

# HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY



Department of Economics  
ECON 6121A  
(2 Units)

Topics in Economic Dynamics I  
(Spring I 2024-25)

## Instructor

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## Class Schedule

Lecture time is Monday 2:00 – 5:50 pm, unless stated otherwise and are held in LSK 1026. Teaching mode is “face to face”.

## Course Description

This is a 7-week macroeconomics course covering solution methods in business cycle and DSGE models, bounded rationality - adaptive learning vs. rational expectations, equilibrium determinacy and expectational stability applied to monetary policy rules, and introductions to both financial frictions macro and tractable HANK (Heterogenous Agent New Keynesian) models. Emphasis will be on analytical and numerical solution methods using Matlab, Octave and DYNARE.

## Course Intended Learning Outcomes (CILO's)

After completing this course, students should be able to understand, explain and identify:

1. Solution (analytical), calibration, and numerical simulation methods (Matlab, Octave, DYNARE) in representative agent models - RBC, monetary models, New Keynesian DSGE - to make predictions and inferences about economic shocks and policy events. **(PILO 1)**
2. The role of expectations - rational expectations and bounded rationality via adaptive learning in macroeconomic models and applications in monetary policy. **(PILO 1)**
3. Financial frictions and heterogeneous agent New Keynesian model and applications in monetary policy. **(PILO 1)**
4. Course material in group assignments and presenting to classmates. **(PILO 3)**

## Prerequisite

The pre-requisites for this course are the core macro PhD courses: ECON 5250 and ECON 5260.

## Recommended Learning Resources

There is no required textbook. A detailed and comprehensive list of references for each topic will be provided ahead of each topic covered in this course.

## Assessment Scheme

	Description	Weight
Quizzes	2 short in-class quizzes	30%
Group Assignment	Written Work – 40%, Presentation – 10%, Peer Review – 10%	60%
Class Participation	Constructive contribution to class discussion	10%

## Attendance Policy & Class Participation

Class attendance will be recorded each week. Attendance may be used as an input for the class participation grade and in some circumstances may be a contributing factor in borderline grading decisions. Class participation is NOT a 1-1 mapping with attendance. While attendance may be a contributing factor, the constructive contribution to class discussion will be very influential in your class participation grade. Conversely, disruptive behavior will lead to a lower participation grade. Class participation is worth 10% of your total grade.

## ChatGPT Policy

ChatGPT is not permitted in this course. No use in exams or individual assignments is permitted. In your assignments students are required to make a statement as to whether they used ChatGPT

and if they did to declare how they done so. Violation of this policy will be considered an academic integrity breach with potentially serious consequences.

## Academic Integrity Policy

Honesty and integrity is a central value in HKUST. Please be aware of the importance of maintaining a high standard of honesty in assignments and examinations in this course. Please familiarize yourself with the university rules and the HKUST academic honor code by visiting the following website: <http://www.ust.hk/vpaao/integrity/>

## Course Syllabus

Please note this is a tentative schedule. Topic order may be changed and some topics may be removed or modified, based on time constraints, student progression, and continuous improvement. Each week's lecture will be broken up into three separate 65-70 minutes, with two 15 minute breaks. Sessions may be lecture style, tutorial, quiz or class presentations.

Week	Date	Topics*
1	Feb 3	<b>L1 - RBC Model - Log-linearization, Calibration, Simulation</b> <b>L2 - MIU Model - - Log-linearization, Calibration, Simulation</b> <b>L3 - Blanchard-Kahn - Solving Expectational Difference Equations</b>
2	Feb 10	<b>L4 - New Keynesian DSGE model - Simulation in DYNARE</b> <b>Tutorial 1</b> <b>L5 - Adaptive Learning &amp; Rational Expectations - 1</b>
3	Feb 17	<b>Quiz 1</b> <b>L6 - Adaptive Learning &amp; Expectational Stability - 2</b> <b>L7 - Monetary Policy Rules: Equilibrium Determinacy &amp; Learning</b>
4	Feb 24	<b>L8 - Financial Frictions (BGG) - 1 - Financial Accelerator</b> <b>L9 - Financial Frictions (BGG) - 2 - Simulation of BGG Model</b> <b>L10 - Financial Frictions, Equilibrium Determinacy &amp; Learning (Kitney, 2018)</b>
5	Mar 3	<b>Tutorial 2</b> <b>L11 - Heterogeneous Agent New Keynesian Models (HANK) - 1</b> <b>L12 - Heterogeneous Agent New Keynesian Models (HANK) - 2</b>
6	Mar 10	<b>Quiz 2</b> <b>L13 - Heterogeneous Agent New Keynesian Models (HANK) - 3</b> <b>L14 - Tractable HANK and Equilibrium Determinacy and Learning in Monetary Policy Rules (Gibbs, Kitney and McClung, 2025)</b>
7	Mar 17 (2:00 - 3:50 pm)	<b>Class Presentation</b>

## Rubrics for Final Grade

After completing this course, students should be able to understand, explain and identify:

1. Excellent Performance (A range): Demonstrates a deep understanding of the macroeconomic models covered in the course. Exhibits exceptional skills in solving models analytically and using numerical methods. Is excellent in providing economic intuition to the results of the models studied. Performs very well in the group assignment, class participation and class quizzes.
2. Good Performance (B range): Shows a solid grasp of the macroeconomic models covered in the course. Shows good skills in solving models analytically and using numerical methods. Performs well in class quizzes, the group assignment and contributes well in class participation.
3. Marginal Performance (B-, C+, C): Has basic knowledge of the macroeconomic models and solving models analytically and in numerical methods. Shows limited skills in utilizing them. Acceptable performance in the group project with limited class participation and has a solid performance in the class quizzes.
4. Fail: Demonstrates insufficient understanding of the macroeconomic models in the course. Lacks skills in solving and interpreting these models. Unsuccessful in the group assignment and/or class quizzes with little or no class participation.