

**Name of subject:**

ECONOMIC MODELS

**Contact:** michael.creel at uab.es**Code:** OB**Term:** Year 1, Semester 2**ECTS Credits:** 15**Working Language:** English**Instructors**

Michael Creel, Stephan Litschig, Francesc Obiols

**Objectives and Contextualization**

This module seeks two main objectives. On the one hand, it teaches students how to analyze, interpret and organize economic data with advanced econometric and statistical techniques. On the other, it shows students how to use advanced econometric techniques and theoretical models to make economic forecasts and assess important economic policies. The student also learns how to use the main software packages for data analysis.

**Skills**

|      |  |
|------|--|
| CB6  | To acquire the knowledge that provides the basis for originality in developing and/or applying ideas, often in a research context                      |
| CB7  | The students can apply the acquired knowledge to solve problems in new environments, within broader contexts, that are related to their field of study |
| CB9  | The students can communicate their conclusions to both specialists and non-specialists in a clear and unambiguous way                                  |
| CB10 | Students must have the learning skills necessary to continue studying in a way that is, mostly, self-directed and autonomous                           |

**Learning Outcomes**

Specific:

|        |  |
|--------|--|
| E01    | Ability to articulate the fundamentals of economic theory analytically, deriving them with mathematical reasoning                                  |
| E01.05 | To describe the fundamentals underlying dynamic economic phenomena at the macro level  |
| E02    | Ability to identify the fundamentals of statistical analysis and econometric techniques, deriving them from the laws of probability and statistics |
| E02.02 | To identify the possibilities and limitations of basic empirical analysis  |

|          |   |
|----------|---|
| E02.03   | To analyze the different estimators and empirical methods   |
| E03      | To use the main software packages to program the analysis of economic data  |
| E03.01   | To program basic estimation methods   |
| E04      | To analyze a particular economic problem using advanced analytical tools  |
| E04.03   | To frame a dynamic economic question as a mathematical problem and answer it with mathematical logic                                      |
| E05      | To find, collect and analyze economic data using advanced econometric techniques  |
| E05.01   | To implement an empirical analysis  |
| General: |   |
| GT02     | To use new information technology to solve problems in the professional activity  |
| GT03     | To apply the research method, its techniques and advanced tools, to investigate and provide new results in a particular area of expertise |

### Methodology

- Theory classes
- Practice classes
- Learning based on problem solving
- Tutorials
- Personal study
- Study groups
- Textbook reading
- Article reading

### Evaluation

|   |     |
|---|-----|
| Final Exam                                | 80% |
| Class attendance and active participation | 10% |
| Problem sets and assignments              | 10% |

### Activities

| Type       | Hours |
|------------|-------|
| Directed   | 112.5 |
| Supervised | 75    |
| Autonomous | 187.5 |

## Contents

### Econometrics I

1. Causal inference vs. forecasting and types of data
2. Conditional expectations and their properties
3. Identification, estimation, and inference in bivariate OLS regression
4. Identification, estimation, and inference in multiple OLS regression
5. Measurement error bias and solutions
6. Sample selection bias and solutions
7. Reverse causality bias and solutions
8. Standard error bias and solutions
9. Identification, estimation, and inference in linear IV regression
10. Weak instrument bias and size distortion
11. Extremum estimator

### Econometrics II

12. Maximum likelihood
13. Generalized Method of Moments
14. Introduction to time series analysis
15. Additional topics in econometrics

### Macroeconomics III

16. Representative consumer theories of inequality. Representative consumer theories. Perfect Aggregation and distributional dynamics. Borrowing constraints and welfare.
17. Idiosyncratic uncertainty. The complete markets case. The incomplete markets case. Perfect Aggregation does not hold. Precautionary saving. Does market incompleteness matter?
18. Fiscal Policy. Optimal capital income taxation with incomplete markets, revisiting Chamley. Optimal taxation: a quantitative evaluation.
19. Frictional labor markets. Search and matching in frictional labor markets. Extensions in the Neoclassical Model of Growth and in the Real Business Cycles model with incomplete markets

## Bibliography

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- Davidson, R. and J.G. MacKinnon, Econometric Theory and Methods
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- Hamilton, J.D., Time Series Analysis
- Ljungqvist, L., and T. Sargent (2000): Recursive Macroeconomic Theory, MIT press.