



ST. FRANCIS XAVIER UNIVERSITY

Department of Economics
Faculty of Arts

ECON 271: Quantitative Methods in Economics & Finance

Fall 2024

Description:

This course aims to cover all the basic mathematics tools that students would be expected to use in upper-year undergraduate courses in Economics and Finance.

It assumes that students have a high-school-level math background. It starts with a quick review of functions and basic algebra that has been covered in high school, before moving to mathematical finance and single- and multi-variable calculus – and linear algebra, time-permitting.

What makes this course unique is an emphasis on how math can *applied* to solve problems in Economics and Finance. Not only will the problems be relatable to students in these areas, but this also implies that the math covered will be relevant to them. For example, we will not be covering trigonometric functions, as these are seldom used in Economics and Finance.

Students interested in pursuing a Masters degree in Economics or Finance are encouraged to also take *ECON 471: Mathematical Economics*, which will help prepare them for more advanced study. For example, dynamic optimization techniques will be covered in that course.

Lectures:

Wednesday 1:00 – 2:15PM

Friday 11:30 – 12:45PM

Lecture Locations:

Coady 110

Instructor:

Greg Tkacz, Ph.D.

Instructor's Office:

Mulroney Hall 3075

Office Hours:

Monday 9:00 – 11:30

Wednesday 11:30 – 12:45

Friday 10:00 – 11:15

or by appointment

Phone: (902) 867-4846

E-mail: gtkacz@stfx.ca

Profile Page:

<https://www.stfx.ca/faculty-staff/greg-tkacz>

Evaluation:

End-of-chapter problems will be regularly assigned for practice purposes, but will not be graded.

Assignment #1: 15%

Mid-Term Exam: 30%

Assignment #2: 15%

Final Exam: 40%

Key Dates:

Wednesday September 4: First ECON 271 class

Friday Sep 27: Assignment #1 is due

Friday Oct 4: Assignment #1 is returned

Wednesday October 9: Mid-Term Exam

Friday October 11: Mid-Term Exam Back-Up Date (*only for students who had a valid excuse to miss the Oct 11 exam date, such as a medical or family emergency; students who wrote the exam on Oct 11 do not need to attend class on this date*)

Monday October 14 to Friday October 18: Fall Study Break (NO CLASSES)

Friday November 15: Assignment #2 is due

Friday November 22: Assignment #2 is returned

Friday December 6: Last class

December 9 to 18: EXAMINATION PERIOD

Drop Date

Students may drop ECON 271 on Banner by **WEDNESDAY OCTOBER 30.**

Learning Objectives:

The mathematical toolkit used by economists is more vast than for other social sciences. For this reason, Economics has a higher “barrier-to-entry” in terms of mathematical preparedness. This course helps lower this barrier.

The learning objectives of ECON 271 are:

1. To introduce students to various mathematical tools that are *relevant* for the study of upper-year undergraduate courses in Economics and Finance;
2. To show students how mathematics can be *applied* to solve *practical* Economics and Finance problems;
3. To prepare students for more advanced study of Mathematical Economics.

Pre-Requisites and Math Requirements:

Pre- or co-requisite: ECON 101

Math Requirements: You will be expected to know high-school-level algebra (e.g. the quadratic equation, cubic functions, exponents, etc.)

Calculator: For the assignments and exams, I recommend you find a simple calculator that can at least handle exponents and square roots. You should be able to find one for no more than \$10. If you have a fancy Business or Scientific calculator, you can feel free to use it.

Textbook:

Sydsaeter, Knut, et al. *Essential Mathematics for Economic Analysis*. Available from: VitalSource Bookshelf, (6th Edition). Pearson International Content, 2021.

Course Outline

Weeks 1-6: Applied Algebra

Chapter 2: Algebra
Chapter 3: Solving Equations
Chapter 4: Functions of One Variable
Chapter 5: Properties of Functions
Chapter 11: Topics in Finance (11.1 to 11.7 only)

MID-TERM EXAM

Weeks 7-10: Applied Single-Variable Calculus

Chapter 6: Differentiation
Chapter 7: Derivatives in Use
Chapter 8: Concave and Convex Functions
Chapter 9: Optimization

Weeks 11-12: Applied Multi-Variable Calculus

Chapter 14: Functions of Many Variables
Chapter 15: Partial Derivatives in Use

Time Permitting: Linear Algebra

Chapter 12: Matrix Algebra
Chapter 13: Determinants, Inverses, and Quadratic Forms