



Department of Economics

Fall 2022

**ECO 609: Macroeconomic Theory I**  
(SEM, 3 credits)

**Class Time:** Tue Thu 11:00AM—12:20PM EST

**Recitation Time:** Friday 10:00AM—11:00AM

**Class Location:** Fronczak 424

<b>Instructor</b>	<b>Email</b>
Dr. Monica Tran-Xuan	<a href="mailto:monicaxu@buffalo.edu">monicaxu@buffalo.edu</a>

**Office Location & Hours**

Fronczak 425

Tue and Thu 9:30AM—10:30AM EST or by appointments

(The best way to reach me is via email. Email subject: ECO 609 – your name)

**Teaching Assistant:** Qiong Liu. Email: [qliu35@buffalo.edu](mailto:qliu35@buffalo.edu). Office Location: 411

**Course Description**

This course is the first part of the macroeconomics graduate sequence. The sequence aims to help the student develop the analytical and methodological tools to follow and understand modern professional research in macroeconomics. The course assumes that the classical dichotomy holds. It reviews the leading contemporaneous theories of consumption and saving, economic growth, real business cycles, and asset pricing. The course consists of several learning modules. The first module covers concepts of optimality, general equilibrium, and efficiency in a pure exchange economy. The next module presents the neoclassical growth model, the main macroeconomic workhorse model, and the subsequent module shows how to use dynamic programming. The course also covers economic growth theory and the overlapping generations model.

## Learning Outcomes

Upon successful completion of this course, students are expected to

Learning outcomes	Assessment methods
1. Understand basic macroeconomic facts and the relationship between models and data	Problem set, Exam
2. Learn the thought process and how to speak the language of modern macroeconomic research, including using theoretical tools to formulate and solve standard models, applying concepts to analyze these models, and understanding the economic intuition behind model properties	Problem set, Exam
3. Familiarize with basic macroeconomic computational and data tools	Problem set

Students should be able to apply the knowledge and techniques learnt from this course to conduct future research in macroeconomics, labor, public finance, urban, health, international, and other areas.

This course's learning outcomes are consistent with the goals of the [Economics Ph.D. program](#).

## Prerequisites

Students are expected to know multivariate calculus and linear algebra, or equivalents. Real analysis, optimization, and proof techniques will be heavily used throughout the course. Most of these tools are covered in ECO 611. Basic programming skill will be needed in some of the assignments.

## Course Materials

I will have slides and some reading materials posted on UB Learns. The following textbooks are optional but very useful for future use:

- Stokey, N. L., R. E. Lucas Jr., and E. C. Prescott (1989). *Recursive methods in economic dynamics*. Harvard University Press.
- Ljungqvist, L., and T. J. Sargent (2012). *Recursive Macroeconomic Theory*. MIT Press, Cambridge.
- Sundaram, R. K. (1996). *A first course in optimization theory*. Cambridge University Press. (a great book on optimization)

Do not worry if they are difficult to read at this point. The goal is to help you understand and use these books for future references. Other study notes that are free online and easier to digest are

- Krueger, D. (2012). *Macroeconomic theory*. Lecture Notes.
- Krusell, P. (2014). *Real Macroeconomic theory*. Lecture Notes.

## Course Requirements

There will be six problem sets, one midterm, and one final exam. Students are responsible for materials covered in lectures and recitations.

*Participation:* Students should attend every class and is expected to participate in each class actively. You may ask questions and answer or comment on other students' questions.

*Problem sets* are submitted via UB Learns and due at the beginning of the class on the due date. No late assignments are accepted except for special circumstances with official documents (doctor's notes, etc.). Students are encouraged to work together on problem sets, but each student must submit individual solutions and acknowledge whom the students work with on the first page. The solutions can be electronic (using LaTeX and its applications such as Overleaf, Lyx, etc.) or handwritten.

*Exams:* All exams are closed books, closed notes, and with a time limit. The midterm covers the first half of the class, while the final covers all course materials. Students are required to submit handwritten answers to exams. There is no make-up exam for the midterm, and the make-up final exam will only be scheduled in advance. If you miss the exams, you are responsible for providing documentation for special circumstances (illness, family emergency, athletic conflicts, etc.) no later than a week after the official exam time. If you miss the midterm and provide sufficient documentation, I will use your final exam grade. Students with final exam conflicts as described in the [university guidelines](#) must inform the instructor no later than September 19. After September 19, there is no way to resolve the conflicts. Exam schedule:

<b>Exam</b>	<b>Date</b>	<b>Time</b>	<b>Location</b>
Midterm	Oct 20	11:00AM - 12:20PM	Fronczak 424
Final	Dec 15	8:00AM - 11:00AM	Fronczak 424

## Teaching Assistant

The TA for this course is Qiong Liu (email: [qliu35@buffalo.edu](mailto:qliu35@buffalo.edu)). She will hold a recitation weekly to cover additional materials as well as review solutions to problem sets and exams.

## Grading Policy

The final total score for the course will be determined as follows:

Participation	10%
Problem sets	30%
Midterm	25%
Final	35%

I will follow this grading rubric in determining your final letter grade:

<b>Letter grade</b>	<b>Final total score</b>
A	93-100
A-	87-92
B+	80-86
B	75-79
B-	70-74
C+	65-69
C	60-64
C-	55-59
D	45-54
F	00-44

Students have a responsibility to participate in the course evaluation process. For the “Incomplete” grade, please refer to the [graduate school’s Incomplete Policy](#).

### **Academic Content**

This is the list of course topics and relevant reading materials that may be covered in this course. The instructor reserves the right to modify/adjust course materials during the semester.

#### **1. Pure exchange economy**

- Krueger (2013), chapter 2
- Kehoe, T. (1989). *Intertemporal General Equilibrium Models*, in F. Hahn (ed.) *The Economics of Missing Markets. Information and Games*. Clarendon Press
- Negishi, T. (1960). *Welfare Economics and Existence of an Equilibrium for a Competitive Economy*. *Metroeconomica*, 12, 92-97.

#### **2. Neoclassical growth model**

- Krueger (2013), chapter 3
- Krusell (2014), chapter 5
- Stokey, Lucas, and Prescott (1989), chapter 2
- Ljungqvist and Sargent (2012), chapter 8

#### **3. Dynamic programming under certainty and its application**

- Stokey, Lucas, and Prescott (1989), chapter 3-4 and 6
- Ljungqvist and Sargent (2012), chapter 3-4
- Krueger (2013), chapter 4-5
- Krusell (2014), chapter 3-4

#### **4. Growth theory**

- Krueger (2013), chapter 9
- Krusell (2014), chapter 8
- N. Kaldor (1961). *Capital Accumulation and Economic Growth*, in F. A. Lutz and D. C. Hague, editors, *The Theory of Capital*. St. Martin's Press, 177–222.

- Lucas, R. E. Jr. (1990) *Why doesn't capital flow from rich countries to poor countries?* American Economic Review, 80, 92-96.
- Jones (1995). *R&D-Based Models of Economic Growth*. Journal of Political Economy, 103, 759-784.
- Romer (1986). *Increasing Returns and Long Run Growth*. Journal of Political Economy, 94, 1002-1037.

#### 5. Overlapping generation model

- Krueger (2013), chapter 8
- Krusell (2014), chapter 7
- Ljungqvist and Sargent (2012), chapter 9
- Kehoe, T. (1989). *Intertemporal General Equilibrium Models*, in F. Hahn (ed.) The Economics of Missing Markets, Information and Games. Clarendon Press
- Barro, R. (1974). *Are Government Bonds Net Wealth?* Journal of Political Economy, 82, 1095-1117
- Diamond, P. (1965). *National Debt in a Neo-Classical Growth Model*. American Economic Review, 55, 1126-1150.
- Wallace, N. (1980). *The Overlapping Generations Model of Fiat Money*, in J.H. Kareken and N. Wallace (eds.) Models of Monetary Economies. Federal Reserve Bank of Minneapolis.

#### Course Website

All relevant course materials, links, assignments, and exams will be posted on [UB Learns](#). Please check the website regularly.

Please do not share course documents, links to lectures, office hours, or other course meetings to others who do not officially register with the course without the instructor's approval. If you receive such requests, please forward it to the instructor.

#### Class Policies

Students are encouraged to actively participate in class discussions and respect the instructor, the TA, and other students. Any student found disturbing the academic environment in the class would be asked to leave. Reentry into the class will be permitted at the discretion of the instructor.

#### Academic Integrity

Academic integrity is critical to the learning process. It is your responsibility as a student to complete your work in an honest fashion, upholding the expectations your individual instructors have for you in this regard. The goal is to ensure that you learn the content in your courses in accordance with UB's academic integrity principles, regardless of whether instruction is in-person or remote. Please refer to the [graduate school's academic integrity policy](#) for more details.

Students are expected to have appropriate citation of sources used, acknowledgment of collaboration and help in your work, and no communication with others during exams. Failure to abide by such policies will result in a failing grade of the course.

Thank you for upholding your own personal integrity and ensuring UB's tradition of academic excellence.

### **Health and Safety Guidelines**

While your attendance and participation are essential components of this course, it is critical that you follow [UB's public health guidelines](#).

### **Accessibility Resources**

If you have any disability which requires reasonable accommodations to enable you to participate in this course, please contact the Office of Accessibility Resources in 60 Capen Hall, 716-645-2608 and also the instructor of this course during the first week of class. The office will provide you with information and review appropriate arrangements for reasonable accommodations, which can be found at <http://www.buffalo.edu/studentlife/who-we-are/departments/accessibility.html>

### **Critical Campus Resources**

#### **Sexual Violence**

UB is committed to providing a safe learning environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic and dating violence and stalking. If you have experienced gender-based violence (intimate partner violence, attempted or completed sexual assault, harassment, coercion, stalking, etc.), UB has resources to help. This includes academic accommodations, health and counseling services, housing accommodations, helping with legal protective orders, and assistance with reporting the incident to police or other UB officials if you so choose. Please contact UB's Title IX Coordinator at 716-645-2266 for more information. For confidential assistance, you may also contact a Crisis Services Campus Advocate at 716-796-4399.

#### **Mental Health**

As a student you may experience a range of issues that can cause barriers to learning or reduce your ability to participate in daily activities. These might include strained relationships, anxiety, high levels of stress, alcohol/drug problems, feeling down, health concerns, or unwanted sexual experiences. Counseling, Health Services, and Health Promotion are here to help with these or other issues you may experience. You can learn more about these programs and services by contacting:

#### *Counseling Services:*

120 Richmond Quad (North Campus), 716-645-2720

202 Michael Hall (South Campus), 716-829-5800

*Health Services:*

Michael Hall (South Campus), 716-829-3316

*Health Promotion:*

114 Student Union (North Campus), 716-645-2837

**Tentative Course Schedule**

<b>Week</b>	<b>Topic</b>	<b>Assignment Due</b>	<b>Date</b>
1	Intro, Pure exchange economy (static)		
2	Pure exchange economy (static, dynamic)		
3	Pure exchange economy (welfare)		
4	Neoclassical growth model (equilibrium)	Problem set 1	
5	Neoclassical growth model (efficiency)		
6	Neoclassical growth model (efficiency), Dynamic programming (intro)	Problem set 2	
7	Dynamic programming (intro, theorems)	Problem set 3	
8	<b>Review &amp; Midterm Exam</b>		<b>Oct 20</b>
9	Dynamic programming (application)		
10	Dynamic programming (convergence)	Problem set 4	
11	Growth (exogenous)		
12	Growth (endogenous)	Problem set 5	
13	OLG (intro, characterization)		
14	OLG (efficiency)	Problem set 6	
15	OLG (money) & Review		
Final	<b>Final Exam</b>		<b>Dec 14</b>