

## ECON 1401B

### Elementary Mathematics for Economics I

Winter 2023

Instructor: Jiankang Zhang  
Office: D887 Loeb Building  
Phone: 613-520-2600 ext. 3774  
[jiankangzhang@cunet.carleton.ca](mailto:jiankangzhang@cunet.carleton.ca)  
TA: TBA

Classes:  
Tuesdays 11:35-12:55 (Lecture, 417 Southam Hall)  
Thursdays 11:35-12:55 (Lecture, 417 Southam Hall)  
Mondays 16:35-17:25 (Tutorial, 202 Tory Building)  
Office Hours: 16:10-17:40 (Thursdays or by appointment)

---

Welcome to ECON 1401: Elementary Mathematics for Economics I.

**Objectives:** The course is designed to provide students with elementary mathematical tools required for basic economic analysis. The emphasis is not only on the mathematics but also on its applications to economics. Topics covered include linear and non-linear functions and models (including cost, revenue, profit, demand and supply), matrices, and mathematics of finance and growth (including simple and compound interest: annuities, mortgages, loans). Graphing economic magnitudes: scatter diagrams, time-series graphs, functional relationships. Applied algebra: solving systems of linear equations and Keynesian national-income analysis.

**Prerequisites:** Ontario Grade-12 U Advanced Functions, or MATH 0005, or equivalent; and ECON 1001 or ECON 1000 or FYSM 1003, which may be taken concurrently with ECON 1401. Students who believe they have taken a similar background course or courses from another university should provide appropriate documentation to the Department of Economics Undergraduate Administrator, Renee Lortie: [renee.lortie@carleton.ca](mailto:renee.lortie@carleton.ca) to check that credit may be given for all courses.

**Precludes additional credit for BIT 1000, BIT 1001, BIT 1100, BIT 1101, BIT 1200, BIT 1201, MATH 1007, MATH 1009, MATH 1104, MATH 1107, MATH 1119, MATH 1052, MATH 1152.**

The course consists of lectures three hours a week, tutorials one hour a week.

#### Textbook

The required textbook for the course is:

*Maths for Economics, 5<sup>th</sup> edition By Geoff Renshaw, Oxford University Press*

## Course Outline

- Topic I: Foundations
  - Chapter 1: Arithmetic
  - Chapter 2: Algebra
  - Chapter 3: Linear equations
  - Chapter 4: Quadratic equations
  - Chapter 5: Some further equations and techniques
- Topic II: Mathematics of Finance and Growth
  - Chapter 10: Compound growth and present discounted value
  - Chapter 11: The exponential function and logarithms
  - Chapter 12: Continuous growth and the natural exponential function
  - Chapter 13: Derivatives of exponential and logarithmic functions and their applications
- Topic III: Some Further Topics
  - Chapter 19: Matrix algebra
  - Chapter 20: Difference and differential equations

## Grading Scheme

- The final grade will consist of the following elements weighted as shown:
  1. Three in-class midterm exams 15%, 20%, 25%, respectively
  2. Final exam 40%
- The first midterm examination will be held after finishing Chapter 2.  
The second midterm examination will be held after finishing Chapter 3.  
The third midterm examination will be held after finishing Chapter 5.
- The dates for the midterms will be announced in advance.
- There will be no deferred mid-term exams. If you miss a midterm exam due to an emergency or illness and provide proper documentation (Please give me the original copy in person!), the assigned weight will be added to the final exam. Otherwise you will receive zero marks for it.
- A maximum of one missed midterm is permitted. As a result, a maximum weight of 65% will be given to the final examination. DEF(erred final grade) status at the end of this course precludes (continued) registration in any other course for which the former is a prerequisite.
- All the midterms and the final are **closed** book examinations and students are **not allowed** to bring in any materials.
- The final exam will be **cumulative** and cover the **entirety** of the course material.
- The final examination will be a three-hour in-person examination, scheduled by the Scheduling Office.

**Satisfactory Performance Criteria:** Students must fulfil all of the preceding course requirements in order to achieve a passing grade (D- or higher). Failure to write the final examination when the student has achieved satisfactory performance during the term will result in a grade of 'F' until an appeal to write the deferred final exam in May

2023, if granted by the Registrar's Office. A change of grade will be submitted when the deferred final exam has been written and the marks are available. See Academic Regulation 2.3 for the official meanings of the grades, and note that it stipulates that no course grades are final until approved by the Faculty Dean. Application to write a deferred final examination must be made at the Registrar's Office in writing no later than three working days after the original final examination was scheduled.

**Tutorial Groups:** Weekly tutorials will be conducted. The TA will show the students the applications of concepts and theories presented in classes step by step by using some examples.

**Practice Problems:** Students are encouraged to work through as many textbook problems as possible, since these are the best way to learn the course and prepare for the exams as well. Moreover, I will provide four sets of practice problems.

**Brightspace** and the Carleton email system will be used extensively as a means of communication with students. Therefore, students are strongly advised to access Brightspace and check their Carleton email at regular intervals in order to check for new information. To access Brightspace and the Carleton email system, students require a MyCarletonOne account. For questions about MyCarletonOne accounts, students should access <http://carleton.ca/ccs/get-started/> (and then click on either New Students or New Grad Students, as appropriate) or contact the ITS Service Desk (4th Floor, MacOdrum Library, telephone: 613-520-3700).

**Plagiarism:** Please be aware that plagiarism is serious offense at Carleton and should be recognized and avoided. For more information, please see [Academic Integrity and Offenses of Conduct](#).

**Requests for Academic Accommodation:** You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

**Pregnancy obligation:** Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [carleton.ca/equity/wpcontent/uploads/Student-Guide-to-Academic-Accommodation.pdf](http://carleton.ca/equity/wpcontent/uploads/Student-Guide-to-Academic-Accommodation.pdf)

**Religious obligation:** Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](http://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

\*\*\*\*\*

**Academic Accommodations for Students with Disabilities:** If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. [carleton.ca/pmc](http://carleton.ca/pmc).

**If you have any problems and questions, please do not hesitate  
to ask me for help.**