



**THE CHINESE UNIVERSITY OF HONG KONG  
DEPARTMENT OF ECONOMICS**

**ECON5022**

**MACROECONOMIC ANALYSIS AND APPLICATIONS  
(2022-2023 First Term)**

This is a one-semester course in modern graduate macroeconomics for the Dual Master's Programme in Economics. The course is structured in three parts. First, students will learn the foundations of modern macroeconomics, covering topics on Dynamic Programming, theories of equilibrium unemployment and economic growth. Second, short-run elements of macroeconomics are introduced, with New Classical and New Keynesian DSGE models and their computation approaches incorporated. Third, we will focus on practical empirical methods of macro-econometrics. The course will additionally introduce students to empirical academic research papers in areas of macroeconomic public policy.

**LEARNING OUTCOMES**

After completing this part of the course, students should be able to:

1. Handle elementary and canonical macroeconomic models both graphically and algebraically.
2. Understand the limitations and controversies of modern macroeconomic theories.
3. Understand the basics of Dynamic Stochastic General Equilibrium Models
4. Handle the basics of programming simple Macroeconomic Models in MATLAB/OCTAVE with the aid of Computational methods in Macroeconomics.
5. Evaluate the effects of macroeconomic policies and shocks on the domestic economy in the short run and their implications on society.
6. Apply economic analysis to a variety of lifecycle events and examine related empirical evidence.
7. Read and critique on empirical academic studies of topics related to Macroeconomics and Public Finance

## **TENTATIVE SCHEDULE**

NB: Given the limited time, some topics may not be covered.

### Week 1: Introduction to Modern Macroeconomics

- History of Economic Thoughts
- The First Fundamental Theorem of Welfare Economics
- Elements of MATLAB/OCTAVE Programming

### Week 2/3: Elements of Dynamic Programming

- The Neoclassical Growth Model (Non-optimizing Agents)
- Intertemporal Optimization
- Finite and Infinite Horizon Discrete State Dynamic Programming
- The Bellman Equation and the Benveniste-Schienkman Formula
- Backward Induction, Value Function and Policy Function Iteration
- Value Function and Policy Function Iteration
- More examples of Dynamic Programming

Life-cycle events and empirical research

- Ricardian Equivalence
- Public Pensions and Social Security
- Retirement-Consumption Puzzle, Marital Bargaining Theory

### Week 4: Inflation and Central Banking

- Elements of Banking – Diamond Dybvig Model
- Review of the ISLM Model, and the Phillips Curve
- Introduction to Monetary Economics and The Quantity Theory of Money
- The Cash in Advance Model
- Central Bank Independence/ Barro-Gordon Model

### Week 5/6: Equilibrium Unemployment

- The Beveridge Curve Model of Natural Rate of Unemployment
- Search Theory of Unemployment
- Shapiro Stiglitz Model
- Duration Models
- Empirical Studies of Unemployment

Week 7/8: Economic Growth and Development

- The Solow – Swan Model
- Endogenous Growth Models
- The Romer Model
- Additional Topics on Economic Growth

Week 9/10: Introduction to DSGE

- New Classical Macroeconomics
- Rational Expectations Formulations
- Real Business Cycles Model
- (Tentative) Solving Linear Rational Expectation Model (by the Blanchard-Kahn Method)
- Introduction to DYNARE
- New Keynesian Macroeconomics
- Aggregate Supply and the Phillips Curve

Week 11/12 : Elements of Macroeconometrics

- Introduction to Time Series
- Vector Autoregressions and Structural Vector Autoregressions
- Vector Error-Correction Models
- (Tentative) Bayesian Macroeconometrics

**THE TEACHING TEAM**

<b>Instructor/Tutor</b>	Wallace K. C. Mok	Zhidong PANG
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<b>Office</b>	ELB 905	ELB1016
<b>Office Hours</b>	By appointment Walk-in consultations welcomed	By appointment

**GRADING**

Your overall performance will be assessed based on:

Midterm (45%)

Final exam (45%): (Time/Venue to be announced)

Class Participation (10%)

## **PROBLEM SETS**

Problem sets will be given.

## **PROGRAMMING**

The basics of programming macroeconomic models will be covered throughout the course. The proposed software is OCTAVE (free) / MATLAB (not free) / STATA (not free).

## **SUGGESTED READINGS**

There is no single textbook covering the entire course. More detailed suggestions for readings and lecture notes will be provided. We will also make regular references to academic journal studies.

For students without sufficient background in basic economic principles, the following two books serve as good introductions to the subject:

- *Intermediate Macroeconomics* – 7<sup>th</sup> Edition (International Student Edition for Asia), by N. Gregory Mankiw, Worth Palgrave Macmillan
- *Macroeconomics* – 2<sup>nd</sup> Edition, by Charles I. Jones, Norton

The course will make references occasionally to the following books. Note that some of these books are more appropriate for the PhD level.

- *Advanced Macroeconomics*, by David Romer, McGraw-Hill/Irwin
- *Foundations of Modern Macroeconomics*, by Ben J. Heider, Oxford University Press
- *Intermediate Macroeconomics*, by Eric Sims, Julio Garin, Robert Lester ([https://www3.nd.edu/~esims1/gls\\_textbook.html](https://www3.nd.edu/~esims1/gls_textbook.html))
- *Recursive Macroeconomic Theory*, by Lars Ljungqvist, Thomas J. Sargent, MIT Press
- *Recursive Methods in Economic Dynamics*, by Nancy L. Stokey, Robert E. Lucas and Edward C. Prescott, Harvard University Press
- *Applied Computational Economics and Finance*, by Mario J. Miranda and Paul L. Fackler