ECON 4200
Economic Growth
Spring 2024

Instructor: *Prof. Joachim Hubmer*, email: jhubmer@sas.upenn.edu
In-person Lectures: Tuesday, Thursday 3.30-5pm (PCPE 200)
Instructor Office Hours: Tuesday, Thursday 5-6pm PCPE 504

Teaching Assistant: *Leon Huetsch*, email: lhuetsch@sas.upenn.edu
T.A. Office Hours: Wednesday, Thursday 9-10am

Important: When you have a question/problem regarding the class material or grading, please contact your TA first!

Textbook: Charles I. Jones and Dietrich Vollrath. Introduction to Economic Growth. Third Edition. W.W. Norton & Company. Both lecture slides (Canvas) and the corresponding textbook chapters are required readings.

Course Description: The process of economic growth and the sources of differences in economic performance across nations (and within) are some of the most interesting, important, and challenging areas in modern social science. Why are some countries richer than others? How did modern economic growth start? What can governments do to foster sustainable economic growth? We also discuss economic inequality within countries, as well as the interaction between economic growth and the environment.

The primary purpose of this course is to introduce undergraduate students to these major issues, and to the theoretical tools necessary for studying them. The course therefore strives to provide students with a solid background in dynamic economic analysis, as well as empirical examples and data analysis. We will cover models at an abstract and advanced level. You must have the degree of mathematical maturity associated with the concepts of sets, functions, derivatives, integrals, optimization, and other material covered in one year of calculus. Some basic knowledge of regression analysis is also strongly recommended. Strict prerequisites are ECON 2100, 2200, 2300; MATH 1400, 1410 or 1510.

My first goal, however, is that you and I have fun with the course. Economics, in particular economic growth, is exciting and I hope that you will share my excitement by being a lively crowd that actively participates in class, asks a lot of questions, and brings in diverse viewpoints.

Grading: There will be overall 3 homework assignments, 3 midterms, and 1 participation grade requirement. All of them will count towards your final grade, but your respective worst midterm and worst homework assignment will be discounted. The precise break-down is as follows:

> 1st Highest Midterm 30%
> 2nd Highest Midterm 30%
> Lowest Midterm 10%
> 1st Highest Assignment 10%
> 2nd Highest Assignment 10%
> Lowest Homework Assignment 5%
> Participation Grade 5%

Following departmental guidelines, on average about 30-40% of students receive As, 50-60% Bs, and 0-10% Cs, with some flexibility. This is not a strict curve.

No Make-Up Exam: There will be NO make-up test if you have to miss any of the midterms unless you miss **2 or more** midterms due to a valid excuse, as defined by departmental policies: https://economics.sas.upenn.edu/undergraduate/course-information/course-policies.

If you miss one of the first two midterms (with or without a valid excuse), I will count it as your lowest midterm, assign 0% weight, and upgrade the weights of the remaining two midterms to 35% each. Hence, you do not need to provide us with a formal excuse. To prevent strategic manipulation, the following applies to the last midterm: if you miss it without a valid excuse, it will enter with a score of 0 and the maintained weight of 10%. If you have a valid excuse, we will apply the re-weighting scheme.

Regrading fairness policy: If you have complaints about the grading, do the following. Within 1 week after you receive the midterm/assignment, send back to me your graded midterm/assignment and a written statement explaining your complaint (i.e. which question you think was graded wrongly and why you think it was graded wrongly). I will then regrade the whole midterm/assignment. Please note that there is no guarantee that, after the midterm/assignment has been regraded, your score will be higher than before and it may be lower. A week after the midterm/assignment has been returned the scores cannot be changed anymore and no further complaints will be accepted.

Exam dates: Homework due dates and exam dates are indicated below. Please review the dates carefully. Completed homeworks are to be submitted **on Canvas before class starts at 3.30pm** on the day they are due.

Assignment	Dates
Assignment #1	Feb 13 (Tue)
Midterm Exam #1	Feb 15 (Thu)
Assignment #2	Mar 21 (Thu)
Midterm Exam #2	Mar 26 (Tue)
Assignment #3	Apr 25 (Thu)
Midterm Exam #3	Apr 30 (Tue)

If you have a conflict with any of these dates (including religious observance) please let me know before January 25th. After that date I cannot accommodate personal issues.

Midterm Exams: Midterms are generally in person, closed book, and not cumulative.

Participation Grade: You are strongly encouraged to attend class, and participate actively. However, I will not take attendance, and there is no need to let me know me if you cannot attend class for any reason. To fulfill the participation grade requirement, you must present once: a presentation should last no more than 5-10 minutes. A few Powerpoint/Pdf slides suffice. You can pick a newspaper article from a respected outlet such as The Economist, New York Times, Wall Street Journal, Financial Times, that broadly relates to any of the topics we're covering. Another excellent (and free) option is VoxEU.org – this website contains accessible policy pieces based on recent academic research. Your presentation should summarize the key points of the article and you should try to relate to the course content. You may fulfill this requirement in groups of up to 3 students—to economize on the total number of talks I encourage you to do so. I will provide a Canvas sign-up sheet to coordinate.

Content of the Course: This is an outline of the topics that I intend to cover. The list of topics may be revised during the course as we may not be able to cover all the material:

- Introduction and Growth Facts
- Solow Model (Exogenous Growth)
- Growth Accounting

- Human Capital
- Convergence
- Income Distribution Within and Across Countries
- Automation and the Future of Work
- Economics of Ideas
- Endogenous Growth Models: Romer and Schumpeter
- Technology Diffusion and Development
- Institutions and Economic Growth
- Population Growth
- Natural Resources and the Environment

Class Schedule: This schedule is tentative and subject to change depending on progress.

Thu	1/18	L1: Introduction and Facts
Tue	1/23	L2: Solow Model
Thu	1/25	L3: Solow Model
Tue	1/30	L4: Solow Model / Growth Accounting
Thu	2/1	L5: Growth Accounting
Tue	2/6	L6: Human Capital
Thu	2/8	L7: Human Capital / Convergence
Tue	2/13	L8: Convergence, HW I due
Thu	2/15	Midterm I
Tue	2/20	L9: Income Distribution
Thu	2/22	L10: Income Distribution / Automation
Tue	2/27	L11: Automation
Thu	2/29	L12: Automation / Ideas
Tue	3/5	No Class, Spring Break
Thu	3/7	No Class, Spring Break
Tue	3/12	L13: Ideas / Romer Model
Thu	3/14	L14: Romer Model
Tue	3/19	L15: Romer Model
Thu	3/21	L16: Romer Model, HW II due
Tue	3/26	Midterm II
Thu	3/28	L17: Schumpeterian Growth / Development
Tue	4/2	L18: Development / Institutions
Thu	4/4	L19: Institutions / Population Growth
Tue	4/9	L20: Population Growth
Thu	4/11	L21: Population Growth
Tue	4/16	L22: Natural Resources
Thu	4/18	L23: Natural Resources
Tue	4/23	L24: Natural Resources
Thu	4/25	L25: Natural Resources/ Review, HW III due
Tue	4/30	Midterm III