

AMERICAN UNIVERSITY

MACROECONOMIC ANALYSIS I

ECON 802.001

Syllabus

Semester: Spring 2023
Time: M 5.30pm - 8pm,
with a 20 min break.
Place: East Quad Building, 17

Instructor: Ignacio González
Email: ignaciog@american.edu
Office: Kreeger 123
Office Hours:

TA: Eduardo Lederman Rawet
Email: el2162a@american.edu
Office: Zoom meeting
Office Hours: TBA

Course Description and Objectives: This course presents standard models used in modern macroeconomics. Most of the material will be studied from a theoretical perspective, emphasizing both the general picture and the technical aspects of the models. We will begin with a partial equilibrium discussion of households' inter-temporal problem, and we will show how consumption and saving decisions are affected by the presence of i) uncertainty, ii) borrowing constraints and iii) multiple assets. We will also use a partial equilibrium approach to study different models of investment behavior, and we will devote some time to learn the role of adjustment costs and the Q-theory of investment. Next, we will move to a discussion of dynamic programming techniques and we will see some examples of how dynamic programming is used in the empirical literature. Then we will turn our attention to general equilibrium (GE) models. Our first GE model will be the Neoclassical Growth Model, which we will use to learn several concepts associated to GE theory, like the stochastic discount factor, and different solution strategies. We will add aggregate uncertainty to study RBC (Real Business Cycle) theory. Then we will enrich the environment of the neoclassical growth model by introducing Overlapping Generations (OLG). OLG models have been widely used in the literature to study policy relevant topics like Social Security, Taxation and Government Debt. We will see some of these examples. Finally, we will move to the Standard Incomplete Markets Model. This model generates an endogenous wealth distribution and has become an important tool in modern public finance and macroeconomics. If we have time, we will introduce New Keynesian models and other miscellaneous topics.

Prerequisites: ECON-705 (Mathematical Economic Analysis).

Class Material: I will lecture using my slides. You must check Canvas for additional readings per topic. They will be announced as the course progresses. Material from the following books will be used in this course but you are not required to buy any of them. For each topic, I will indicate which of the books I am following more closely.

- Jerome Adda and Russell Cooper, Dynamic Economics. MIT Press, 2003. (AC)
- Lars Ljungqvist and Thomas Sargent, Recursive Macroeconomic Theory. 2nd or 3rd Edition. (LS)

- Jianjun Miao, Economic Dynamics in Discrete Time. MIT Press, 2014. (JM)
- David Romer, Advanced Macroeconomics. 4th edition (DR)

Class Policy:

- Our class meetings are on Tuesday 5.30pm-8pm (ET). I will start the lecture no later than 5.35pm. We will have a 20 minute break every session. You are expected to attend all lectures. If you are not able to attend a lecture, please email me in advance.
- You are responsible for making up anything that was covered during the lectures you missed.

Grading Policy:

- Participation (10%) Home assignments (25%), Final exam (65%).

Participation: Class participation is very important. It is not only a percentage. It is also the way we share doubts and ideas about a material that is new and complex. This is a PhD course, so it is very important that you ask questions about the material covered. I try to encourage participation in a way that everybody feels confident. While your participation grade is subjective, it will not be arbitrary. You will be evaluated on the quantity and quality of your questions and insights (of course, you do not need to be right). I will use the assessment of your participation to manage borderline grades. Class attendance does not count for participation.

Home assignments: There will be several assignments throughout the semester (six or seven, depending on the material that we manage to cover). Each assignment is worth **100 points**. The assignments will consist of some modelling, analytical and basic numerical tasks. We will have the chance to learn some programming with Matlab and simple codes will be provided and discussed during class and/or TA sessions. Assignments are extremely important for the exam and for your future research. They allow us to learn not only about existing work but also about how to do work. You are encouraged to work in groups. However, each of you must hand in your own independently written answers. The submission must be done **via Canvas**. If for some reason you cannot submit using Canvas, you must send a copy via email to our TA, not to me. I expect a TA session will be devoted to each assignment. Attendance to TA sessions is not compulsory but it is highly recommended.

Submission Policy for Home Assignments: Home assignments have to be submitted before the indicated deadline (on Canvas, to our TA). For every day an assignment is late after the assignment is due, 10 per cent will be deducted from the assignment grade. For example, if your submission is 2 days late and you are awarded full points, your final grade on the assignment would be 80 points (2 days late x 10 per cent deduction per day = 20 per cent Late Penalty). For the calculation of the Late Penalty, days late will be rounded up to the next whole number. For example, if a student submits 1.3 days late, the Late Penalty will treat the student as 2 days late. No exceptions to this policy will be made, apart from documented emergencies (in these cases, an ad-hoc deadline with no penalty will be agreed on a case-by-case basis).

Final Exam: The final exam is closed book and will cover the entire material.

Office Hours: Office hours will be held in my office during the time specified above. Wearing a mask is required. TA's office hours will be held in Canvas (Zoom) during the time specified above, and will be devoted to explain the solutions of submitted assignments and address other questions related to the material covered in class.

Incomplete Grade: If, for different reasons, you cannot complete all the required work by the end of the semester, you might receive an incomplete grade, but only at my discretion.

Important Dates:

First day of class	January 11th, 2022
Spring Break (no class)	March 8th and 11th, 2022
Last Day of Class	April 22nd, 2022
Final Exam	May 3rd, 2022

Academic Integrity:

- Students must comply with the Academic Integrity Code available at <http://www.american.edu/academics/integrity/code.cfm>.
- You should read it carefully, particularly section II.A (definition of academic integrity violations, including plagiarism and dishonesty in examinations) and section III.C (sanctions).

Academic Support:

- All students may take advantage of the [Academic Support and Access Center](#) (ASAC) for individual academic skills, counseling, workshops, tutoring and writing assistance, as well as Supplemental Instruction.
- Students who wish to request accommodations for a disability, must notify me with a letter of approved accommodations from the ASAC. As the process for registering and requesting accommodations can take some time, and as accommodations, if approved, are not retroactive, I strongly encourage students to contact the ASAC as early as possible. For more information about the process for registering and requesting disability-related accommodations, contact ASAC.

Technology during the lecture: The use of laptops and tablets is allowed in the classroom, but only for educational purposes (i.e. to take notes). The use of cell phones is not allowed. You should be aware that the use of electronics for non-educational purposes is highly disruptive for your learning and distracts from course discussions (numerous experimental studies have shown that the misuse of personal technology is causally related to poor performance in courses).

COURSE OUTLINE:**Consumption.** (AC 6.2; DR 8;)

Intertemporal Consumption Problem. The Euler Equation. Borrowing Constraints. Consumption and saving under uncertainty. Portfolio choice.

Jan 11 and 18

Investment. (DR 9; JM 8.6.1, 8.6.2)

The Hall-Jorgenson Model of Investment. The Q-Theory of Investment. Financial Markets and Firms Behaviour. The Modigliani-Miller theorem.

Jan 25 and Feb 1

Introduction to Dynamic Programming (AC 2; 3, 6.3, 8.1-8.4; LS 3, 4; JM 6, 7, 8.3-8.4;)

Finite and Infinite Horizon Problems. Recursive formulation and Bellman's equation. Value and Policy Functions. Key examples: Investment and Consumption problems.

Feb 8 and 15

The Neoclassical Growth Model (DR 5; AC 5.1-5.4; LS 12; JM 14)

Without uncertainty (the Ramsey model) and with uncertainty (the Real Business Cycle model). The Planner's Problem. The Decentralized Equilibrium. The Stochastic Discount Factor. Solution Methods. Introduction to Calibration.

Feb 22 and March 1

Overlapping Generations Models (LS 9; JM 16)

The Diamond Model (OLG with Production). Dynamic Efficiency. Public Debt and Social Security analysis

March 15 and 22

Incomplete Markets (LS 17 (2nd ed) or 18 (3rd ed); JM 17)

An introduction to incomplete markets models. Idiosyncratic shocks. Precautionary savings. Endogenous wealth inequality (Hugget 1993, Aiyagari 1994). Wealth distribution in life-cycle economies (Hugget 1996)

March 29 and April 5

Introduction to New Keynesian Models. (DR 6, 7; JM 19)

Sticky prices. Monopolistic competition. A canonical NK model.

April 12 and 19