Syllabus

Course Description

Course Title	Applied Statistics for Accounting and Finance
Course Code	25408
Course Title Additional	
Scientific-Disciplinary Sector	STAT-01/A
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	ILO (Intended Learning Outcomes) ILO 1 – Knowledge and Understanding: ILO 1.1 of the theories and tools for the economic analysis of firms and markets. ILO 1.2 of basic forecasting models for conducting integrated economic and financial analyses, also using econometric methodologies for time series and multivariate analysis. ILO 2 – Applying Knowledge and Understanding: ILO 2.1 for understanding the evolution of financial markets and changes in the international macroeconomic context. ILO 2.2 for analyzing economic, managerial, and financial variables to support decision-making in companies and financial intermediaries.

	ILO 3 – Making Judgments: ILO 3.1 ability to relate models and empirical evidence in the study of companies, intermediaries, and financial markets. ILO 4 – Communication Skills: ILO 4 Ability to effectively communicate, both orally and in writing, the specialized content of individual disciplines, using different registers depending on the audience and the communicative and educational purposes, and to assess the educational impact of one's communication. ILO 5 – Learning Skills: ILO 5.1 ability to identify thematic connections and establish relationships between different cases and contexts of analysis. ILO 5.2 ability to develop general models based on 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) within the academic year; 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% (ILO1-3) Option 2) final-term exam: 100% (ILO1-3) The two options are defined in the Assessment field. ILO 1-5 assessed

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