looking to maximize profit or minimize cost.
- Chapter 8 Introduction to Probability and Statistics:  
Students will learn the basic principles of counting and probability and will be able to solve probability problems involving cards, dice, the choosing of committee members, and much more.

- **Textbook**

E. Haeussler, R. Paul, and R. Wood: Introductory Mathematical Analysis for Business, Economics, and the Life and Social Sciences, 14th Edition

- **Marking Scheme**

Assignments	15%
Test 1	20%
Test 2	20%
Final Exam	45%

If there is a strong improvement from tests to final, we can discuss alternative marking schemes, but the final decision will be my call. .

- **Assignments** Assignments will be ready on BrightSpace/WebWorks at least one week before they are due. The link for WebWorks is on BrightSpace. Late assignments will not be accepted.

- **Tests**

The tests will be held in class. The first will be on October 4, and the second will be on November 8. The exam is schedule is to be decided by the registrar.

- **Course Website**

There is an Brightspace site for the course (<https://dal.ca/brightspace>). This is where course announcements will be posted. Webworks will be used for assignments. Links will be posted on the Brightspace page for you to access Webworks.

- **Mathematics and Statistics Student Resource Centre**

The Mathematics and Statistics Student Resource Centre is in Room 119 of the Chase building. There are large tables available for groups to work together, tutors with expertise in Statistics will be there and available to answer questions (on a first come first served basis), please check there for summer hours and availability.

- **Conversion to Letter Grades**

Total grade	Letter grade
90-100	A+
85-89	A
80-84	A-
77-79	B+
73-76	B
70-72	B-
65-69	C+
60-64	C
55-59	C-
50-54	D
<50	F

- **Course Policies**

- Cell phones and other electronic messaging devices should be turned OFF before class begins.
- If you must use a computer during class, please sit at the back so you do not distract other students.
- If you have to leave early (please do not make this a regular occurrence, it is very disruptive), take a seat near the exit and leave as quietly as possible.
- Be on time for class. Entering late is extremely disruptive to the instructor as well as the other students who arrived on time to learn.
- Refrain from talking when the instructor or a student is speaking to the class. If you have a question, direct it at the instructor not your classmates. That is what I am here for!
- Treat the instructor and your classmates respectfully and with the courtesy with which you would like to be treated.
- Late assignments cannot be submitted and will not be accepted.
- If for any reason you will miss a midterm or final, you will require a doctors note. This will be handled in a way suitable to both parties.

- **Statement of Accommodation**

Students who require academic accommodation for either classroom participation or the writing of tests, quizzes and exams should make their request to the Office of Student Accessibility & Accommodation (OSAA) prior to or at the outset of each academic term. Please see [www.studentaccessibility.dal.ca](http://www.studentaccessibility.dal.ca) for more information and to obtain Form A - Request for Accommodation.

A note taker may be required to assist a classmate. There is an honourarium of \$75 for the course. If you are interested, please go to the Advising and Access Services Centre, Killam G28 for more information or email [notetaking@dal.ca](mailto:notetaking@dal.ca)

Please note that your classroom may contain specialized accessible furniture and equipment. It is important that these items remain in the classroom so that students who require their usage will be able to participate in the class.

- **Statement on Intellectual Honesty**

Please see the section in the undergraduate calendar on Intellectual Honesty:  
[http://www.dal.ca/content/dam/dalhousie/pdf/university\\_secretariat/POLICY%20on%20Intellectual%20Honesty.pdf](http://www.dal.ca/content/dam/dalhousie/pdf/university_secretariat/POLICY%20on%20Intellectual%20Honesty.pdf).

- **Policy**

Policy If any exam is missed for medical reasons, the students must contact the professor within 24 hours of the exam. If an exam is missed without a valid reason a zero grade may be assigned. Students can work at their own pace on the assignments, following the pace of the lectures. For this reason any unsubmitted assignment gets zero, no exemptions will be granted under any circumstances.

- **Tentative Topic Outline**

Class introduction and material review  
The central limit theorem, hypothesis testing, and confidence intervals  
One sample t-test and t-interval  
Comparison of two means - independent samples  
Comparison of two means - permutation tests, Wilcoxon rank-sum test  
One way analysis of variance  
Bonferroni method for multiple comparisons  
Assessing the model assumptions - normal QQ plot, residual plot  
Non-parametric one way ANOVA - Kruskal-Wallis test  
Two way ANOVA, with and without interaction  
Post-hoc comparisons of means  
Randomized block design  
Comparison of several proportions  
Multinomial distribution, goodness of fit test  
 $\chi^2$  test for contingency tables  
Scatterplots, Pearson's correlation  
Least squares estimates, ANOVA  
Coefficient of determination  
Residual plot, remedies, adding variables, transformation  
Inferences for slope and intercept, and mean response  
Multiple regression basics, types of models, matrix approach  
Overall F test, inference for a single  $\beta$   
Inferences for the mean at  $x^*$ , prediction intervals for a new  $y$  at  $x^*$   
Partial F test for comparing nested models  
Comparing two regression lines  
One way ANOVA using regression  
Two way ANOVA using regression