UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Advanced Macroeconomics M

2627-2-F8206B028

Learning objectives

The primary objective of the course is to understand the characteristics of basic macroeconomic models, analyzing them from both a theoretical and empirical perspective. The course aims to enable students to understand the fundamental aspects of growth theory and the analysis of business cycles.

Part of the course is dedicated to simulating and estimating economic cycle models.

The course, by covering macroeconomic models analyzed both theoretically and empirically, contributes to achieving the educational objectives in the learning area of the degree program: "Economics and Finance."

By the end of the course, students will be able to:

1. Understand the main macroeconomic models of economic growth and business cycles, also in relation to their empirical evidence.
2. Use the models studied in the course for simulation and estimation purposes, employing computational tools such as MATLAB and Dynare.
3. Critically interpret the theoretical and empirical results of macroeconomic models, assessing their assumptions, limitations, and economic implications.
4. Clearly discuss the results of a model and of the estimation project, using appropriate economic and technical language.
5. Independently explore advanced macroeconomic models and scientific articles related to the topics covered in the course.

Contents

This course is composed of five parts.

1. In the first part, we will analyze the "stylized facts" related to economic growth and the main growth models.

2. The second part of the course is dedicated to the study of the business cycle and of *Real Business Cycle* models, characterized by the absence of markets imperfections.

3. The third part analyze *New Keynesian* models, where we will introduce imperfect competion and price and wage rigidities.

4. The fourth part deals with the simulation and Bayesian estimation of the models considered, using MATLAB and Dynare.

5. The course concludes with the development of an estimation project by the students.

Detailed program

First part

1. Stylized facts about growth
2. Solow model (theory and empirical evidence)
3. Ramsey-Cass-Koopmans model

Second part

1. Definition of the concept of the economic cycle
2. Development and analysis of the Real Business Cycle model (role of technology)
3. Simulation of the model (with particular emphasis on technological shocks)

Third part

1. Development and analysis of the basic New Keynesian model with sticky prices and wages (role of monetary policy)
2. Development and analysis of a medium-scale Dynamic Stochastic General Equilibrium (DSGE) macroeconomic model (Christiano, Eichenbaum, and Evans, 2005 model)
3. Simulation of the models (analysis of the effects of technological and monetary shocks)
4. Introduction to models including financial frictions

Fourth part

1. Analysis of other structural shocks that can affect the economic system
2. Introduction to Bayesian estimation and application to the analyzed models
3. Estimation of the Smets and Wouters (2007) model

Fifth part

1. Development of an estimation project by the students.

Prerequisites

Standard undergraduate courses in maths, statistics, micro and macro.

For Erasmus students: the skills in macroeconomics, microeconomics, mathematics, and statistics must be consolidated in order to successfully tackle the course. Basic notions of econometrics are also useful.

Teaching methods

The course consists of a total of 63 hours, structured as follows:

33 hours of in-person lectures delivered in teaching mode.
24 hours of computer-based practical sessions delivered in both teaching mode and interactive mode. These sessions will normally take place in person, with the possibility of delivering part of them remotely, up to a maximum of 18 hours.
6 hours devoted to the development of the estimation project, delivered in person in interactive mode.

Assessment methods

Attending students: project and written exam.

Non-attending students: project and written exam.

Written exam (individual assessment, 3 open-ended questions), accounting for 5/9 of final mark. Evaluation focuses on methodological rigour and analysis of theoretical models.

Group project, accounting for 4/9 of final mark. Evaluation focuses on knowledge of software and interpretation of empirical results.

No mid-term assessments are planned.

Textbooks and Reading Materials

D. Romer, *Advanced Macroeconomics*, McGraw-Hill (ch. 1-2 part A).

J. Galí, *Monetary Policy, Inflation, and the Business Cycle: An Introduction to the New Keynesian Framework and Its Applications*, Princeton University Press (cap. 1-2-3-6).

Scientific papers, available on the course page.

Semester

Second semester

Teaching language

English

Sustainable Development Goals

QUALITY EDUCATION