



*PhD in*  
**Applied Mathematics**  
*for* **Economics**  
*and* **Management**

*Open minds for a better world*

# PhD in *Applied Mathematics* for *Economics* and *Management*

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This programme prepares students to carry out research work worthy of publication in scientific journals with a peer-review system. It aims to develop the skills needed to devise and implement new mathematical methods that could be used to tackle problems in the areas of Economics and Management.

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#### Scientific Board

**M. Teresa Chaves De Almeida**  
(Coordinator)  
Full Professor

**Filipe Serra De Oliveira**  
Senior Associate Professor

**Nuno Sobreira**  
Assistant Professor

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#### Target

The PhD Programme in MAEG (Applied Mathematics for Economics and Management) is designed to meet the needs of those who wish to enhance their knowledge of mathematical methods and techniques in order to make original contributions in a particular field or to develop and implement solutions for problems in the areas of Economics and Management.

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#### Entry Conditions And Selection Criteria

The entry requirements are an MSc or BSc degree (with a curriculum of four years or more) in Mathematics, Statistics, Economics, Finance, Management, Physics or Engineering. The degree curriculum and the marks obtained must provide evidence that the applicant has a strong background in Mathematics. Applicants who have not yet completed the degree may be accepted conditionally if they expect to do so before the beginning of the Program. Applicants who do not hold any of the degrees listed above may also be accepted, provided that the CV is deemed suitable for the Program.

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#### Study Topics

The research topics are the following:

- > Actuarial Science;
- > Dynamical Systems;
- > Financial Econometrics;
- > Financial Mathematics;
- > Macro and Micro-econometrics;
- > Mathematical Analysis;
- > Operational Research;
- > Statistics;
- > Time Series.

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#### Structure of the Program

The PhD Programme spans over a total of three years. The first year is devoted to coursework, and includes the preparation, presentation and defense before an evaluation committee of the student's thesis research project. Please note that if there are any non-Portuguese speakers registered in a course, the lectures will be taught in English. The following two years are dedicated to research, leading to the design, writing and defense of an original dissertation in an area of Applied Mathematics for Economics or Management.

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*I believe Quantitative methods, and in particular Operational Research, can provide extremely valuable management decision systems to any organization. Pursuing a new direction in my professional career I decided to return to ISEG and enroll in the MAEG PhD programme looking to enrich and develop my skills in that scientific field. My objective was fully met. From the excellence lecturing faculty, supervisors, teaching and research resources to the material and administrative supporting conditions, the MAEG PhD programme delivered everything I was expecting. I strongly recommend it to anyone interested.*



**Carlos Martins**

Director na Create Business LDA.

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*The PhD programme in MAEG was an extremely enriching experience in personal, academic and professional terms. As I have an academic background in Mathematics and Statistics, attending this PhD programme allowed me to explore a new, more applied area of research, developing knowledge and methodologies in an area as fundamental as Finance. It is worth mentioning the quality and monitoring carried out by the faculty throughout the programme, the environment for sharing experiences and knowledge, the motivation to participate in seminars and conferences, thus instilling in all of us a critical spirit and constant questioning, which allows us to grow as researchers and academics. It was a challenge that will certainly mark the rest of my life.*



**Liliana Pereira**

Invited Adjunct Professor at the Higher Professional Technical School of the Polytechnic Institute of Cávado e Ave



# Faculty and Subject Areas

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## Alexandra Moura

PhD Politecnico di Milano, Italy  
Numerical Analysis, Statistics, and Actuarial Sciences

## Alfredo Egídio dos Reis

PhD Heriot-Watt University, Edinburgh, UK  
Actuarial Science

## Amélia Bastos

PhD ISEG, Universidade Técnica de Lisboa  
Economics and Statistics

## Ana Margarida Neto

PhD Faculdade de Ciências, Universidade de Lisboa  
Mathematics – Algebra

## Artur da Silva Lopes

PhD ISEG, Universidade Técnica de Lisboa  
Macroeconometrics

## Carlos Oliveira

PhD Instituto Superior Técnico, Universidade de Lisboa  
Stochastic Optimisation

## Esmeralda Arranhado Ramalho

PhD University of Bristol, UK  
Econometrics, Microeconometrics

## Fernando Gonçalves

PhD University of Edinburgh, UK  
Mathematical Finance and Numerical Analysis

## Filipa Duarte de Carvalho

PhD ISEG, Universidade Técnica de Lisboa  
Operational Research

## Filipe Serra de Oliveira

PhD Université Paris-Orsay, France  
Partial Differential Equations.

## Graça Leão Fernandes

PhD ISEG, Universidade Técnica de Lisboa  
Economics of Education

## Isabel Proença

PhD Université Catholique de Louvain, Belgium  
Applied Micro-econometrics and Panel Data

## João Andrade e Silva

PhD ISEG, Universidade Técnica de Lisboa  
Actuarial Science

## João Guerra

PhD Universidad de Barcelona, Spain  
Stochastic Analysis and Mathematical Finance

## João Janela

PhD Instituto Superior Técnico, Universidade Técnica de Lisboa  
Numerical Analysis

## João Lopes Dias

PhD Cambridge University, UK  
Dynamical Systems

## João Nicolau

PhD ISEG, Universidade Técnica de Lisboa  
Financial Econometrics

## Jorge Caiado

PhD ISEG, Universidade Técnica de Lisboa  
Econometrics and Forecasting

## José Passos

PhD University of Bristol, UK  
Micro-econometrics

## José Pedro Gaivão

PhD University of Warwick, UK  
Dynamical Systems

## Leonor Santiago Pinto

PhD ISEG, Universidade Técnica de Lisboa  
Operational Research

## Lígia Amado

PhD ISEG, Universidade Técnica de Lisboa  
Operational Research

## Manuel Castro Guerra

PhD Universidade de Aveiro  
Optimisation and Control Theory

## Margarida Moz

PhD ISEG, Universidade Técnica de Lisboa  
Operational Research

## Margarida Vaz Pato

PhD Faculdade de Ciências, Universidade de Lisboa  
Operational Research

## Maria Cândida Mourão

PhD ISEG, Universidade Técnica de Lisboa  
Operational Research

## Maria de Fátima Fabião

PhD ISEG, Universidade Técnica de Lisboa  
Mathematical Finance and Differential Equations

## Maria Do Rosário Grossinho

PhD Faculdade de Ciências, Universidade de Lisboa  
Mathematical Finance and Differential Equations

## Maria Teresa Almeida

PhD London School of Economics, University of London, UK  
Operational Research

## Nicoletta Rosati

PhD Università di Padova, Italy  
Econometrics and Panel Data

## Nuno Crato

PhD University of Delaware, USA  
Econometrics and Time Series

## Nuno Sobreira

PhD Universidade Nova de Lisboa  
Econometrics and Time Series

## Onofre Simões

PhD ISEG, Universidade Técnica de Lisboa  
Actuarial Sciences

## Pierre Hoonhout

PhD University College London, UK  
Econometrics and Panel Data

## Raul Brás

PhD ISEG, Universidade Técnica de Lisboa  
Operational Research

## Rui Paulo

PhD Duke University, USA  
Statistics

## Telmo Peixe

PhD Faculdade de Ciências, Universidade de Lisboa  
Dynamical Systems



# Details and Study Plan

**Schedule:**

Evening Lectures

**Participating Centres:**

APPLIED MATHEMATICS (CEMAPRE),  
ECONOMICS (UECE).

**Start Date:**

September

**Tuition Fees:**

€3,000 – 1st Year;  
€2,000 - 2nd – 3rd Years;  
€1,000 - 4th - 6th Years



year 1	Course Units	Professor	Credits	Semester
	Advanced Topics Of Econometrics*	Pierre Hoonhout	10	1
	Advanced Topics Of Statistics*	Rui Paulo	10	1
	Analysis And Optimisation*	Manuel Castro Guerra	10	1
	Computational Mathematics*	João Janela	10	1
	Elective	-	6	1
	Seminar I	Teresa Chaves de Almeida	4	1
	Elective	-	6	2
	Preparation Of The Thesis Project	Teresa Chaves de Almeida	24	2

\*The Scientific Board of the PhD chooses two out of the four course units for each student.

year 2	Course Units	Professor	Credits	Semester
	Thesis (Research Seminar)	-	60.0	-

year 3	Course Units	Professor	Credits	Semester
	Thesis (Research Seminar)	-	60.0	-

electives	Course Units	Professor
	Advanced Risk Theory	Alfredo Egídio Dos Reis
	Financial Econometrics	João Nicolau
	Macroeconometrics	Artur Da Silva Lopes
	Mathematical Methods For Finance	João Guerra
	Operational Research	Teresa Chaves De Almeida
	Panel Data	Isabel Proença
	Time Series Analysis And Forecasting	Jorge Caiado

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MEMBER

