

Mathematical Economics - ECON 3613  
Department Economics  
Acadia University  
Fall 2024

## Professor Information

**Name:** Dr. Barry Watson

**Email:** barry.watson@acadiau.ca

**Office Location:** BAC 343

**Office Hours:** Mondays & Wednesdays, 1pm - 5pm (or by appointment). I am in my office most days, and so long as my door is open (which it normally is), I am available for drop-in consultations.

## Course Information

**Course Title:** Mathematical Economics

**Course Number:** ECON 3613

**Location:** BAC 364

**Meeting Times:** Tuesday & Thursday, 1:00-2:20pm

## Course Description

This course introduces the student to economic analysis using mathematical methods – with emphasis on calculus and algebra. Until now, enrolled students have likely solved economic problems using qualitative theory and graphical analysis. While these methods are sound in principle, mathematical analysis often provides the most concise, robust, and versatile methods for solving economic problems. The objective of this course is to provide the student with a set of tools that can be used to analyse practical economic problems.

## Textbook

(Not Required for Purchase): This course will use material from two textbooks. Both textbooks are available on reserve. The chapters of interest are listed in the accompanying reading list. These are meant to serve as a reference to the lecture material and additional reading material will be posted to D2L.

Chiang, A. & Wainwright, K (2005). *Fundamental Methods of Mathematical Economics*, 4th Edition. McGraw-Hill Education.

Hess, P. (2002). *Using Mathematics in Economic Analysis*. Prentice Hall.

## Course Topics

Topics	Hess	Chiang
Economic Foundations: Supply & Demand	1	N/A
Mathematical Foundations Derivatives & Differentials Limits Integration <i>Application:</i> Consumer/Producer Surplus	2	6,7,14
Static Analysis Marshallian Systems Comparative Statics <i>Application:</i> Supply & Demand Systems	3	8
Unconstrained Optimization First & Second Order Conditions <i>Application:</i> Short run product & cost curves <i>Application:</i> Short run decision rules re. firms	6	9
Constrained Optimization The Lagrange Multiplier Method <i>Application:</i> Firm: Cost Minimization <i>Application:</i> Household: Utility Maximization	10-12	11-13
Matrix Algebra Calculating Determinants Finding the Inverse Cramer's Rule <i>Application:</i> IS-LM	5, 13-14	4
Dynamic Optimization First-order differential equations <i>Application:</i> Solow Growth Model	15	5, 20

## Grading

Assignments (5 at 5% each)	25%
Test 1 - October	25%
Test 2 - November	25%
Test 3 - December 3rd	25%

Tests and assignments will consist of a set of short answer, problem-based questions. The first test will be held in early/mid-October, the second will be in early/mid-November, and the final test will be on the last day of class. Note: tests are NOT cumulative. Assignments are intended enhance the topics covered in class with practical application.

## Grading Scale

Grades for individual course components may fall between 0 and 4.33. Final grades will be reported as a letter grade. The letter grading system is provided below.

Grade	GPA	%	Performance
A+	4.33	90-100	
A	4.00	85-90	Excellent
A-	3.67	80-84	
B+	3.33	77-79	
B	3.00	73-76	Good
B-	2.67	70-72	
C+	2.33	67-69	
C	2.00	63-66	Satisfactory
C-	1.67	60-62	
D+	1.33	57-59	
D	1.00	53-56	
D-	0.67	50-52	Pass
F	0.00	0-49	Failure

## Equity, Diversity, and Inclusion

We are committed to fostering an inclusive and equitable learning environment where the principles of human rights and social justice are paramount. We recognize and respect the diverse backgrounds, identities, and experiences of all students. Our collective goal is to create a space where every individual feels valued, heard, and supported.

All students are encouraged to contribute to and uphold an atmosphere of mutual respect and empathy. Discrimination, harassment, or any form of intolerance will not be tolerated. If you have any concerns or require accommodations to ensure your full participation in this course, please do not hesitate to reach out. Together, let's work towards understanding and advancing human rights and equity, both within and beyond the classroom.

Acadia's Human Rights and Equity Office is responsible for the management and implementation of Acadia's Policy Against Harassment and Discrimination. This Policy is underpinned by a commitment to deconstructing the problematic structures of systemic racism and discrimination within the University Community. Acadia upholds a commitment to fostering a culture within the University Community that is welcoming and reflective of the diverse individuals that comprise this community and to fostering cultural safety, anti-oppression and anti-racism within the University Community, making it our goal to achieve a culture where our diversity is our strength.

For more information, as well as resources for those who have experienced (or witnessed) the above, please contact Polly Leonard at [equity@acadiau.ca](mailto:equity@acadiau.ca).

## Accessibility

The Accessibility Learning Office is committed to creating a welcoming and inclusive environment for all students, including those with disabilities. Their office strives to ensure that all students have equal access to educational opportunities and resources. Students who require accommodations to complete coursework, or fully participate in class, are encouraged to contact them directly. Please visit the [Accessible Learning Services website](#) or email them at [Accessible.learning@acadiau.ca](mailto:Accessible.learning@acadiau.ca) for more information.

## Health & Well-being

Acadia provides a host of services for student health, well-being, and safety. The university's physicians provide services for: medical diagnosis and treatment of health concerns, reproductive health (pap tests, birth control, pregnancy tests), sexual health (confidential testing for all sexually transmitted infections and HIV), and emergency contraception. For more information, please contact [studenthealth@acadiau.ca](mailto:studenthealth@acadiau.ca), or visit their [website](#).

The Counselling Centre offers a confidential, safe, and caring place for students to access mental health support. To book an appointment, please [click here](#), or contact [counselling@acadiau.ca](mailto:counselling@acadiau.ca).

## Academic Ethics

Students should familiarize themselves with the Acadia's policy on academic ethics. Plagiarism and other academic offences are not tolerated. Penalties are severe and may result in suspension or expulsion. A complete list of regulations can be found in the [student handbook](#).

## Important Dates

- Sept 13 Last day to add/change fall courses  
Last day to withdraw from fall courses without receiving a "W"
- Sept 30 National Day for Truth and Reconciliation observed – No classes
- Oct 14 Thanksgiving - No classes
- [October 15 - October 18: Reading Week - No classes](#)
- Nov 11 Remembrance Day observed- No classes
- Nov 22 Last day to withdraw and receive a "W"; withdrawals thereafter receive an "F"
- Dec 4 Last day of classes
- Dec 7 First day of exams
- Dec 18 Last day of exams