



Department of Economics
ECON 5346
(2 Units)

BUSINESS CYCLES & MONETARY POLICY
(Spring I, 2025-26)

INSTRUCTOR

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CLASS SCHEDULE

Lecture time is Wednesday 6:00pm-9:20pm, unless stated otherwise and are held in LSK G003. Teaching mode is "face to face".

COURSE DESCRIPTION

This course provides an introduction to a wide variety of business cycle models designed to analyze macroeconomic shocks and policy events, with a particular focus on monetary policy. We cover the Real Business Cycle Model (RBC) and we study international business cycles, where results differ between emerging and developing economies, to cover a small open economy RBC model. We then introduce money into the modeling framework with the Money in Utility (MIU) model and the Overlapping Generations Model (OLG) with money. We cover models of imperfect information such as the Lucas island model, nominal rigidity in the canonical New Keynesian DSGE model. We extend this model with financial frictions in the BGG Financial Accelerator model. Key topics in monetary policy such as monetary policy rules, equilibrium determinacy, time inconsistency, and reputation are presented. Numerical methods are emphasized and simulation methods taught using DYNARE using a simple "cookbook" approach, to compute the quantitative impact of economic shocks and policy events.

COURSE INTENDED LEARNING OUTCOMES (CILO's)

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

1. Modern business cycle models using sequential dynamic optimization methods. **(PILO 1)**
2. Solution, calibration, and simulation methods in RBC, monetary models, New Keynesian DSGE, and BGG to make predictions and inferences about economic shocks and policy events. **(PILO 2, 5)**
3. Key concepts in monetary economics such as money neutrality, super money neutrality, the Fisher equation, Tobin effect Friedman rule, equilibrium determinacy, time inconsistency and reputation to establish a deeper understanding of monetary policy and business cycles. **(PILO 1,2, 5, 13)**

PREREQUISITES AND ASSUMED KNOWLEDGE

No formal prerequisite but ECON 5140 or equivalent is assumed knowledge. We do NOT assume any coding knowledge prior to this course. We provide a simple "cookbook" approach to simulating models using open source (free) software DYNARE in Matlab (not free but available at HKUST) and an open source (free) language, Octave, so you can replicate everything at home for free. Knowledge of basic multi-variable calculus and linear algebra is assumed.

RECOMMENDED LEARNING RESOURCES

There is no required textbook. A detailed and comprehensive list of references will be provided during class. Some useful reference books may include: Campante, F., Sturzenegger, F., and Velasco, A. (2021). *Advanced Macroeconomics: An Easy Guide*. LSE Press. Also, Champ, B., Freeman, S., and Haslag, J. H. (2022). *Modeling monetary economies*. Cambridge University Press. These are at or slightly lower technical level than this course. McCandless, G. (2008). *The ABCs of RBCs: An introduction to dynamic macroeconomic models*. Harvard University Press and Walsh, C. E. (2017). *Monetary theory and policy*. MIT press, around the level used in the course or slightly more advanced. For international topics Uribe, M. and Schmitt-Grohé, S. (2017). *Open economy macroeconomics*. Princeton University Press is advanced but useful.

INDIVIDUAL ASSIGNMENTS

Students will be required to submit 3 short individual assignments for grading. Each assignment is worth 10% for a total of 30% of the total assessment. These will help prepare you for the exam. **No late homework will be accepted!**

ASSESSMENT SCHEME

	Description	Weight
Final Exam	Examines all topics covered during the term	60%
3 Individual Assignments	Three assignments to be submitted for assessment	30%
Class Participation	Constructive contribution to class discussion	10%

FINAL EXAMINATION

The final exam (closed book) will be held during class in the final lecture on April 1. The location is TBD. There will NOT be make-up exams. Only serious medical or personal emergencies may be accepted as legitimate excuses for a missed exam. If you fail to attend an exam for medical reasons, you must present a doctor's note. If you miss an exam without a valid reason, then you will receive a zero. You will be permitted to have a 1-page A4 handwritten cheat sheet but otherwise, this exam is closed book. The final exam will be worth 60% of the total assessment.

CLASS PARTICIPATION

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. 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. 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*

Week	Date	Topics
1	Feb 4	Lectures 1-2 - Motivation, Data, the Lucas Critique and Review of Discrete-time Dynamic Optimization - Business cycle data, stylized facts, methods in business Cycle analysis, and schools of thought. This includes an intro to the "New Classical" and "New Keynesian" schools, and the "Lucas Critique". We revise sequential methods of dynamic optimization in infinite and finite horizons models and I will provide a gentle introduction to dynamic programming.
2	Feb 11	Lecture 3 - Real Business Cycle Models - We satisfy the Lucas Critique in RBC. We solve the model and simulate it using DYNARE graphically, with impulse response functions, critically evaluate the RBC model and match it against US empirical data.
3	Feb 25	Lectures 4-5 - Introduction to International Business Cycles and the Small Open Economy Real Business Cycle Model - We highlight 10 stylized facts in international business cycle data, distinguishing emerging and developed economies. We will then study the open economy RBC model, solving it analytically and numerically in DYNARE, comparing results with Canadian macroeconomic data.
4	Mar 4	Lecture 6 - Money in Utility Model - We now introduce money into our business cycle models beginning with MIU. We solve and simulate the MIU model using DYNARE. Famous results such as the Fisher equation, neutrality, superneutrality of money and the Friedman Rule are derived with "Monetarist School" monetary policy conclusions.
5	Mar 11	Lecture 7 - Wallace Dictum, Methodology and the Overlapping Generations Model - We criticize the use of money in MIU with the "Wallace Dictum" and present the OLG model which satisfies Wallace's criteria. We derive the Fisher Effect again but see this theory is challenged by the "Tobin Effect". Lecture 8 - Lucas Island Model of Imperfect Information - We then study the Lucas Island Model, where imperfect information and incomplete nominal adjustment leads to a violation of money neutrality; and derive the undergraduate short-run aggregate supply curve with deeper monetary policy intuition.
6	Mar 18	Lectures 9-10 - Monetary Policy in the New Keynesian DSGE Model, and an extension to the BGG Financial Accelerator Model - We first motivate the NK IS curve and NK Phillips curve with nominal rigidities, then simulate the model. We analyze uniqueness of equilibrium under Taylor Rules in monetary policy. Then we extend the NK DSGE model to the BGG Financial Accelerator model, motivating the role of financial frictions. We simulate the financial accelerator with policy shocks and interpret the results, calibrated to the US economy.
7	Mar 25	Lecture 11 - Time Consistency and Optimal Monetary Policy - Motivation: rules versus discretion in monetary policy - which is better for achieving central bank objectives? We derive an inflation bias using an optimal policy approach, arising under discretionary policy and we provide solution methods to inflation bias including the role of reputation in monetary policy using game theory.
8	Apr 1	Final Exam Time and Location TBD

**This is a tentative schedule and may change during the semester.*

ASSESSMENT TIMETABLE

Week	Date	Topics*
1	Feb 4	
2	Feb 11	Assignment 1 posted
3	Feb 25	
4	Mar 4	Assignment 1 deadline
5	Mar 11	Assignment 2 posted
6	Mar 18	Assignment 2 deadline , Assignment 3 posted
7	Mar 25	Assignment 3 deadline
8	Apr 1	Final Exam - Location and time TBD

**Please note that the timetable is tentative and may change throughout the course.*

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 class participation and individual assignments and the final exam.
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 the final exam, assignments 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 assignments with limited class participation and has a solid performance in the exam.
4. Fail: Demonstrates insufficient understanding of the macroeconomic models in the course. Lacks skills in solving and interpreting these models. Unsuccessful in the assignments and/or final exam with little or no class participation.