

# Carleton University

## Department of Economics

### ECON 6503 F PhD Macroeconomic Theory I 2026 Fall

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Office Hours: By appointment

Lectures: Tuesdays, 8:35a-11:25a (in person)

Course Location: Log into Carleton Central to view the location on your timetable.

Course Website: Brightspace

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## Course Description

Calendar description: *Analysis of dynamic macroeconomic systems, with applications to economic growth. Micro-foundations of modern macroeconomics, with a focus on solving dynamic optimization problems and applied to consumption, portfolio, and investment decisions, and to micro-founded growth models.*

*This course precludes additional credit for ECON 6021 (no longer offered).*

## Textbook

There is no required textbook for the course. Some recommended texts that you may find helpful for reference purposes are:<sup>1</sup>

1. Daron Acemoglu, *Introduction to Modern Economic Growth*, Princeton University Press.
2. Lars Ljungqvist & Thomas J. Sargent, *Recursive Macroeconomic Theory*, MIT Press.
3. Robert J. Barro & Xavier Sala-i-Martin, *Economic Growth*, MIT Press.
4. Nancy L. Stokey & Robert E. Lucas, Jr., *Recursive Methods in Economic Dynamics*, Harvard University Press.

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<sup>1</sup>In cases where there are multiple editions, newer editions are usually preferable, but in most cases any edition will do.

5. David Romer, *Advanced Macroeconomics*, McGraw-Hill.
6. Marina Azzimonti, Per Krusell, Alisdair McKay, and Toshihiko Mukoyama, *Macroeconomics*, Oxford University Press.

The course will be taught mainly from my own lecture notes, which will be posted on the course website. These notes generally (though not always) overlap with one or more of the above textbooks, though the presentation style is in many cases quite different. As a result, the textbooks, while not necessary, may be useful for some students who feel they could benefit from a different take on the materials covered in the lecture notes. My suggestion is to hold off on buying any of the textbooks until you have a better idea of whether you might benefit from them.

If you do end up buying one of these textbooks, here are my own opinions on them (other professors may reasonably disagree).

- If you're only going to buy one, I think Ljungqvist & Sargent will be the most useful in your future as a macro researcher *unless* you plan on working in economic growth (which is not covered). It's also a bit lacking in terms of formal theory, instead taking a bit more of an intuitive, informal approach.
- For economic growth, or to get a better handle on formal macro theory, Acemoglu is probably your best bet (despite its name, much of the theory discussed in the first half of Acemoglu's book is applicable well beyond the sub-field of economic growth).
- Barro & Sala-i-Martin is a good option if you're interested in economic growth, but want to avoid the formal theory in Acemoglu.
- Stokey & Lucas is the most comprehensive of these options when it comes to formal macro theory, but is written at a highly technical, mathematical level (much more so than even Acemoglu). I wouldn't make this your first stop for anything, but it's a great secondary reference work for the more mathematically inclined.
- Romer is a good textbook if you want a comprehensive high-level overview of a particular macro topic, with lots of citations to direct you to further reading. However, while it excels in breadth, it's lacking in detail. For example, many of the mathematical derivations are omitted, with only the final result shown, which can be frustrating at times for students.
- The Azzimonti et al. textbook covers a wide variety of macro topics and is aimed at first-year PhD students. However, it isn't actually available yet (it won't be out until late fall 2026 apparently). While it's not available any more, a digital draft was available for free as recently as last fall, so you may yet be able to obtain a copy from someone.

## Course Website

This course will make use of Brightspace. I will post all materials for the course on the Brightspace course website, and also use that platform as a means of communicating important information about the course. Please ensure that you are set up on Brightspace prior to the course start date.

## Lectures

Lectures are expected to be held in person only, and no recordings will be made available.

As noted above, the course will be taught mainly from my own lecture notes. Throughout the semester, I will expect you to read through the relevant material for each lecture **in advance** of the lecture itself. That way we can focus our class time on the more difficult aspects of the material, and spend less time on the simpler stuff (e.g., defining notation, stating common basic assumptions, etc.). As a result, if you don't keep up on the readings, you'll probably find the lecture harder to follow.

As a rough guide, we'll typically aim to get through around 10 pages of the lecture notes per lecture (give or take a couple of pages).

## Course Material

There may be cases where I discuss some things in class that aren't in the lecture notes, or vice versa. Unless I specifically indicate otherwise, you are responsible for knowing all material discussed either in class *or* in the lecture notes (or both).

## Computational Software

This course will involve assignments that require the use of computational software. You may choose from the following two options (**and *only* the following two options**):

1. **MATLAB**, which requires a paid license. If you have a Carleton email account, you should have access to a student MATLAB license for free through the university.
2. **Julia**, which is freely available software.

The main advantage to MATLAB is that it is a very mature piece of software (the earliest versions are from the late 1970s) that is also officially maintained and extensively supported by the company that owns it (Mathworks). As a result, in my experience it is easier to use, more reliable, and has more support and help available for it (both official and unofficial) than Julia.

On the other hand, Julia is probably more powerful and versatile than MATLAB, and for some applications also considerably faster. It's also freely available, which makes it more likely to be available to you in the future if and when you no longer have access to a university-provided MATLAB license. The main downsides are that it can be harder to work with at times than MATLAB, and since the software is relatively new and doesn't have the same resources behind it as MATLAB (after all, it's free), it ultimately does not have the same degree of support and help available for it.

You are free to do your assignments with either piece of software. The one caveat you should be aware of is that I myself only have limited experience with Julia, so I won't be able to be of much (if any) help to you if you're having trouble with something.

## Course Outline and Schedule

The outline below lists the tentative plan for the topics that we will cover. I reserve the right to make changes to this list as the term proceeds.

1. Economic growth
  - (i) Solow model
  - (ii) Ramsey-Cass-Koopmans model
  - (iii) Endogenous growth
2. Discrete-time optimization theory
3. General equilibrium in an endowment economy

## Evaluation

Each student's grade will be calculated as follows:

- Written assignments: 20%.
- Midterm exam: 30%.
- Final exam: 50%.

## Assignments

There will be four assignments each worth 5% of your final grade. All assignments will be completed by students outside of class time. Each assignment will consist of various questions 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.

While students are encouraged to discuss the assignment material with classmates, each student must ensure that their submitted work is their own (e.g., in their own words, with their own step-by-step mathematical derivations, etc.). Please see the statement on plagiarism below.

In addition, some use of generative AI tools is permitted (see the policy on generative AI below). Note, however, that relying excessively on AI tools in completing your assignments is likely to be detrimental to your performance on the exams.

Half of the grade weight for each assignment will be based on its correctness. The other half will be based on its "completeness", which I define as: the degree to which *I perceive* that a serious attempt was made by the student to answer each question *using their own words and arguments*. While the completeness component will ultimately be based on my subjective perceptions, you should have no trouble avoiding

problems if you put away all other materials when actually writing out your answers. Put differently, feel free to use AI to help you *understand* how to solve some challenging part of the assignment, but don't use it to help you actually *write* your answers. After all, if you can't write them out on your own, then you don't really understand the solution in the first place.

Generally speaking, **only physical copies** of assignments will be accepted, and must be received by the due date and time indicated on the assignment. **Late assignments will not be accepted, and will receive a mark of zero.** In those rare cases where an unexpected emergency prevents you from being able to make it to campus to turn in your assignment, you should scan it (either using a proper scanner, or using your smartphone with some kind of scanning app) and submit it to me electronically via email **before** the due date and time, along with an explanation for why you were unable to deliver the assignment in person. If I consider your explanation acceptable, I will grade the electronic submission (NOTE: In such cases, I won't be able to provide detailed feedback, you'll only receive your grade). If I don't consider your explanation acceptable, you'll receive a mark of zero.

I will generally post the assignments 7-10 days in advance of the due date, and therefore **only in rare cases where a student can document a compelling reason for a prolonged absence will they be excused from handing in an assignment.** In such rare cases, the weight of that assignment will be transferred to the final exam.

The tentative due dates for the assignments are as follows: **Sep. 29, Oct. 20, Nov. 17, and Dec. 11.** I reserve the right to modify these dates depending on how the semester progresses.

While every effort will be made to return graded assignments to students in a timely manner, sometimes delays are unavoidable. It is therefore recommended that students **retain some form of copy of their completed assignment** when handing it in.

## Exams

All exams will be in-person only.

### Midterm Exam

The midterm is tentatively scheduled for **Nov. 3** during the lecture time. However, I reserve the right to modify this date depending on how the semester progresses.

There will be no deferred/make-up exam for students who do not write the midterm. If you miss or expect to miss the midterm, you must contact me as soon as possible (in advance if feasible) to notify me of the reason, and then submit an official request for academic consideration. If your request is approved, the weight of the midterm will be automatically added to the final exam. If your request is not approved, you will receive a midterm grade of 0.

### Final Exam

The final exam will take place during the term examination period at a time set by the University. Students are not to make travel plans during the exam period as that is not a valid reason for missing

a final exam.

The final exam will cover content from the entire course.

## Re-grading

Any request for the remarking of an exam or assignment must be submitted in writing within one week of exam/assignment grades being returned to the class. The request should contain a detailed explanation of why you feel you should receive a higher mark. Please note that remarking will apply to the entire assignment/exam, not just the contentious question. As a result, the revised mark could end up being higher than, lower than, or the same as the original mark.

## Final Course Grade

Students must write the final exam in order to achieve a passing grade (B- or higher). Students who do not write the final exam because of illness or other circumstances beyond their control may apply to write a deferred final exam by contacting the Registrar's Office no later than three working days after the original final exam was scheduled. In the event that a student writes a deferred exam, the deferred exam will carry the same weight as the final exam in determining the course grade. Any deferred exam will not be identical to the original final exam.

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

## Generative AI

**AI use in this course:** Students are allowed to use AI tools in this course to support advancing their knowledge and understanding of the material. Some acceptable uses include:

- Assistance in understanding course materials.
- Help with challenging parts of assignment questions.

### **Limitations:**

- Students may not include the raw output of generative AI, either in whole or in significant part, in their submitted assignments.
- Students must ensure that critical thinking and personal insight are evident in all work.
- AI should enhance, not replace, the student's role in the work. AI-generated content should not replace core analysis or the student's primary arguments.
- In all cases, students remain responsible and accountable for the accuracy, originality, and academic integrity of all work they submit, regardless of how AI was used in preparing that work.

**Documenting use of AI:** Provided you abide by the principles described above, it is not necessary to document your use of AI in this course.

**Why have I adopted this policy?** This policy allows students to leverage AI for more complex tasks, promoting interaction between human intelligence and AI. It supports students learning to effectively integrate AI into their workflow, while maintaining their own intellectual contributions and critical thinking.

As our understanding of the uses of GenAI and its relationship to student work and academic integrity continue to evolve, students are required to discuss their use of GenAI in any circumstance not described here with the course instructor to ensure it supports the learning goals for the course.

## Academic Accommodations

Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes, including information about the *Academic Consideration Policy for Students in Medical and Other Extenuating Circumstances*, are outlined on the Academic Accommodations website.

## Plagiarism

The Carleton 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 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 (see Generative AI section above)
- 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
- failing to acknowledge sources with 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 follows a rigorous process for academic integrity allegations, including reviewing documents and interviewing the student, when an instructor suspects a violation has been committed. Penalties for violations may include a final grade of "F" for the course.

## **Statement on Mental Health**

As a student you may experience a range of mental health challenges that significantly impact your academic success and overall well-being. If you need help, please speak to someone. There are numerous resources available both on- and off-campus to support you. For more information, please consult <https://wellness.carleton.ca/>.

## **Treatment of Course Materials**

Student, teaching, assignment 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).