

**Department of Economics**

**Carleton University**

**ECON 4995 A**

**Review of Mathematical and Statistical Methods of Economics**

**2022 Summer-Fall Intersession**

Instructor: Derek Olmstead                      E-mail: derek.olmstead@carleton.ca

Lectures: August 22-24 and August 29-September 1, 10 a.m. to 12 p.m. and 1 to 3 p.m.

Location: Online; available asynchronously; see cuLearn course page for delivery details

T.A: TBD    E-mail: TBD

Tutorials: August 24, 26, and 30, and September 1, 3:30 to 5:30 p.m.

Location: Online; conducted synchronously; see cuLearn course page for delivery details

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**Objectives**

The aim of the course is to provide a review of a variety of mathematical and statistical methods commonly applied in economic analysis.

**Registration**

Registration in this course is strongly recommended for all incoming M.A. economics students.

**Prerequisites**

Admission to the M.A. or Ph.D. program in economics, or permission of the department.

**Evaluation**

Electronic submission of one assignment is required by 3 p.m. on the day of each tutorial (listed above). Submission details will be provided on the cuLearn course page. There are four assignments in total. Each assignment will comprise 10% of the final grade. Late assignments will not be accepted for grading and the associated weight will be transferred to the final examination.

The final examination will take place on September 2. It will follow a “take-home” format: it will be posted on the cuLearn course page at 10 a.m. and an electronic submission of answers will be due by 1 p.m. Additional details will be provided on the cuLearn course page. The final examination will comprise 60% of the final grade (plus any weight transferred from the assignments). If the final examination is missed for any reason, students should contact the instructor to determine the time for a make-up examination on September 6 (scheduled to avoid conflict with academic orientation activities).

## Lectures

Lectures will be pre-recorded with links to the videos on cuLearn course page with the exception of the first lecture which will be recorded live and made available thereafter. Student attendance at the first lecture is strongly recommended. A webcam is not required.

## Tutorials

The tutorials are an integral part of the course and are important to its successful completion. The tutorials will be delivered synchronously online by the teaching assistant. In each tutorial, the assignment collected in class earlier that day will be discussed and the solutions will be provided. Additional questions and problems that are relevant to the topics covered in the lectures will also be discussed in the tutorials.

Students are strongly recommended to participate in the tutorials and are required to have webcams to do so.

## Course outline and coverage

The topics will be covered as time permits and the order is subject to change. The instructor will indicate which topics will be subject to testing on the final examination.

### ***Mathematical methods***

1. Linear algebra
2. Calculus
3. Optimisation

### ***Statistical methods***

4. Probability, random variables, and distributions
5. Estimation, hypothesis testing, and inference
6. Linear regression

## Recommended texts

Chiang, Alpha C. and Kevin Wainwright. *The fundamental methods of mathematical economics*. McGraw-Hill. Any recent edition.

Keller, Gerald. *Statistics for management and economics*. Cengage Learning. Any recent edition.

Sydsaeter, Knut, Peter Hammond, Atle Seierstad, and Arne Strom. *Further mathematics for economic analysis*. FT Prentice Hall. Any recent edition.

Tan, Soo. *Applied calculus for the managerial, life, and social sciences: A brief approach*. Cengage Learning. Any recent edition.

Wooldridge, Jeffrey M. *Introductory econometrics: A modern approach*. Cengage Learning. Any recent edition.

These textbooks are available from the [CU Bookstore](#) and many online book retailers.

## **Online resources**

This course is structured to follow selected chapters of the textbooks listed above. Online resources are available from the publishers' websites for new purchases of the Keller, Tan, and Wooldridge textbooks. These materials consist of practice problems, online assignments, and practice tests. Access to these resources is not mandatory for the completion of the course.

## **Communications policy**

To contact the instructor or the T.A., please use the email function available on the cuLearn course page.

## **No distribution of course materials**

Posting of course material to Internet websites is prohibited. Materials created for this course, including presentations and posted notes, assignments, and examinations, remain the intellectual property of the author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s).

## **Academic support**

The [Centre for Student Academic Support \(CSAS\)](#) is a centralized collection of learning support services designed to help students achieve their goals and improve their learning. CSAS offers academic assistance with online student success, course content, academic writing and skills development.

## **Plagiarism**

Please be aware that plagiarism is a serious offence at Carleton and should be recognised and avoided. For information on how to do so, please see the [University Academic Integrity Policy](#).

## **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***

Write to the instructor with any requests for academic accommodation during the first week of class, or as soon as possible after the need for accommodation is known to exist. For more details, please visit [Equity Services](#).

### ***Religious obligation***

Write to the instructor with any requests for academic accommodation during the first week of class, or as soon as possible after the need for accommodation is known to exist. For more details, please visit [Equity Services](#).

### ***Students with disabilities***

Students with disabilities requiring academic accommodations in this course must contact a coordinator at the [Paul Menton Centre for Students with Disabilities \(PMC\)](#) to complete the necessary Letters of Accommodation. After registering with the PMC,

students must make an appointment to meet and discuss their needs with the instructor in order to make the necessary arrangements as early in the intersession as possible.

For a complete list of accommodations see the following link:

<https://students.carleton.ca/course-outline/>.