Syllabus
Course description

Course title	Quantitative Research Methods
Course code	29022
Scientific sector	SECS-P/05
Degree	PhD in Economics and Management
Semester and academic year	1rst semester 2020-2021
Year	1rst
Credits	8
Modular	no

Total lecturing hours	48
Total office hours	Not foreseen
Total exercise hours	Not foreseen
Attendance	required
Prerequisites	
Course page	
Specific educational objectives	The aim of the module is to develop specific skills in applied econometric and statistical research by a mix of lectures and tutorials where each topic is discussed in both methodology and application. The intention is to provide a description of a number of different quantitative research methods and examples of how they may be applied to management and social science research problems for the collection and analysis of data. More specifically educational objective include: - Ability to apply theoretical and empirical models. - Ability to interpret the results of econometric and statistical analysis and draw appropriate conclusions. - Ability to efficiently plan and manage independent academic research.

Lecturer	Steven Stillman, Francesco Ravazzolo, F. Marta L. Di Lascio
Scientific sector of the lecturer	SECS-P/03,SECS-P/05,SECS-S/01
Teaching language	English
Office hours	please refer to the lecturer's web page
Lecturing assistant	
List of topics covered	Part 1: Introduction to Applied Research: Data collection, data processing, descriptive analysis, survey design Part 2: Review of Linear Regression Methods Part 3: Using Stata for Applied Research

	Part 4: Casual analysis and Panel Data Experimental methods, difference-in-differences, regression discontinuity, instrumental variables, fixed effects models, recent advanced in causal analysis Part 5: Advanced Estimation methods Nonlinear least square, Two-stage least square, GMM, Bayesian analysis Part 6: Simulation methods and forecasting Bootstrapping, (Markov Chain) Monte Carlo integration, forecasting methods Part 7: Advanced R programming Functions, anonymous functions and closures, looping and conditional expressions, functionals, rolling computations. Part 8: Copula theory and the analysis of association Bivariate and multivariate statistical analysis of association. Copula function, copula models and estimation methods for copulas. Copula-based time series analysis. Part 9: Dimensionality reduction methods Principal component analysis and factor analysis.
Teaching format	Lectures, face-to-face coaching and mentoring.

Learning outcomes	The course will equip students with the following analytical skills: Analysis, Synthesis, Evaluation, Application; Numeracy and business research skills; Managing information and knowledge; Research related skills. In addition the course will develop the following behavioral, organizational and communication skills: personal effectiveness, learning, autonomy, technical expertise, communication and information technology, IT architecture and problem-solving using IT software. More precisely, the learning outcomes include: - Knowledge and understanding quantitative methodologies used by researchers in economics, business and management field, including data collection, data processing and analysis, model design and analytics - Applying knowledge and understanding to techniques for analyzing quantitative data in economics, business and management

	- Making judgments regarding the suitability of particular methods to research in economics and business. - Making informed choices in regard to quantitative methods for decision-making , selection and application of research methods using statistical software, IT and communication skills, available statistical information and data. - Can be expected to be able to promote, within academic and professional contexts, technological and socio-economic advanced knowledge

Assessment	Problem sets for each units and a replication project
Assessment language	English
Evaluation criteria and criteria for awarding marks	Replication of academic papers proposed by the professors.

Required readings	References will be provided by the professors during the course
Supplementary readings	