

CARLETON UNIVERSITY  
Department of Economics

ECON 4021 B  
**Advanced Macroeconomic Theory**  
Winter 2025

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TA: TBC  
Office: TBD  
Email: TBD

Lectures: Tuesday and Thursday, 2:35 – 3:55 pm  
Tutorials: Tuesday, 4:05 – 5:25 pm  
Course and Tutorial Locations: Log into Carleton Central to view the location on your timetable.  
Course Website: Brightspace

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## Course Description

**Overview:** This course provides an introduction to the modern micro-founded and dynamic approach to modeling and understanding the macroeconomy. We will develop several micro-founded theoretical models and then study the implications of these models for the behaviour of the macroeconomy. A particular focus of the course will be in developing a dynamic, general equilibrium model of the macroeconomy using two-period and/or infinite horizon frameworks.

**Expected Outcome:** The course will help broaden students' understanding of modern approaches to macroeconomics beyond the traditional IS/LM style frameworks that they may have encountered previously. For students planning on pursuing macroeconomics at the graduate level, the course will provide an intuitive and theoretical foundation for studying more complex macroeconomic models in typical graduate programs. For students **not** planning on pursuing macroeconomics at the graduate level, the course will complement past macroeconomic courses to help provide a micro-founded framework through which to understand and analyze real-world issues related to the macroeconomy.

## Prerequisites

[ECON 2102](#) with a grade of C+ or higher; [ECON 2103](#) with a grade of C+ or higher; [ECON 3001](#) (or [MATH 2000](#) or [MATH 2004](#)) with a grade of C+ or higher; and [ECON 2220](#) (or

equivalent, or ([STAT 2509](#), [STAT 2559](#), [STAT 2602](#), [STAT 2605](#) , [STAT 2607 \(no longer offered\)](#) or [STAT 3502](#)), which may be taken concurrently with ECON 4021. Students who believe they have taken a similar background course or courses from another university must provide appropriate documentation to the Department of Economics Undergraduate Administrator, Sean Hall. 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.

## Recommended Text

Stephen D. Williamson, *Macroeconomics*, Sixth Canadian Edition (eTextbook \$67.99 on Pearson.com).

The Williamson text provides a good introduction to the micro-founded and dynamic approach to macroeconomics for students whose previous exposure to macroeconomics may have revolved around traditional IS/LM-type frameworks. The text may be used at different intellectual levels depending on the nature of the course and the treatment of the instructor. A typical chapter in the text contains both graphical and mathematical treatment of a topic, and is accompanied by a mathematical appendix which approaches the problems using intertemporal optimization and expands the treatment of the core chapter. Our level of analysis in the course will be consistent with the mathematical treatments in the body of the chapters and the material in the mathematical appendices, although we will also often complement this with graphical treatments to develop our understanding and intuition. In many instances I will provide supplementary lecture notes where we go beyond the analysis in the textbook or where the presentation in the appendices is too brief.

Please note that the above textbook is recommended, but not required. Since we will be only following the text loosely, some students may also elect to use previous or non-Canadian editions.

## Course Website

This course will make use of Brightspace. I will post all materials for the course, including lecture slides, notes, assignments and reading details, on the Brightspace course website.

## Tutorials

In addition to the lecture component, this course includes scheduled tutorials during which the TA will discuss and review assignment and midterm solutions, discuss separately assigned problems, and possibly present material to reinforce or support lecture material. I will announce the specific requirements during the term through Brightspace.

***There will be no tutorial on January 7.***

Depending on the progress of the lectures through the term, I may optionally use all or a portion of one or two tutorials to deliver lecture material.

## *Assignments*

The tentative assignment due-dates are as follows:

- Assignment 1 due: **January 23, 2024**
- Assignment 2 due: **February 4, 2025**
- Assignment 3 due: **February 27, 2025**
- Assignment 4 due: **March 18, 2025**
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Each assignment will consist of various analytical questions primarily intended to support and reinforce students' comprehension of the course material and to provide an indication of the type of questions that will be on the exams. As such, students are encouraged to treat each assignment as a critical learning opportunity. The assignments may include short-answer questions, mathematical derivations/calculations, true/false and numerical calculations. While students are permitted to discuss the assignment material with classmates, each student must ensure that their submitted work is their own. Please see the statement on plagiarism below.

Assignments must be submitted by 11:59 pm on the due date as a soft-copy file upload **within Brightspace** (ideally as a pdf). Students who complete their assignment in hard-copy format (ie paper) should scan their hard-copy assignment and upload the soft-copy scan of the file. If possible, please try and scan your assignments as a pdf rather than taking pictures and submitting image-files (there are number free scanning-apps for smartphones that will create pdf files from scans, such as "Genius Scan", or even simply the ios Notes app). Late assignments will receive a mark of zero.

I will post the assignments approximately two weeks in advance, and therefore **only in rare cases** where a student can document a compelling reason for a **prolonged** absence will students be excused from handing in an assignment. In such a rare case, the weight of the assignment will be transferred to the final exam.

## *Research Paper (Optional)*

By their fourth year, many students have had the opportunity to conduct empirical projects, but very few have had the opportunity to complete a theoretical project. To help students get acquainted with more theoretically-oriented research activities, in this class students will be required to write a "research paper" on a topic of interest. Many research papers in economics begin with a question ("What caused the Great Recession?", "Why was inflation so low for so long?", "Will the COVID crisis cause sustained inflation", "Why is inequality increasing?".....). For this paper, students will be required to first come up with a simple, approachable and specific macroeconomic question, and then use one of the modeling frameworks learned in class (or extensions the framework) to study the question. Students will then write a short paper that introduces their question, presents and describes the relevant model and equilibrium, and then uses the model to try and analyze and address their question. Students will be given assistance in limiting the scope of their question to something that is approachable given the tools learned in this course as well as time constraints. To give an indication of the scope, I expect that the students will spend about 10-15 hours on average on their project.

**Note that this year the research paper will be OPTIONAL. See the grading evaluation breakdown below.**

Students who chose to submit the research paper **must** submit a short (one paragraph) proposal by **March 20**. The final research paper is due **April 8**.

### *Midterm exams*

There will be two midterm exams during the term. The first exam will take place during regular class time on **February 6, 2025** The second exam will take place during regular class time on **March 20, 2025**.

Students who can document a compelling reason for missing the **first** midterm exam will be excused and the weight of the midterm will be automatically added **to the final exam**. Students who can document a compelling reason for missing the **second** midterm exam will be excused and the weight of the second exam will be automatically added **to the final exam**. There will be no deferred midterm exams. Students who can document a compelling reason for missing the **both the first and second** midterms will be excused and the weight of the first midterm and second midterms will be added to the final exam, and these students must also then submit the Research Paper (ie **the Research Paper is compulsory for students who miss both the first and second midterms**). Students must complete a Self-Declaration for Academic Considerations form (<https://carleton.ca/registrar/wp-content/uploads/self-declaration.pdf>) for all of the cases described above in this paragraph.

In general, the course material is “cumulative” in the sense that material learned later in the course relies on material learning earlier in the course. As such, I have designed a flexible grading scheme that optionally puts more weight on the second midterm exam for students who might take a bit more time to absorb the material (see below).

I tend to make the first midterm “easier” in the sense that the average mark is typically higher than that for the second midterm or final exam.

### *Final exam*

The final exam will take place during the Winter term examination period at a time and place set by the University. The exam will cover content from the entire course.

## **Evaluation**

Each student’s grade will be calculated as follows:

Final grade = max (Scheme A, Scheme B), where Scheme A and B are defined as follows:

#### **Scheme A:**

- Four written assignments 8% (2% each assignment)
- Class participation 2%

- Midterm 1 20%
- Midterm 2 20%
- Final exam (+ optional research paper) 50%

#### Scheme B:

- Four written assignments 8% (2% each assignment)
- Class participation 2%
- Midterm 1 10%
- Midterm 2 30%
- Final exam (+ optional research paper) 50%

***\*Note: For students who choose to submit a Research Paper, for either Scheme A or Scheme B, I will weight the Final Exam 30% and the Research Paper 20% (ie such that the total of the Final Exam + Research Paper comprise 50% of the overall course mark).***

In addition, I reserve the right to apply some professional discretion to modify the weights above slightly for a student whose grade ends up at the upper-boundary of a grade-range based on the algorithm above, but who did an outstanding job on a particular grading component (such as the research paper or final exam).

## Final Course Mark

Students must fulfill both the midterm and final exam course requirements in order to achieve a passing grade (D- or higher) in the course. Failure to write the mid-term examinations (without a documented compelling reason) will result in a grade of F. No course grades are final until approved by the Faculty Dean. Note also that course grades may be scaled upwards or downwards in a rank-preserving manner to better fit the relevant departmental distributional norm. Application to write a deferred final examination must be made at the Registrar's Office.

## Plagiarism

Please be aware that plagiarism is a serious offence at Carleton and should be recognized and avoided. The University Academic Integrity Policy defines plagiarism as *“presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one’s own.”* This includes reproducing or paraphrasing portions of someone else’s published or unpublished material, regardless of the source, and presenting these as one’s own without proper citation or reference to the original source. Examples of sources from which the ideas, expressions of ideas or works of others may be drawn from include but are not limited to: books, articles, papers, literary compositions and phrases, performance compositions, chemical compounds, artworks, laboratory reports, research results, calculations and the results of calculations, diagrams, constructions, computer reports, computer code/software, material on the internet and/or conversations.

Examples of plagiarism include, but are not limited to:

- any submission prepared in whole or in part, by someone else, including the unauthorized use of generative AI tools (e.g., ChatGPT);
- using ideas or direct, verbatim quotations, paraphrased material, algorithms, formulae, scientific or mathematical concepts, or ideas without appropriate acknowledgment in any academic assignment;
- using another’s data or research findings without appropriate acknowledgement;
- submitting a computer program developed in whole or in part by someone else, with or without modifications, as one’s own; and
- failing to acknowledge sources through the use of proper citations when using another’s work and/or failing to use quotations marks.

Plagiarism is a serious offence that cannot be resolved directly by the course’s instructor. The Associate Dean of the Faculty conducts a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They can include a final grade of “F” for the course.

I wish to emphasize that using AI tools to produced any assessed content in this course (including the any portion of the Research Paper) is considered violation of academic integrity standards.

## Treatment of Course Materials

Student, teaching assistant or professor materials created for this course (including but not limited to lecture slides, presentations and posted notes, labs, case studies, assignments, exams and solutions to assignments and exams) 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 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/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](https://carleton.ca/equity/wp-content/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](https://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](https://carleton.ca/pmc)

## *Survivors of Sexual Violence*

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and its survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: [carleton.ca/sexual-violence-support](https://carleton.ca/sexual-violence-support)

## *Accommodation for Student Activities*

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. 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. <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

For more information on academic accommodation, please contact the departmental administrator or visit: [students.carleton.ca/course-outline](https://students.carleton.ca/course-outline)

## Course Outline and Schedule

The outline below lists the topics that we will cover, the related reading sources, and the approximate timing of each topic. Where there are exclusions to the chapter readings I will note them during the term in Brightspace.

1. Introduction
  - a. Modern approach to macroeconomics
2. Static consumption-leisure framework (one-period models)
  - a. Introduction: A simple (static) Robinson Crusoe model

- Lecture notes
  - b. Consumer and firm behaviour
    - Ch. 4, Appendix to Ch.4, Lecture notes
  - c. A Closed-Economy One-Period Model
    - Ch.5, Appendix to Ch.5, Lecture notes
  - d. Finale: A dynamic Robinson Crusoe model with no storage
    - Lecture notes
3. Real Intertemporal framework (real dynamic models)
- a. Endowment Economies
    - Two-period real model
      - Ch. 9 & Appendix to Ch.9
    - Infinite-horizon real endowment model
      - Class notes
    - Credit market imperfections (time-permitting)
    - Overlapping generations (time-permitting)
      - Lecture notes
  - b. Production Economies
    - Two-period real model with investment
      - Ch. 11 & Appendix to Ch. 11
    - Infinite-horizon real production model (“RBC model”)
      - Class notes
    - Overlapping generations production and and capital (time-permitting)
      - Lecture notes
4. Monetary Economies
- Role of “money” and various theories of inflation
    - Williamson Ch.12
    - Williamson Ch.14
    - Cochrane “Fiscal Theory of the Price Level” Ch.1
5. Aggregate fluctuations and “business cycles”
- a. Business cycle facts
    - Ch. 3
  - b. Market-clearing models of the aggregate fluctuations/business cycles (Real Business Cycle model)
    - Ch. 13
  - c. New Keynesian economics: sticky prices
    - Ch. 13, 14
6. Money, financial intermediation and banking, credit market imperfections (time-permitting)
- a. Ch.10, 17, 18
7. Search and Unemployment (time-permitting)
- a. A model of search and unemployment
    - Ch. 6



8. Growth (time-permitting)

- Ch.7, 8

\*Please note that I reserve the right to make modifications to the list of contents as the term proceeds. If I make a modification, I will provide advance warning through Brightspace.