

**University of Waterloo**  
**Department of Economics**  
**Economics 211-2**  
**Introduction to Mathematical Economics**  
**Monday, Wednesday 8:30-9:50, AL 105**

**Course Outline Winter 2016**

**Instructor Information**

Instructor: John Burbidge  
Office: HH-125  
Office Hours: MW: 1:00-2:00, or by appointment  
Email: [jburbidg@uwaterloo.ca](mailto:jburbidg@uwaterloo.ca)  
Web: <http://artsonline.uwaterloo.ca/jburbidg/>

**Course description**

The undergraduate calendar description for this course is:

**ECON 211 LEC 0.50**

Course ID: 004890

**Introduction to Mathematical Economics**

Application of mathematics to problems in economic theory. Topics include an introduction to matrix algebra, differentiation, partial derivatives, optimization techniques including constrained optimization -- all developed within the context of economic theory.

*[Note: Students should complete ECON 211 by their second year.]*

*Prereq: ECON 101; one of MATH 104, 4U Advanced Functions, 4U Calculus and Vectors; Not open to students in the Faculty of Mathematics.*

*Antireq: MATH 106/125, 109, 115, 116, 117, 118, 119, 128, 136, 138, 146, 148*

**Note that Math 104 or its equivalent is a pre-requisite.**

**Math 104**

Introductory Calculus for Arts and Social Science: An introduction to applications of calculus in business, the behavioural sciences, and the social sciences. The models studied will involve polynomial, rational, exponential and logarithmic functions. The major concepts introduced to solve problems are rate of change, optimization, growth and decay, and integration.

## **Course Goals and Learning Outcomes**

Economics is the most mathematical of the social sciences. This course, together with Econ 311, provides students with the mathematical background required to complete Econ 221, Statistics for Economists, and the core third- and fourth-year courses in economic theory and econometrics.

### **Text**

Michael Hoy, John Livernois, Chris McKenna, Ray Rees and Thanasis Stengos, 2011, Mathematics for Economics, third edition (Cambridge, MA: MIT Press), together with its Solution Manual.

### **Topics**

Basics: Sets, numbers, functions, sequences, limits and series: Hoy et al., chapters 2-3.

Univariate calculus and optimization: Hoy et al., chapters 4-6.

Linear algebra: Hoy et al., chapters 7-10.

Multivariate calculus and optimization: Hoy et al., chapters 11-14.

### **Evaluation**

There will be five assignments, two term tests and a final exam. The assignments and their due dates will be posted on the course web site. They must be submitted in class on their due dates.

The term tests will be held on Wednesday January 27th and Wednesday March 2nd. Both tests will take place in the class period and in the room classes are held. The weights on assignments, tests and the final exam are:

Assignments: 10%

Test 1: 15%

Test 2: 15%

Final exam (cumulative): 60%

There will be no make-up assignments or tests. If a student misses an assignment or a test, and she/he can provide credible documentation for missing the assignment or the test, the weight on the assignment or test will be transferred to the final exam.

\*\*\*\*\*

### **Economics Department Deferred Final Exam Policy**

Deferred Final Exam Policy found at <https://uwaterloo.ca/economics/current-undergraduates/policies-and-resources/deferred-final-exam-policy>.

### **Cross-listed course**

Please note that a cross-listed course will count in all respective averages no matter under which rubric it has been taken. For example, a PHIL/PSCI cross-list will count in a Philosophy major average, even if the course was taken under the Political Science rubric.

### **Academic Integrity**

**Academic Integrity:** In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility.

**Discipline:** A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to [Policy 71 - Student Discipline](https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71) (https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71)

**Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70 - Student Petitions and Grievances](https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70) (https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70), Section 4.

**Appeals:** A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read [Policy 72 - Student Appeals](https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-72) (https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-72).

### **Other sources of information for students:**

[Academic Integrity website \(Arts\)](https://uwaterloo.ca/arts/current-undergraduates/student-support/ethical-behaviour)

<https://uwaterloo.ca/arts/current-undergraduates/student-support/ethical-behaviour>

[Academic Integrity Office \(UWaterloo\)](https://uwaterloo.ca/academic-integrity/)

<https://uwaterloo.ca/academic-integrity/>

## **Accommodation for Students with Disabilities**

***Note for students with disabilities:*** The [AccessAbility Services](https://uwaterloo.ca/disability-services) office (https://uwaterloo.ca/disability-services), located on the first floor of the Needles Hall extension (NH 1401), collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AS office at the beginning of each academic term.