Macroeconomics II
Professor: Matthias Kredler
Master in Economic Analysis
Universidad Carlos III de Madrid

Office number: 15.2.10   Telephone: + 34 91 624 9312
Office hours: TBA   E-mail: mkredler@eco.uc3m.es

Timetable

Week 1 Dynamic programming under certainty with finite horizon

- Session 1: The life-cycle consumption-savings problem; Consumption Euler Equation.
- Session 2: Dynamic-programming approach to the life-cycle problem; Envelope Theorem; 2-period job-search model.
- Practical session: Introduction to programing in *Matlab*.

Week 2 Dynamic programming under certainty with infinite horizon

- Session 1: Review of the neo-classical growth model; first-order conditions.
- Session 2: Introduction to the recursive (dynamic-programming) approach.
- Practical session: Review of Homework 1.

Week 3 Dynamic programming: Mathematical preliminaries

- Session 1: Banach spaces and contraction mappings.
- Session 2: Blackwell's sufficient conditions; Berge's Maximum Theorem.
- Practical session: Review of Homework 2.

Week 4 Dynamic Programming: Basic results

- Session 1: Bellman's Principle of Optimality.
- Session 2: Properties of value and policy functions: monotonicity, concavity.
- Practical session: Review of Homework 3.

Week 5 Dynamic programing under uncertainty (I)

- Session 1: Euler Equations in stochastic frameworks; history-contingent notation.
- Session 2: Dynamic-programming approach; application to growth model and consumption-savings model.
- Practical session: Review of Homework 4.

Week 6 Dynamic programing under uncertainty (II)

- Session 1: The McCall job-search model.
- Session 2: Recursive Competitive Equilibrium; big-K-little-k trick.
- Practical Session: Review of Homework 5.

Week 7 Continuous-time dynamic programming

- Session 1: The Hamiltonian-Jacobi-Bellman Equation and Euler Equations.
- Session 2: Connection to Pontryagin's Maximum Principle; introducing uncertainty using Poisson processes.
- Practical Session: Review of Homework 6.

Week 8 MIDTERM EXAM

Week 9 Cyclical fluctuations (I)

- Session 1: Real-business-cycle model; empirical evidence.
- Session 2: Perturbation methods; log-linearization.
- Practical Session: Review of Midterm Exam; introduction to *Dynare* (program for solving dynamic models by perturbation methods).

Week 10 Cyclical fluctuations (II)

- Session 1: Solving stochastic linearized models; method of undetermined coefficients.
- Session 2: Blanchard-Kahn stability conditions.
- Practical Session: Review of Homework 7.

Week 11 The New-Keynesian model (I)

- Session 1: Setup; flexible-price benchmark.
- Session 2: Firm's price-setting problem under sticky prices; equilibrium concept.
- Practical Session: Review of Homework 8.

Week 12 The New-Keynesian model (II)

- Session 1: New-Keynesian Phillips Curve and Dynamic IS Curve.
- Session 2: Analysis of monetary policy; the Taylor Principle.
- Practical Session: Review of Homework 9.

Week 13 Search-and-matching model

- Session 1: Matching functions; Bellman Equations and firm entry.
- Session 2: Equilibrium; determinants of unemployment.
- Practical Session: Review of Homework 10.

Week 14 Review

- Session 1: Policy analysis in the search-and-matching model.
- Session 2: Review session.
- Practical Session: Review of selected homework problems.

Week 15 FINAL EXAM