

Corso di dottorato

QUANTITATIVE METHODS IN ECONOMICS

The Ph.D. programme in Quantitative Methods in Economics (hereinafter, QME), at the University of Macerata, is an innovative, international and interdisciplinary course designed for students interested in acquiring the necessary **quantitative tools in economics**, and for quantitative methods students who want to learn how to apply them in the context of economic and social issues and policy evaluation. The applications range from the analysis of **economic growth** and **distribution** to **international trade** and **migration**, from **macroeconomic policies** to **environmental, health, education, development and gender issues**. Students' research topics bridging disciplines and focus on atypical data such as historical and archive data, textual data, web data or firms' workflow data are particularly encouraged.

The candidates we are looking for are outstanding applicants whose aspiration is to undertake a higher education course inspired to the contamination of different fields of knowledge, to be educated and trained to become experts on data analysis and policy evaluation, capable of recommending decisions on scientific grounds by applying methods and models derived from an array of quantitative methods, including: advanced econometrics, computable general equilibrium models, multi-sectoral modelling, impact evaluations, multivariate statistical analysis, dynamic systems, network analysis, discrete choice models, machine learning and computational economics.

PROGRAM

The Ph.D. program is developed over three years:

- a first year of courses, seminars and exams common to all curricula and aimed at teaching advanced topics in quantitative methods.
- a second year of international research and training, mainly spent in international institutions associated to the Ph.D. program (with an increase of 50% for the research scholarship amount).
- a third year of research activity for completing the Ph.D. thesis.

CURRICULA

The QME Ph.D. programme is organized in **three curricula**.

1. **Computable General Equilibrium Models and Multi-sectoral Analysis (QME1)**, focusing on input-output analyses, Social Accounting Matrix e computable general equilibrium models.
2. **Mathematical, Statistical and Econometric Methods (QME2)**, focusing on basic statistics, linear and non-linear regressions, time series analysis, panel data econometrics, quantile regressions, policy evaluation methods as well as dynamic systems analysis.
3. **Advanced Data Analyses (QME3)**, focusing on methods for big data, machine learning and network analysis.

The three curricula are interconnected and students of one curriculum must attend the courses offered by the other curricula.

Being grounded on methodology but strongly insisting on applications, the QME Ph.D. program offers, at the beginning of the academic year, introductory courses to the use and programming in Stata, R, Python

and Matlab. Follow-up and advanced courses are offered to second- and third-year Ph.D. students. Students are trained in the production of scientific research, targeted at academic outcomes and at institutional analysis and reporting. The use of replication exercises is a constant throughout the courses and curricula.

All courses are taught in English by highly qualified Professors, including outstanding guests' lecturers from major international universities and research centres. Moreover, the Ph.D. students join an active research community of previous years' students, junior and senior researchers and are asked to actively participate to regular seminars, organized by the Doctoral School or the University's Departments involving academics of international reputation.

TARGET

The QME Ph.D. is aimed at educating skilled researchers capable of applying their scholarly experience in professional environments where the scientific ability to address complex matters is needed. Although the natural destination of this program is the academia, QME commits itself to train new generations of scholars whose analytical and critical skills are valuable also to local, national and international institutions, and NGOs.