COURSE SYLLABUS 2168 - Macroeconometrics, 7 ECTS Spring Semester 202425

COURSE INSTRUCTOR

Paulo Manuel Marques Rodrigues

SHORT BIOGRAPHY

Paulo M. M. Rodrigues (PhD, University of Manchester; Agregação, Universidade do Algarve). He was a Jean Monnet Fellow at the European University Institute in Florence. He was also Visiting Scholar at the Institute for Advanced Studies in Vienna, Austria, the University of British Columbia, Vancouver, Canada and the University of Navarra, Spain. Research interests include time-series econometrics, financial econometrics and empirical macroeconomics. He has published a number of peer-reviewed articles in several internationally renowned scientific journals, including Journal of Econometrics, Econometric Theory, Econometrics Reviews, Journal of Financial Econometrics and Oxford Bulletin of Economics and Statistics, Review of Economics and Statistics.

INSTITUTIONAL EMAIL

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OFFICE HOURS

Office Hours: TBA

| Scientific Area/Área Científica: | Métodos Quan | itativos | | | |
|---|--------------|--|---------|--|--|
| Frequency/Periodicidade: | Semestral | | | | |
| Number of Contact Hours/ Número Horas Contacto: | | | | | |
| (T) Teóricas/Theoretical: | 0000:00 | (TP) Teórico-Práticas/Theoretical-Practical: | 0036:00 | | |
| (P) Práticas/Practical: | 0000:00 | (OT) Orientação Tutorial/Tutorial Orientation: | 0010:00 | | |
| (PL) Práticas Laboratoriais/Pratical Labs: | 0000:00 | (S) Seminário/Seminar: | 0000:00 | | |
| Horas Dedicadas/Dedicated Hours: | 0150:00 |) | | | |
| Total Horas/Total Hours: | 0196:00 |) | | | |

PREREQUISITE(S) / PRÉ-REQUISITO(S)

NA

COURSE UNIT AIMS

In this course, students will learn the most important concepts, models, and techniques used in the empirical econometric analysis of macroeconomic data. The focus of the course will be on dynamic models using econometric time series methods. During the course, students will also learn how to use specialized econometric software tools.

COURSE UNIT CONTENT

1. Basic concepts in time-series analysis:

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- difference equations,
- stationarity and ARMA models,
- forecasting.
- 2. ARCH and GARCH models,
- 3. VAR models,
- reduced form models,
- estimation,
- structural VAR models with recursive identification,
- alternative identification methods,
- 4. Cointegration and VEC models,
- 5. HP and band-pass filters,
- 6. Bayesian models,
- 7. Models for unobserved components:
- state space models,
- the Kalman filter,
- structural time series models.
- 8. Markov regime switching.
- 9. Threshold models.

LESSON PLAN

Lesson Synopsis

Additional details

Materials/ Readings

LEARNING OBJECTIVES

- A. Knowledge and Understanding Have a broad understanding of time series data and the different approaches to analyze it depending on its characteristics.
- B. Subject-Specific Skills Time series methods. Data representation. Estimation, interpretation and assessment of time series methods.
- C. General Skills

Dynamic modeling and estimation techniques.

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LEARNING OUTCOMES

| | Learning outcome | Proficiency level |
|-----|--|----------------------|
| Ι | I Analyses and evaluates national and international economic contexts | |
| II | Applies quantitative and technical skills to analyse and solve economic issues | |
| III | Demonstrates proficiency in leveraging core economic principles and techniques to effectively resolve practical economic problems | proficient |
| IV | Demonstrates effective interpersonal and communication skills to enhance teamwork and collaboration across various settings | proficient |
| V | Utilizes analytical, critical thinking, and problem-solving skills to navigate challenges and enable lifelong learning within teams and organizations | expert |
| VI | Leverages a deep understanding of sustainability in business and economics to drive ethical transformations and positive outcomes across organizational and project contexts | N/A |

If this is a mandatory course for a degree program's, the table above will already include the learning outcomes and their respective proficiency levels, as validated by the program s academic director. It outlines how the course contributes to the program's 6 learning outcomes. If you believe the course impacts these outcomes differently, you may directly edit the table to adjust the proficiency levels using the following categories: N/A (does not contribute), developing (basic understanding), proficient (solid understanding), or expert (advanced proficiency). If the table is empty, you may define and enter the learning outcomes and proficiency levels you find appropriate.

DEMONSTRATION OF THE COHERENCE OF THE SYLLABUS WITH COURSE UNIT AIMS/LEARNING OBJECTIVES

This course introduces students to a variety of time series methods that allow for further study in each topic with better preparation. At the same time, it allows students to be ready to apply each method and understand and interpret academic papers and reports that use such methods.

TEACHING AND LEARNING METHODS

Students should attend the weekly classes to understand the use of the main time series macroeconometric tools and the theoretical arguments used to derive the main results, and to get acquainted with the interpretation of the results for the selected examples. The use of specialized econometric software will help students understand and apply the methods and models developed during the course. The assignments are important to develop all the learning objectives.

DEMONSTRATION OF THE COHERENCE OF THE TEACHING METHODS WITH COURSE LEARNING OBJECTIVES

The course unit main objective is for students to learn the basic econometric methodologies used in the analysis of macroeconomics time-series data and to be proficient in applying them. Taking into consideration the fundamental purpose of this course, the learning method most suitable to this course is a mixture of learning-by-doing, individual study, and group work. The learning methodologies adopted are intended to stimulate the students' ability to go from theory to practice, through the apprehension of concepts, tools, and methodologies, which are explained in the course. Thus, they contribute to the process of learning and the development of critical analysis.

ASSESSMENT

The final course grade is based on a final exam (65%) and one group assignment (35%). The grades for the assignment will account for the originality, quality, and autonomy of the work done. Detailed instructions are provided on Moodle.

BIBLIOGRAPHY

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The main material for the course will be available on the course page on Moodle, including papers for specific topics. Recommended readings from the following textbooks will also be indicated on moodle:

Enders, W. (2014), Applied Econometric Time Series, 4th ed., John Wiley & Sons, Inc.

Lütkepohl, H. (2005). New introduction to multiple time series analysis. Springer Science & Business Media.

Hamilton, J.D. (1994), Time Series Analysis, Princeton University Press.

Canova, F. (2007), Methods for Applied Macroeconomic Research, Princeton University Press.

ADDITIONAL INFORMATION

All the necessary material for this course will be posted on the course page on Moodle.

Course Impact Relation

Throughout the teaching period, the course equips students with foundational skills that will enable them to develop further understanding in future courses, directly related with the SDG Agenda.

