

# Doctoral School in Economics and Finance

2019-2020

## *Advanced Macroeconomics II (Part 2)*

### 1. Course details

Semester: 1

Credit rating: 2 ECTS

Pre-requisite(s): The prerequisite for this course is Advanced Macroeconomics I of the Master in Economics and Finance (Research Track).

Lecturers: Christos Koulovatianos (University of Luxembourg)

Administrator: Roswitha Glorieux

Seminar times and rooms: Wednesdays from 9:30am until 11:45 am

**Communications** It is important that students regularly read their University e-mails, as important information will be communicated this way.

Reading week: -

Mode of assessment: oral exam and assignments

Additional work: TBA

Examination Periods: -

Course WebPage: [Moodle.uni.lu](https://moodle.uni.lu)

## 2. Aims and objectives

### Aims

This course connects students to the research frontier of modern Macroeconomics. It builds on and complements the PhD training in Macroeconomics that begins with the course *Advanced Macroeconomics I* of the Master in Quantitative Economics and Finance (past Research Track). The course content includes most recent advances business cycle theory, heterogeneous-agent models, fiscal policy analysis, and asset pricing. It emphasizes theoretical foundations, empirical applications, policy analysis, and computational methods.

### Learning Objectives

Upon successful completion of this course students will be able to:

- understand and contribute to the theory and policy of business cycles, heterogeneous-agent models and asset pricing
- understand and apply numerical techniques of dynamic optimization (Matlab)
- understand and apply calibration techniques

## 3. Plan of semester

The lectures are set up in a block of 30 TU (including 7.5 TU for recitation lectures) and take place at the University of Luxembourg.

WEDNESDAY	Room Campus Kirchberg	Time	Seminar Lecture
		<b>09.30 – 11.45 a.m.</b>	
(1) 4 Dec. 9:30-11:45 (2) 11 Dec. 9:30-11:45 (3) 18 Dec. 9:30-11:45 (4) 8 Jan. 9:30-11:45 (5) 15 Jan. 9:30-11:45 (6) 22 Jan. 9:30-11:45 (7) 29 Jan. 9:30-11:45 (8) 5 Feb. 9:30-11:45 (9) 12 Feb. 9:30-11:45 (10) 19 Feb. 9:30-11:45	C15		<ul style="list-style-type: none"> <li>- Numerical techniques (grid search, finite differences, quadratic approximation, projection), minimum-distance fitting, bootstraps</li> <li>- Dynamic programming (deterministic and stochastic), Monte-Carlo simulation, Markov chains, and their role for dynamic-stability analysis</li> <li>- Real-business- cycle facts and models</li> <li>- Borrowing constraints and computation, portfolio choice, heterogeneous-agent models, wealth-inequality determinants</li> <li>- Asset-pricing models and their computation</li> <li>- Learning in Macroeconomics and Finance</li> <li>- Continuous-time approach to Macro, Finance (asset pricing), Financial stability (banks), Inside/outside Money, heterogeneity</li> <li>- Dynamic optimal fiscal policy and dynamic contracts</li> </ul>

#### 4. Course details

Heer, Burkhard and Alfred Maußner, *Dynamic General Equilibrium Modelling: Computational Methods and Applications*, Springer, Berlin, 2009, 2<sup>nd</sup>.edition

Yves Achdou, Jiequn Han, Jean-Michel Lasry, Pierre-Louis Lions, Benjamin Moll, *Income and Wealth Distribution in Macroeconomics: A Continuous-Time Approach*, 2017, Mimeo Princeton University

Brunnermeier, Markus K., and Yuliy Sannikov, *Macro, Money, and Finance: A Continuous-Time Approach*, 2015, online manuscript

Ljungqvist, Lars and Thomas Sargent, *Recursive Macroeconomic Theory*, Cambridge, MA: MIT Press, 2004

Nancy Stokey and Robert E. Lucas Jr. (collaboration with Edward Prescott), *Recursive Methods in Economic Dynamics*, Harvard Univ. Press, 1989

Marimon, Ramon and Andrew Scott (Eds.), *Computational Methods for the Study of Dynamic Economies*, Oxford: Oxford University Press, 1999, ISBN: 0-19-829497-2.

Mario J. Miranda and Paul L. Fackler, *Applied Computational Economics and Finance*, MIT Press, 2002

Judd, Kenneth, *Numerical Methods in Economics*, Cambridge, MA: MIT Press, 1998

Thomas Sargent, *Dynamic Macroeconomic Theory*, Harvard Univ. Press, 1987

David Romer, *Advanced Macroeconomics*, Mc-Graw Hill, New York, 2012, 4<sup>th</sup> edition

George W. Evans and Seppo Honkapohja *Learning and Expectations in Macroeconomics*, 2001 by Princeton University Press

Moll, Benjamin, SeHyoun Ahn, Greg Kaplan and Tom Winberry (2016): No More Excuses! A Toolbox for Solving Heterogeneous Agent Models with Aggregate Shocks, mimeo, Princeton University and Matlab routines.

Marcet, Albert and Ramon Marimon, 2019, Recursive Contracts, 87, 1589-1631.

#### 5. Further information about assessment

Examination(s)	Oral exam and assignments
Date:	See plan of semester
Length:	-
Structure:	Pass/Fail