

CARLETON UNIVERSITY
Department of Economics

ECON 4026 A
Macroeconomic Dynamics: Economic Growth
Fall 2024

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Office hours:

Lectures: Tuesdays, 2:35-5:25 pm
Lecture Location: Log into Carleton Central to view the location on your timetable.
Course Website: Brightspace

Course Description

Why are some countries so rich but others so poor? Will poor or middle-income countries catch up to those at the frontier? Why have living standards risen so dramatically over the last 200 years after being nearly stagnant for thousands of years? Does sustained growth result from investments in physical capital or human capital, or are there other factors at play? These are some of the questions addressed by the study of Economic Growth, a fascinating area of macroeconomics that seeks to understand the sources and conditions for growth and their potentially enormous impact on human welfare.

In this course we will study modern theories of economic growth, beginning with the classic Solow model that explores the role of capital accumulation, and eventually moving on to endogenous growth models, such as the Romer model that includes a role for technological ideas, and the Schumpeterian model of Aghion and Howitt that includes a role for creative destruction. Our focus throughout will be on developing understanding and intuition about the mechanics of these models using a level of mathematics appropriate for 3rd or 4th year undergraduates.

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 2605](#) or [STAT 3502](#)), which may be taken concurrently with [ECON 4026](#). 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.

Required Text

Jones and Vollrath, *Introduction to Economic Growth*, Fourth Edition

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.

Assignments

The tentative assignment due-dates are as follows:

- Assignment 1 due: **Tuesday September 24, 2024**
- Assignment 2 due: **Tuesday October 15, 2024**
- Assignment 3 due: **Tuesday November 12, 2024**
- Assignment 4 due: **Tuesday November 26, 2024**

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.

Midterm exam

There will be one midterm exams during the term. The exam will take place during regular class time on **Tuesday, October 29, 2024**.

Students who can document a compelling reason for missing the midterm exam will be excused and the weight of the midterm will be automatically added **to the final exam**. There will be no deferred midterm exam. 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.

Final exam

The final exam will take place during the Fall 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 10% (2.5% each assignment)
- Midterm 30%
- Class participation 10%
- Final exam 50%

Scheme B:

- Four written assignments 10% (2.5% each assignment)
- Midterm 15%
- Class participation 10%
- Final exam 65%

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.

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

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

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 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

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 is 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

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

Course Outline

The outline below lists the topics that we will cover and the related chapters in the Jones and Vollrath course text. Where there are exclusions to the chapter readings I will note them during the term in Brightspace.

- Introduction & Facts of Economic Growth
 - Ch. 1
 - Appendix A, Mathematical Review
- Solow Model
 - Ch. 2
 - Appendix A, Mathematical Review
- Solow Model Empirics
 - Ch. 3
- Economics of Ideas
 - Ch.4
- Romer Model
 - Ch. 5
- Creative Destruction
 - Ch. 6
- Social Infrastructure and Growth
 - Ch. 8
- Population and Growth
 - Ch. 9
- Alternative Theories and Models
 - Ch. 11
- Future of Growth
 - Ch. 12
- Revisiting the growth questions
 - Ch. 13

*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.