# Economics 2200: Intermediate Macroeconomics
# Spring 2024: Syllabus

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**Office:** PCPE 504
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**Office Hours:** Tuesday, Thursday 5-6pm PCPE 504
**Course Delivery:** 2 lectures, Tuesday and Thursday 1:45 - 3:15pm LLAB 10
**Recitations:** 1 recitation, various sections and times
**Teaching Assistants:**
*Jordan Peeples*: jpeeples@sas.upenn.edu; Recitations: Fri 8.30-9.30am and noon-1pm BENN 138; Office hours: Wed 10.30-11.30am and 1.30-2.30pm PCPE 208
*Shreemayi Samujjwala*: shreem@sas.upenn.edu; Recitations: Tue Fri 10.15-11.15am PCPE 101; Office hours: Mon Wed 11.30-12.30pm PCPE 500
*Cesar Urquizo*: curquizo@sas.upenn.edu; Recitations: Tue 8.30-9.30am and noon-1pm PCPE 203; Office hours: Tue 10-11am virtual (https://upenn.zoom.us/j/94618866966) 11am-noon PCPSE 141
**Recommended Text:** Stephen D. Williamson: *Macroeconomics,* 6th edition.
**Course Web Page:** Canvas: https://canvas.upenn.edu/

## Course Outline and Overview

Economics 2200 is the basic course in macroeconomic theory for undergraduate economics majors. It is centered around the idea that in order to understand the complex macro economy in the real world around us, we need to construct a simple laboratory (which we will call a model). This laboratory will help us to understand the data from the past, make predictions for the future, and analyze how the past and future is shaped by actual and hypothetical fiscal and monetary policies.

The two basic *methodological principles* we will stress when constructing our model is that a) the actors in our economy act purposefully (e.g., households maximize lifetime utility, firms maximize the present discounted value of profits, and the government maximizes welfare in society—or the benefits of politicians) and b) the interaction of households, firms, the government and the rest of the world determines prices, wages and interest rates in general equilibrium.

We will use our model to discuss long-run economic growth and short-run business cycle fluctuations. Growth theory describes and explains how the main economic aggregates (such as output, employment, inflation, interest rates) evolve *on average* over long periods of time, whereas business cycle theories analyze the short-run movements of economic aggregates. In this part of the course we will also discuss the macroeconomic consequences of the COVID-19 crisis. Once we have understood how the macro economy works, we can start analyzing macroeconomic policy, in particular fiscal policy (what are the macroeconomic effects of taxation, government spending, budget deficits, or surpluses) and monetary policy (what happens if the Federal Reserve Bank increases or lowers interest rates, and more specifically, the Federal Funds Rate). The goal is that, by the end of this course, you can critique articles on economic issues (in publications such as *The Economist,* the *Financial Times,* or the *New York Times*) using good model-based economic intuition and knowledge.

## Organization of the Course

The first lecture will take place on January 18, and the first recitations will take place a week later following the January 25 class. The purpose of the recitations is to review material from class, to

review the mathematical foundations required for the class, and to work through example problems to reinforce the material from class as well as to prepare students for the exams.

## Prerequisites

**Strict** prerequisites for the class **are ECON 2100, as well as MATH 1400 (or 1070) and MATH 1410 (or 1510 or 1080)**. Since 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, Taylor series, optimization, and other material covered in these classes. If you do not meet these requirements, you cannot take this class as you would not be able to handle its mathematical content. The department's course requirements can be found here: https://economics.sas.upenn.edu/undergraduate/majors-and-minors/economics-major/course-requirements

Whenever possible I will stress the economic intuition, but sometimes it is necessary in economics to use mathematical tools to make a point more concisely. In an intermediate economics class in one of the premier universities in the world (i.e. Penn) we will not compromise on rigor of an economic argument just to avoid using the appropriate mathematics, especially since it is a formal prerequisite for the class.

## Instructor

A few words about myself: my name is Joachim Hubmer. I am Austrian and received my undergraduate degree and Masters degree in economics at the Vienna University of Economics and Business as well as the Vienna Institute for Advanced Studies. In 2013 I came to the US for graduate studies in economics at Yale University. I received my Ph.D. in economics in 2019. Then I accepted a position as Assistant Professor in the Economics Department here at Penn. My own research focuses on the macroeconomic aspects of wealth and income inequality, as well as the causes and consequences of technological change (think robots and AI).

Your success in this class is important to me. Therefore I want to be available for your questions as much as possible. I will hold regular office hours at the times listed above. You can also reach me at jhubmer@sas.upenn.edu. I usually answer questions via email by the end of the day, but typically not earlier than that. Finally, we will make use of the Discussion Board through Canvas to provide an online Q&A platform for the class that the TA's will monitor.

## Readings

The most important material for this class is the set of **slides, lecture notes and home works** that I will post regularly on the Canvas web page for the class. You should know how to use Canvas to access this material. The Library provides tutorials and help in case you are not familiar with this website.

Since I will present a unified framework and notation to discuss all the topics in the class, I suggest to use the slides as the main study element. I will also upload a set of **notes**, with consistent notation, as a reference for further reading. These notes will eventually become a book that my colleagues Dirk Krueger and Jesus Fernandez-Villaverde are scheduled to publish with Princeton University Press.

Even though there are no *required* **textbooks** for this class, I match most covered topics with chapters of Stephen Williamson's *Macroeconomics,* 6th ed. Therefore I list this book as a recommended text. Although the Williamson textbook is not required reading (meaning tests will *not* include concepts that were not introduced in class and were not covered in the slides or home

works) I encourage you to consult the book, in order to understand the material from a broader perspective. This is especially true if you find the slides unclear.

Finally, please try to keep informed about what is going on in the economic world by reading **articles** published in publications such as *The Economist,* the *Financial Times,* or the *New York Times.* I will try to address current economic events from time to time in my lectures, and discussing them is much more productive if you have heard about the news beforehand.

## Course Requirements and Grades

Your grade will be determined exclusively based upon your performance in 3 home works and three midterms. The home works together make up 75 points (25% of your grade), and each midterm makes up 75 points (25% of your grade). See the following Table 1

**Table 1**

| | | |
|---|---|---|
| Homework | 25% | 75 points |
| Midterm 1 | 25% | 75 points |
| Midterm 2 | 25% | 75 points |
| Midterm 3 | 25% | 75 points |
| Total | 100% | 300 points |

### Homework

Each homework will be worth 25 points. There are 3 home works. The following rules regarding home works apply and will be strictly enforced without exceptions.

1. Home works will be available on the course web page. I will indicate via email when I have posted a new homework. The due date of the homework will be stated on the homework. In order to receive a passing grade in the course, all three home works have to be submitted.

2. Homework is to be submitted on Canvas, and is due on the specified date **at the beginning of regular class time at 1.45pm EST. Late homework will not be accepted** and you will not get any credit for late homework.

3. If you have complaints about the grading of a problem set, do the following: **Within 1 week** after the problem set was graded, send me your graded homework and a **written** statement explaining your complaint (i.e. stating which question you think was graded wrongly and why you think it was graded wrongly). I will then regrade the whole assignment. Note that there is no guarantee that, after the homework has been regraded, your score will be higher than before and it may be lower. A week after a problem set has been returned the scores cannot be changed any more and no further complaints will be accepted. The same policy applies to complaints of the midterms as well.

4. I encourage you to work in groups on the home works (but not the exams, of course). However, everybody has to submit his/her own, uniquely typed or written assignment. Note that my exams will be similar to my problem sets, so you would hurt yourself by not working out the problems by yourself.

### Midterms

There will be three midterms examinations for this class, on the dates specified below. The midterms are in class exams and will each count 75 points (25% of your grade). The midterms are

not cumulative, that is, only cover the material from part of the course. All three midterm exams are mandatory. The department policies specify the valid excuses for missing an exam. These department course policies can be found here:

https://economics.sas.upenn.edu/undergraduate/course-information/course-policies

### Make-up exams

If you have to miss the first or second midterm (with valid excuse), we will not offer a make-up exam but instead re-weight your other two midterms. If you have to miss the third and final midterm (with valid excuse), there will be a make-up exam. This is to promote fairness and to prevent adverse incentives.

### Grades

Students taking the course for a letter grade will receive grades from A through D or an F. Students that take the class on a Pass/Fail basis need at least a D to pass the class. Note that poor performance is not a valid reason for an incomplete (I). The departmental course policies (see the link above) provide the exact conditions under which an incomplete can be given. Grades will be assigned based on the cumulative score of points attained in home works and exams. Table 2 shows how a certain score of points translates into a letter grade.

**Table 2**

| Points Achieved | Letter Grade |
|---|---|
| 285 - 300 | A + |
| 270 - 284.5 | A |
| 255 - 269.5 | A - |
| 240 - 254.5 | B + |
| 225 - 239.5 | B |
| 210 - 224.5 | B - |
| 195 - 209.5 | C + |
| 180 - 194.5 | C |
| 165 - 179.5 | C - |
| 150 - 164.5 | D + |
| 135 - 149.5 | D |
| less than 135 | F |

Note that I do not curve grades. If every student deserves a good grade, then I will only give good grades. But there is only one way of receiving a good grade in this class, and this is to earn it by working hard on the problem sets and preparing for the exams. Historically, the grade distribution does not deviate significantly from that of economics courses in which a curve is used. This means that I expect 30-40% A's, 40-50% B's and the rest C's or lower grades.

## Contents of the Course

In Table 3 you can find a rough outline of the topics that I intend to cover, the associated readings and the dates when I intend to cover them. The list of topics may be revised during the course as I may not be able to cover all the material. Note that this course will be fairly intense and it is absolutely crucial that you do not fall behind. In the table (W) stands for Williamson's textbook and (N) stands for the lecture notes. Numbers stand for the corresponding chapter, so for example,

W.3 represents chapter 3 in Williamson, and N.7.3-5 stands for sections 7.3 to 7.5 in the lecture notes.

**Table 3**

| Date | Topic | Readings/Assignments |
|---|---|---|
| Jan 18 | Introduction | N.1, W.1 |
| Jan 23 | A Primer on Growth Rates | N.2.6, W.1 |
| Jan 25 | NIPA I | N.2, W.2 |
| Jan 30 | NIPA II | N.2, W.3 |
| Feb 1 | Model: Households | N.4.1-2, W.4,W.9 |
| Feb 6 | Model: Firms | N.4.3, W.4 |
| Feb 8 | Model: Equilibrium | N.4.4-6, W.5 |
| Feb 13 | Social Planner Problem | N.5.1-2, W.5 |
| Feb 15 | The Welfare Theorems | N.5.3, W.5 |
| Feb 20 | Steady State and Dynamics | N.5.4-5, W.5, **HW 1 due** |
| Feb 22 | | **Midterm 1** |
| Feb 27 | Growth and Development Facts | N.6, W.7 |
| Feb 29 | Growth Accounting | N.8.1, W.8 |
| Mar 12 | Neoclassical Growth Model I | N.7.1-2, W.7 |
| Mar 14 | Neoclassical Growth Model II | N.7.3-5, W.7 |
| Mar 19 | Solow Growth Model | N.7.3.4, W.7 |
| Mar 21 | Balanced Growth Predictions | N.8.2, W.8 |
| Mar 26 | Transitional Dynamics | N.8.3, W.8, **HW 2 due** |
| Mar 28 | | **Midterm 2** |
| Apr 2 | Endogenous Growth | N.9, W.8 |
| Apr 4 | Business Cycle Facts | W.3 |
| Apr 9 | Real Business Cycles | N.12.1-9, W.13 |
| Apr 11 | An Application to COVID-19 | N.12.1-9, W.13 |
| Apr 16 | Fiscal Policy I | N.15.1-3, W. 9 |
| Apr 18 | Fiscal Policy II | N.15.4, W. 9-10 |
| Apr 23 | Monetary Policy I | N.16.1-4, W.12 |
| Apr 25 | Monetary Policy II | N.16.1-4, W.12, **HW 3 due** |
| Apr 30 | | **Midterm 3** |