Syllabus

Course Description

Course Title	Applied Statistics for Accounting and Finance
Course Code	25408
Course Title Additional	
Scientific-Disciplinary Sector	SECS-S/01
Language	English
Degree Course	Master in Accounting and Finance
Other Degree Courses (Loaned)	
Lecturers	Prof. Fabrizio Cipollini, Fabrizio.Cipollini@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/48977
Teaching Assistant	Dr. Patrick Osatohanmwen
Semester	First semester
Course Year/s	1
CP	6
Teaching Hours	36
Lab Hours	-
Individual Study Hours	-
Planned Office Hours	18
Contents Summary	The course provides statistical and computational tools useful in accounting and finance applications. The main objectives are: 1) learn R as a computing environment; 2) apply statistical tools already familiar to students (exploratory statistics, statistical distributions, statistical inference, correlation and linear regression) on real data using R; 3) learn new statistical methods frequently used in accounting and finance: logistic regression, repeated cross sections, panel data analysis, difference-in-difference inference, propensity score matching, Heckman model; this is achieved in a practical way by applying them to real data using R.

Course Topics	- R computing environment - Quarto with R - Exploratory statistics - Statistical distributions - Statistical inference (point estimation, confidence intervals, test of hypothesis) - Linear regression, including model diagnostics and inference - Logistic regression, including model diagnostics and inference - Panel data analysis, including model diagnostics and inference - Difference-in-difference inference - Propensity score matching - Heckman model
Keywords	R, exploratory statistics, statistical distributions, statistical inference, correlation, cross-section data, time series data, linear regression, logistic regression, repeated cross sections, panel data analysis, difference-in-difference inference, propensity score matching, Heckman model
Recommended Prerequisites	At least a first course in statistics, covering both descriptive analysis and inference (point estimation, interval estimation, test of hypothesis).
Propaedeutic Courses	
Teaching Format	Traditional classes, mixing statistical theory and practice using R.
Mandatory Attendance	Strongly suggested, but not mandatory
Specific Educational Objectives and Learning Outcomes	Knowledge and understanding: Master's graduates should be able to acquire knowledge of economic-quantitative models that enable them to address management issues of companies, financial intermediaries, financial institutions and markets. These learning outcomes are achieved through an advanced knowledge and understanding - of the theories and tools for the economic analysis of the company and the market; - of the basic forecasting models for carrying out integrated economic and financial analyses, also making use of econometric time series and multivariate analysis methodologies - of Big Data analysis techniques in order to support and integrate business decision-making processes." Applying knowledge and understanding:

	Ability to apply knowledge in the area of Economic Analysis for understanding the evolution of financial markets and changes in the international macroeconomic environment Ability to apply knowledge in the area of Economic Analysis for the analysis of economic, managerial and financial variables supporting the decisions of companies and financial intermediaries Ability to apply knowledge in the area of Economic Analysis to be able to frame and evaluate situations and problems in a critical manner and based on scientific methods in a multidisciplinary perspective, thanks to a training that integrates business, economic, legal, financial and statistical-mathematical disciplines Making judgements: Ability to apply the knowledge acquired to make managerial and operational decisions and to solve problems in the administration and finance of companies, intermediaries and financial markets, jointly taking into account multiple perspectives of analysis, from the economic to the legal, financial, strategic, managerial. Ability to select data and use appropriate information to describe a problem concerning the management of companies, intermediaries and financial markets. Ability to relate models and empirical evidence in the study of companies, intermediaries and financial markets. Communication skills: Ability to communicate effectively in oral and written form the specialised contents of the individual disciplines, using different registers according to the recipients and the communicative and didactic purposes, and to evaluate the formative effects of its communication Learning skills: a) ability to use information technology autonomously to carry out bibliographical research and investigations and for one's own training and updating b) ability to identify thematic links and establish relationships between different cases and contexts of analysis c) ability to frame a new problem systematically and to generate appropriate taxonomies d) ability to develop general models from the phenomena studied.

Specific Educational Objectives and Learning Outcomes (additional info.)	
Assessment	Option 1) mid-term + final-term exams. Mid-term topics: statistics, linear and logistic regressions. Final-term topics: panel data analysis, difference-in-difference inference, propensity score matching, Heckman model. This option is valid only for students receiving a sufficient grade at the mid-term exam, and doing the final exam (with sufficient grade) in February, Any other situation leads to option 2). Option 2) final-term exam only. Topics: statistics, linear and logistic regressions, panel data analysis, difference-in-difference inference, propensity score matching, Heckman model. All exams are composed by questions concerning the analysis of real data to be answered using R.
Evaluation Criteria	Option 1) mid-term exam: 40%, final-term exam: 60% Option 2) final-term exam: 100% The two options are defined in the Assessment field.
Required Readings	Since there is not a unique textbook covering all topics to a level suitable for the course students, the main reference to prepare the exam are lesson notes delivered by the teacher.
Supplementary Readings	Dalpiaz D. (2022). Applied Statistics with R, https://book.stat420.org/applied_statistics.pdf Wasserman L. (2011), All of Statistics: A Concise Course in Statistical Inference https://egrcc.github.io/docs/math/all-of-statistics.pdf Wooldridge, J. M. (2019). *Introductory Econometrics: A Modern Approach.* Nelson Education, 7th ed Ruppert and D. S. Matteson (2015). Statistics and Data Analysis for Financial Engineering, 2nd ed. Springer https://ethz.ch/content/dam/ethz/special-interest/math/statistics/sfs/Education/Advanced%20Studies%20in%20Applied%2 material-1921/FinancialData/2710528_1_ruppert.pdf

Further Information	All course material is made available in OLE
Sustainable Development Goals (SDGs)	Decent work and economic growth