

ECON 401
ADVANCED MACROECONOMICS

Syllabus
Spring 2025

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Lectures:

Monday and Wednesday
Section A: 10:30am – 12:20pm, Smith Hall 307
Section B: 3:30 – 5:20pm, Raitt Hall 116

Office Hours:

Tuesday, 1:30 – 3:20 pm, Savery Hall 136

Appointments:

I will also be available by appointment.
See below for more information.

Welcome

Feel free to address me as Fabio. You can of course address me as Professor Ghironi if you prefer to do so. You can find out a lot about me by visiting my website.

Course Description and Objectives

This course explores modern theories of macroeconomic fluctuations. My objective will be to take you as close as possible to understanding how many macroeconomists at academic and policy institutions think about business cycles and policy questions, including the crises created by COVID-19 and Russia's invasion of Ukraine. We will start from the stochastic growth model (also known as real business cycle model), in which fluctuations are the result of random shocks to technology and economic outcomes are efficient. We will use that model as starting point to become familiar with concepts, tools, and techniques that we will use many times throughout the quarter. We will then introduce a number of more realistic features into our framework—monopoly power, nominal rigidity, financial market frictions, labor market imperfections, producer entry dynamics, heterogeneity across agents, and more. We will conclude the course with an example of how the tools we study can be used to analyze one of the recent crises.

Prerequisites

The course will cover a sequence of mathematical models. This will require familiarity with multivariate calculus and constrained optimization. Things like using the chain rule, setting up a Lagrangian, taking logarithms of functions of multiple variables and differentiating must be familiar to you. If you have forgotten how to do these things, you should review them as soon as possible. The only other prerequisite is Intermediate Macroeconomics (ECON 301), with a minimum grade of 2.0. We will use Microsoft Excel at various points. Familiarity with it will be useful, but it is not required.

Required Material and Recommended Textbook

The only required material is a set of slides/notes that I will post on Canvas and in my teaching webpage at <http://www.fabioghironi.com/teaching.html> and that I will update as the course progresses. A large portion of the slides are based on a textbook by Sanjay K. Chugh: *Modern Macroeconomics*, MIT Press, Cambridge, MA, 2015. If you become especially interested in the material we will discuss, you may want to buy this textbook for additional background reading or to explore topics we will not have time to cover. However, studying my notes/slides will be sufficient for you to do very well. At various points, they provide information that is not in the book.

Pencil-and-Paper Reading Expectation

If I ask you to read some material in advance of a lecture, put your best effort into doing it. In this course, reading means going through the slides/notes with a pencil and an ample supply of paper next to you (or a stylus and an iPad or similar), so you can re-do all the derivations as you read (and fill in the blanks when steps you should know how to do are skipped in the slides/notes). This is very important: Do not try to memorize any of the material. You should focus on understanding it, not trying to memorize equations and results. If you try doing that, you will be quickly overwhelmed.

Important

This course is for students who are seriously interested in advanced macroeconomics and are willing to work hard. It is not written anywhere that economics should be easier than engineering or computer science. ECON 401 is required if you want to graduate with a Bachelor of Science, and I take seriously the word “advanced” in its title. So, this is not the right course for you if you enrolled in it only because you needed to fill your schedule and seats turned out to be open. To reiterate, intermediate macroeconomics and calculus are serious prerequisites. If you forgot your calculus, are not happy to refresh your knowledge of it within a few days of the course’s start, are not up for working through many slides of math and math-intensive assignments and do not want to put much effort into understanding the economic intuitions behind the math, this is not the course for you.

Course Requirements

I will be assigning homework exercises at a frequency that will depend on how the course progresses. Randomly selected parts of each homework (the same parts for each student) will be graded so that the grade for the homework will be a score between 0 and 100. If you submit answers to all the homework assignments, your lowest homework score will be dropped, and your overall homework score for the course will be computed as the average of your remaining

homework scores. If you choose not to submit answers to an assignment, your score for it will be 0, and it will not be dropped before computing your average homework score. You are allowed and encouraged to form study groups to work on these assignments, but you will have to submit your own answers.

There will be a take-home midterm exam and a take-home final exam, which I will assign on dates to be coordinated with you (the final exam will be during Final Examination Week). You may consult all course materials and other Internet sources when taking these exams, but your work must be original, and you may not solicit or obtain assistance from or provide assistance to other people for any specific content on the exam. Activities considered cheating include copying or closely paraphrasing content from websites, discussing exam questions with other students, and/or using ChatGPT or similar. The exams will be graded on a scale 0-100. All exams will be checked for originality, copied content, and use of AI tools, and anyone found cheating will be assigned a zero score for the exam.

Your overall score for the course will be determined using a weighted average of your overall homework score and the exam scores, weighted as follows:

Overall homework score:	25 percent.
Midterm exam score:	30 percent.
Final exam score:	45 percent.

Your overall score for the course will determine the grade between 0 and 4 that I will assign at the end of the quarter.

Attendance and Participation

Attendance and class participation are not formally required. However, historically, students who attend regularly and ask their questions in class (and/or during office hours or appointments) do better than students who do not.

Grader and Questions on Grading

There is a Grader for this course. His name is Sangwoo Park. He will grade your homework assignments, the midterm exam, and part of the final exam. I will grade the other part of the final exam, and I will determine your grade for the course based on your scores as described above.

I trust Sangwoo's competence fully in this process. Therefore, if you have questions about his grading, you should discuss them initially with him, and approach me only if the issue remains unresolved. Sangwoo's e-mail address is sngwpark "at" uw "dot" edu. You should carbon-copy me on all correspondence with him. If you have questions on the part of the final exam that I will grade, or questions on your grade for the course that do not involve Sangwoo's grading, you should contact me directly.

Review Sessions

To help you prepare for the exams, there will be review sessions held by Shipei Huang, a student who took both ECON 401 and ECON 425 with me and did extremely well in both courses. Dates, times, and locations of these sessions TBA.

Academic Integrity

The University of Washington values the academic integrity of its students and faculty. For Student Academic Responsibility and the consequences of misconduct, see <https://www.washington.edu/cssc/for-students/academic-misconduct/>.

The following is the Economics Department policy on Academic Conduct:

Academic integrity is the cornerstone of the Department's rules for student conduct and evaluation of student learning. Students accused of academic misconduct will be referred directly to the Office of Community Standards and Student Conduct for disciplinary action pursuant to the Student Conduct Code and, if found guilty, will be subject to sanctions. Sanctions range from a disciplinary warning to academic probation, to immediate dismissal from the Department and the University, depending on the seriousness of the misconduct. Dismissal can be, and has been, applied even for first offenses. Moreover, a grade of zero can be assigned by the instructor for the course.

Religious Accommodations Policy

Please see the UW's [Religious Accommodations Policy](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/) (<https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/>). Accommodations must be requested within the first two weeks of the course.

Masks

I will greatly appreciate it if you wear a mask when you approach me to ask questions before or after class or if my office is crowded, especially if you have cold symptoms. I have a medical condition for which I take a medication that increases the probability of severe consequences of respiratory tract infections. I teach in person because it is the best strategy to manage my energy. But doctors still want me to do what I can to minimize the probability of contracting COVID-19. Your help in this effort will be greatly appreciated.

Letters of Recommendation

I will write letters of recommendation only for students who take both ECON 401 and ECON 425 with me. It is easier for me to write strong letters for students who are active class participants and/or attend my office hours regularly to ask their questions on the material. I will not write letters for students who do not attend class regularly. You should let me know by the end of the quarter if you think that you may be interested in a letter of recommendation from me during the next academic year. Exogenous constraints imply that my availability for this task will have to be very limited, and it is most likely that I will not be able to accommodate letter requests that I receive during or after the summer from students with whom there was no prior discussion of this topic.

Advice

Students occasionally ask me about my expectations for them to do well in this course. The best strategy is explained below. If you do what I recommend, you will do well.

Attend and ask your questions in class (and in office hours and appointments): Attendance and class participation are not formally required, but evidence over the years is that the students who attend regularly and ask their questions do better than those who do not.

Stay on top of the material regularly: Do not fall behind. Use pencil and paper (or stylus and tablet), making sure that you can reproduce and understand all derivations. Make sure you understand the economic intuitions behind the math. Math is a language that we use to discipline our thoughts and communicate them, but the economics is what really matters. Do not try to memorize the material. Focus on understanding.

You should think of reading and reviewing the material without falling behind and using pencil and paper to make sure you understand everything as your high-frequency homework for this course. I expect to assign a total of four, perhaps five, homeworks that will be graded. Working through the slides and your notes making sure you understand everything and do not fall behind will be key to your success in the course.

Work together: Forming a study group is a great strategy to work through the material and assignments of this course (remember that each one of you will have to submit their own answers). Discussing the material and the questions you are working on with one or more friends will enhance your learning and help you deal with difficulties.

Take full advantage of the resources at your disposal: You should always feel free to ask me questions in class. Lively class discussion is always fun. If you have more questions, come to the regular office hours to ask them or ask me for appointments if the office hours time does not work for you (or if you need more time with me). Do not feel uncomfortable asking the same question more than once—for instance, in class and office hours.

Important: Do not e-mail me questions that require answers that are longer than one or two lines. E-mail is an extremely inefficient way to handle such questions. It is much better to meet in person to discuss them.

About the office hours: As indicated above, they will be on Tuesdays, 1:30-3:20pm, in Savery Hall 136. You do not need to e-mail me in advance if you want to attend these office hours. You can just show up at any point and join whoever else is there.

About appointments: If you want to schedule an appointment, e-mail me with sufficient advance notice. I will do my best to give you maximum flexibility for appointment scheduling, but you should not expect that I will be able to accommodate same-day or next-day appointment requests. Reasonable advance notice will be important.

If you want to send me a message, please use e-mail rather than the Canvas messaging system.

Note: Anything different from the regular Tuesday office hours is not office hours. It is an occasional appointment that is scheduled only if requested with sufficient advance notice. If you attended such an appointment on any day and time, and, for example, it is the morning of the same day in the following week, do not send me e-mails asking me “Are today’s extra office hours happening again?” They were not extra office hours. It was an occasional appointment, and you should not assume it will happen again on the same day and time in the following week. It will happen only if you request it with sufficient advance notice and I agree to schedule it.

I am a professional macroeconomist, and I had the honor of seeing my work with the type of tools we will study used as foundation for policy advice at the International Monetary Fund and other institutions. I am excited about the material of this course, and I will do my best to make sure you learn as much as possible from it. I will expect that we all put our best effort into the course,

subject to the constraints created by situations that may arise. If there are glitches, let us all be prepared to handle them with grace.

#EconTwitter

There is an active community of economists on X (#EconTwitter). I am one of them, mostly retweeting material I find interesting and occasionally contributing my own thoughts. Much material posted by me or other members of the #EconTwitter crowd is related to things we talk about in this course and can be a source of ideas for questions and discussions. If you are interested in this, my handle on X is [@FabioGhironi](https://twitter.com/FabioGhironi).

Topics and Readings

Following is the list of topics I plan to cover. Whether we will cover all the topics will depend on the pace we manage to keep. For each topic, I list some seminal literature contributions that were the foundation of much work in that research area, the relevant chapter of Sanjay Chugh's textbook (if it covers that topic), or recent papers I will talk about. I list these sources for you to have some background information. They are not required readings. Once again, the slides/notes that will be posted on Canvas and at <http://www.fabioghironi.com/teaching.html> will be your only required study material. The papers listed below would be harder for you to work through than my slides/notes (many times, significantly harder).

Important: Macroeconomics is about a lot more than the list of topics below. There are large parts of the field that we simply do not have time to talk about. For instance, this course focuses on fluctuations and does not cover growth, except for a simple mechanism early in the course. We will not talk about models with overlapping generations of agents. In our meetings and in the slides/notes, we will not go deep into issues of fiscal policy and sustainability of government debt. We will focus on closed-economy environments, abstracting from the roles of trade, the exchange rate, and net foreign assets. We will not cover many other very interesting topics. But what we will cover will give you a taste of how many macroeconomists think about the topics we will study, doing it at a level that is accessible for you.

Topic 1: The Stochastic Growth Model

Campbell, J. (1994): "Inspecting the Mechanism: An Analytical Approach to the Stochastic Growth Model," *Journal of Monetary Economics* 33: 463-506.

Chugh, S. K. (2015): *Modern Macroeconomics*, MIT Press, Cambridge, MA, Chapter 14.

Kydland, F. E., and E. C. Prescott (1982): "Time to Build and Aggregate Fluctuations," *Econometrica* 50: 1345-1370.

Topic 2: New Keynesian Macroeconomics

Blanchard, O. J., and N. Kiyotaki (1987): "Monopolistic Competition and the Effects of Aggregate Demand," *American Economic Review* 77: 647-666.

Calvo, G. A. (1983): "Staggered Prices in a Utility Maximizing Framework," *Journal of Monetary Economics* 12: 383-398.

Chugh, S. K. (2015): *Modern Macroeconomics*, MIT Press, Cambridge, MA, Chapters 13, 22, and 23.

Dixit, A. K., and J. E. Stiglitz (1977): "Monopolistic Competition and Optimum Product Diversity," *American Economic Review* 67: 297-308.

Rotemberg, J. J. (1982): "Monopolistic Price Adjustment and Aggregate Output," *Review of Economic Studies* 49: 517-531.

Yun, T. (1996): "Nominal Price Rigidity, Money Supply Endogeneity, and Business Cycles,"

Topic 3: Macroeconomic Policy

- Chugh, S. K. (2015): *Modern Macroeconomics*, MIT Press, Cambridge, MA, Chapters 15 and 16.
- Clarida, R., J. Galí, and M. Gertler (1999): "The Science of Monetary Policy: A New Keynesian Perspective," *Journal of Economic Literature* 37: 1661-1707.
- Romer, D. (2000): "Keynesian Macroeconomics without the LM Curve," *Journal of Economic Perspectives* 14: 149-169.
- Taylor, J. B. (1993): "Discretion vs. Policy Rules in Practice," *Carnegie-Rochester Conference Series on Public Policy* 39: 195-214.
- Woodford, M. (2003): *Interest and Prices: Foundations of a Theory of Monetary Policy*, Princeton University Press: Princeton, NJ (selected parts of chapters 1-4).

Topic 4: Optimal Macroeconomic Policy

- Barro, R. J., and D. B. Gordon (1983a): "A Positive Theory of Monetary Policy in a Natural-Rate Model," *Journal of Political Economy* 91: 589-610.
- Barro, R. J., and D. B. Gordon (1983b): "Rules, Discretion, and Reputation in a Model of Monetary Policy," *Journal of Monetary Economics* 12: 101-121.
- Chugh, S. K. (2015): *Modern Macroeconomics*, MIT Press, Cambridge, MA, Chapters 17-20.
- Kydland, F. E., and E. C. Prescott (1977): "Rules Rather Than Discretion: The Inconsistency of Optimal Plans," *Journal of Political Economy* 85: 473-491.
- Persson, T., and G. Tabellini (1993): "Designing Institutions for Monetary Stability," *Carnegie-Rochester Conference Series on Public Policy* 39.
- Rogoff, K. S. (1985): "The Optimal Degree of Commitment to an Intermediate Monetary Target," *Quarterly Journal of Economics* 100: 1169-1189.
- Walsh, C. E. (1995): "Optimal Contracts for Central Bankers," *American Economic Review* 85: 150-167.

Topic 5: Unemployment

- Andolfatto, D. (1996): "Business Cycles and Labor-Market Search," *American Economic Review* 86: 112-132.
- Chugh, S. K. (2015): *Modern Macroeconomics*, MIT Press, Cambridge, MA, Chapters 27-29.
- Diamond, P. A. (1982a): "Wage Determination and Efficiency in Search Equilibrium," *Review of Economic Studies* 49: 217-227.
- Diamond, P. A. (1982b): "Aggregate Demand Management in Search Equilibrium," *Journal of Political Economy* 90: 881-894.
- Merz, M. (1995): "Search in the Labor Market and the Real Business Cycle," *Journal of Monetary Economics* 36: 269-300.
- Mortensen, D. T., and C. A. Pissarides (1994): "Job Creation and Job Destruction in the Theory of Unemployment," *Review of Economic Studies* 61: 397-415.

Topic 6: Financial Frictions, House Prices, and Unconventional Monetary Policy

- Chugh, S. K. (2015): *Modern Macroeconomics*, MIT Press, Cambridge, MA, Chapter 21.
- Bernanke, B. B., M. Gertler, and S. Gilchrist (1999): "The Financial Accelerator in a Quantitative Business Cycle Framework," in Taylor, J. B., and M. Woodford (eds.), *Handbook of Macroeconomics*, Elsevier: Amsterdam, 1341-1393.
- Gertler, M., and P. Karadi (2011): "A Model of Unconventional Monetary Policy," *Journal of Monetary Economics* 58: 17-34.
- Iacoviello, M. (2005): "House Prices, Borrowing Constraints, and Monetary Policy in the Business Cycle," *American Economic Review* 95: 739-764.

Topic 7: Endogenous Producer Entry and Product Variety

- Bilbiie, F. O., F. Ghironi, and M. J. Melitz (2012): “Endogenous Entry, Product Variety and Business Cycles,” *Journal of Political Economy* 120: 304-345.
- Ghironi, F. (2018): “Macro Needs Micro,” *Oxford Review of Economic Policy* 34: 195-218.

Topic 8: Heterogeneous Agents

- Bilbiie, F. O. (2020): “The New Keynesian Cross,” *Journal of Monetary Economics* 114: 90-108.
- Bilbiie, F. O. (2021): “Monetary Policy and Heterogeneity: An Analytical Framework,” *mimeo*, University of Lausanne.
- Debortoli, D., and J. Galí (2018): “Monetary Policy with Heterogeneous Agents: Insights from TANK Models,” Working Paper, CREI-Universitat Pompeu Fabra.
- Kaplan, G., B. Moll, and G. Violante (2018): “Monetary Policy According to HANK,” *American Economic Review* 108: 697-743.
- Ravn, M. O., and V. Sterk (2021): “Macroeconomic Fluctuations with HANK & SAM: An Analytical Approach,” *Journal of the European Economic Association* 19: 1162-1202.

Topic 9: COVID-19 and War in Ukraine

- Eichenbaum, M. S., S. Rebelo, and M. Trabandt (2021): “The Macroeconomics of Epidemics,” NBER WP 26882.
- Eichenbaum, M. S., S. Rebelo, and M. Trabandt (2022): “Epidemics in the New Keynesian Model,” NBER WP 27430.
- Ghironi, Fabio, Daisoon Kim, and Galip Kemal Ozhan (2022): “International Trade and Macroeconomic Dynamics with Sanctions,” NBER WP 32188.