ECON 101: Intermediate Macroeconomics

"Tell me, I forget. Show me, I remember. Involve me, I understand" ~ Chinese proverb

This course is about foundational theories in macroeconomics, with a computational touch. My aim is to introduce all topics in the regular curricula from three perspectives: 1) Conceptual (i.e., understanding the underlying ideas), 2) Mathematical (i.e., doing the math), and 3) Simulated (i.e., testing implications of the theory with R).

You will learn all the R programming you need during the first three weeks of the semester. So don't worry if you never programmed or used R before. I believe a basic knowledge of programming will help you best prepare for the future workforce, which is why I have added it to the class. We will use R to visualize data, simulate trajectories of growth models, and run basic statistics (including regression).

The first ¾ of the class will be dedicated to the economic theories, programming fundamentals, and foundational topics that make up the requirements for intermediate macroeconomics. That is, the Classical model, Classical Monetary System & Inflation, Classical Economic Growth, Keynesian economics & IS-LM model, and Open-Economy models. The remaining ¼ will cover an introduction to Econometrics and modern methods in macroeconomic modeling. The hope of this additional fourth is to briefly show you methods you will use if you continue your final project or career in economics, as well as present new approaches being considered by central banks and economic modelers today.

Expect this to be a hands-on class. There are no exams in this class. Your grading will be a weighted average of the quizzes, participation, homeworks, and final project. Each quiz is meant to test your conceptual recall and mathematical skills, these will be 20 minutes long each. Refer to homework sheets for more information about specific assignments, these will allow you to develop your writing and programming skills. The final project is the most important component of the class, you should see it as an opportunity to build something for your portfolio that you are proud to show your peers, job interviewers, or other faculty. The only condition on the final project is that it must have Theoretical + Math + Programming components.

Here are some project ideas:

- Analyze some of the policies proposed by presidential candidates based on supply and demand effects
- Assess the macroeconomic performance on the four key indicators of one or more countries based on a few different metrics. Do different measurements tell different stories?

- Estimate the effect of COVID on an economic variable(s) of interest (e.g., unemployment rate, savings deposits, credit, gdp growth, etc.) using Linear Regression
- Simulate and interpret possible trajectory paths of the Solow-Swan growth model.
- Why did Average Hourly Earning in the Private sector increase sharply during the pandemic?
- What drove the increase of the Industrial Production Index (INDPRO) in 2021?
- What is the impact of interest rate change on goods & services versus asset inflation?

General Information

Professor: Augusto Gonzalez-Bonorino
Room: Hahn 108 - Campus map
Times:

- PO1 - WF 11:00 AM to 12:15 PM - MA Room 5 (Mason Hall)
- PO2 - TR 2:45 to 4:00 PM - HN Room 101 (Hahn Social Science Bld.)

Email: agxa2023@pomona.edu

Office hours: Tuesday & Thursday 11 AM - 1 PM @ Carnegie 217

Teaching Assistants:

- Aditya Bhargava (abjj2022@mymail.pomona.edu)
- Leo Ambrogelly (llab2024@mymail.pomona.edu)

Graders:

- Will Bennett (wrbb2022@mymail.pomona.edu)
- Sam English (sfey2023@mymail.pomona.edu)

TA Hours/Room:

- Tuesday & Thursday 7-8:30 PM - Carnegie 110
- Wednesday 6-8 PM - Carnegie 110

Helpful pre-reqs: Derivatives, Algebra, Statistics, and Data Analysis

Books (recommended):

1. Gregory Mankiw Macroeconomics edition 9+ (main reference)
2. David Romer Advanced Macroeconomics edition 5+ (heavy math reference)

Overview

Quizzes will be held every two weeks on the **second class of the week (i.e., Friday for PO1 and Thursday for PO2)** at the beginning of class (see schedule for which weeks have quizzes assigned), and no calculators will be needed. The quizzes will test you on concepts or math (never R!) of topics covered during the two weeks prior to the week of the quiz. All assignments, including R labs, are **due by 11:59 PM on Mondays** (check schedule for due dates). You will

have around 2 weeks for each assignment. Additionally, all R labs must be submitted as **R markdown notebooks**, with all text and descriptions written within the notebook using markdown.

You are allowed, and encouraged, to use AI tools for the programming labs. As a complement, you will have access to a free custom chatbot interface I developed that has access to my notes. Alternatively, I recommend you use Claude.ai by Anthropic. It is the only ISO certified AI company for their safety features and it is the best coding model. Your goal when using these tools should be two-fold:

1. Learn to use them, you will be expected to do so in the labor market. By this I mean really take some time to familiarize yourself with basic prompt engineering to get the most out of free tools out there. There is no such thing as “intelligence” in these models, they require yours to deploy their capabilities.
2. Push beyond your current coding limits. It is no longer necessary for you to become a programmer to program, logic and basic tooling will take you a long way. The premium today is in being capable of articulating your goal and deducting what the outcome should look like. I will push you to do exactly this with the more advanced R labs, so you see how much you can do even if you’ve never used R before. But I hope you start probing these limits yourself early on.

Learning Outcomes

1. Basics of R programming
2. Data science and Data visualization
3. Long-run vs Short-run assumptions
4. Classical model of long-run macroeconomics
5. Classical monetary system and Inflation
6. Solow-Swan economic growth model
7. Keynesian Cross model and Theory of Liquidity Preference
8. IS-LM model
9. Open-Economy IS-LM
10. Phillips Curve
11. Linear regression and causality principles

Grading

5 quizzes ~ 25% (best 5 out of 6)
3 homeworks ~ 30%
Final Project ~ 35%
Participation ~ 10%[1]

[1] Participation grade is fulfilled by submitting a response to 70% of the discussion topics posted during the semester and asking questions in class.

The following letter grade scheme applies for the final grade weighted average calculation:

A >= 95
A- >= 90
B+ >= 85
B >= 80
C+ >= 75
C >= 70
D+ >= 65
D >= 60
F < 60

Tentative Schedule[2]

Week	Topic	Readings	Due	Extra
1 - Jan 20	Introduction & R review 1	Week 1-2 notes Mankiw Ch 1		Podcast Talk on Complexity
2 - Jan 27	Methodology & R review 2	Week 1-2 notes Mankiw Ch 2		Hayek 1
3 - Feb 3	Classical (long-run) Model	Week 3-4 notes Mankiw Ch 3	R lab 1 [start] In-class quiz 1	
4 - Feb 10	Classical Monetary System & Inflation	Week 3-4 notes Mankiw Ch 4-5		Blog post Blog post Podcast Lucas Jr 1
5 - Feb 17	Solow-Swan model & R review 3	Week 5-6 notes Mankiw Ch 8	In-class quiz 2 R lab 1 [due]	Blog post Solow 1
6 - Feb 24	Endogenous Growth & Alternative Frameworks	Week 5-6 notes Mankiw Ch 9	R lab 2 [start]	Solow 2 Tech & Growth
7 - Mar 3	Business Cycle, Keynesian Cross & IS curve	Week 7-8 notes Mankiw Ch 10-11	In-class quiz 3	

[2] This will likely change over the course of the semester to adapt to the pace of the class and any unexpected changes.

8 - Mar 10	Liquidity Preference & LM curve	Week 7-8 notes Mankiw Ch 11	R lab 2 [due]	
9 - Mar 17	Spring break			
10 - Mar 24	IS-LM Model	Week 9 notes	In-class quiz 4	
11 - March 31	Open-Economy Models ~ Trade balance and exchange rates	Week 10 notes Mankiw Ch 6	R lab 3 [start]	
12 - April 7	IS-LM-BoP	Week 11 notes Mankiw Ch 13	In-class quiz 5	
13 - April 14	IS-LM-BoP contd & Data Analysis	Week 12-13 notes	Final Project proposal [due; not graded]	
14 - April 21	Inference vs Forecasting & OLS estimation	Week 12-13 notes	R lab 3 [due] In-class quiz 6	Blog post
15 - April 28	Modern Methods in Macro Modeling; Thanksgiving Break	Week 14 notes		
16 - May 5	Consulting & Final Project			Blog post
17 - May 12	Consulting & Final Project		Final Project [due]	