Syllabus
Course description

Course title	**Data management**
Course code	27418
Scientific sector	SECS-P/05
Degree	Master Degree in Public policies and Administration
Semester and academic year	Semester 1 2020/2021
Year	2
Credits	6
Modular	No

Total lecturing hours	36
Total lab hours	-
Total exercise hours	18
Attendance	Strongly suggested, but not required
Prerequisites	There is no formal pre-requisite for this subject. However, a bachelor-level introductory course in statatistics or econometrics is highly recommended.
Course page	https://www.unibz.it/it/faculties/economics-management/master-public-policies-administration/

Specific educational objectives	The course belongs to the scientific area of Econometrics. It builds on the material covered in Statistics for the Public Sector and provides students with modern statistical techniques needed to conduct empirical research in economics. The first part of the course focuses on useful extensions of the multiple regression model including regression with categorical outcomes, instrumental variables, time series regression, and regression for panel data. The second part of the course covers techniques for model selection, data dimension reduction and model validation methods. Throughout the semester, the utility of contemporary statistical approaches for handling big economic data is discussed. In the lectures, much emphasis will be placed on developing problem-solving skills through the analysis of public sector data commonly used for evaluation and policy-making.
Lecturer	Davide Ferrari Office SER E205 https://www.unibz.it/it/faculties/economics-management/academic-staff/

Scientific sector of the lecturer	SECS-S/01

Teaching language	English
Office hours	TBA
List of topics covered	1. Extending the simple regression model: non-linearity, interactions, instrumental variables 2. Regression for time series data 3. Regression methods for categorical outcomes 4. Regression methods for panel data 5. Principles of model selection 6. Dimension reduction methods 7. Model validation and re-sampling methods
Teaching format	The course will combine in-class explanations of statistical methods, practical exercises on real data and discussion of case studies. Students will be expected to participate actively in class discussions and excercises, which will give them the opportunity to develop their problem-solving skills.
Learning outcomes	Knowledge and understanding: • Understanding of a number of methods relevant for the analysis of common types of economic data. Applying knowledge and understanding: • Ability to apply statistical methods to real data sets using a statistical software. • Ability to interpret results in the context of relevant scientific questions. Making judgments • Ability to think critically and make effective decisions based on appropriate statistical analyses Communication skills • Ability to communicate effectively the results from statistical analyses, even to a non-specialised audience.
Assessment	Final exam (60% of the final grade): The final exam consists of problems related to the analysis and interpretations of various data sets Project assignment (40% of the final grade): A data analysis project will be assigned during the semester. Students will give a in-class prestentation on their analyses towards the end of the semester. For non-attending students, 100% of the final grade in the subject is given by the final exam. The final exam includes multiple problems assessing the acquisition of statistical concepts and students' ability to apply such knowledge in different situations. Questions related to interpretation of computer outputs assess students' ability to interpret analysis restults. The assignment measures students' ability to correctly apply methods to data sets within a computing environment and address relevant scientific questions from an applied viewpoint.
Assessment language	English

Evaluation criteria and criteria for awarding marks	**For attending students:** Final exam: 60% Assignments: 40% **For non-attending students:** Final exam: 100% Students must pass the final exam to receive a passing grade in the overall course. The project assignment is compulsory and must be carried out regardless of whether students are attending classes. To pass the final exam students must give a correct answer to the majority of points awarded in the exam questions. Criteria for evaluation of the project assignment are ability to formulate relevant hypotheses for the data analysis, chose correct methods for the analyses, correctly execute analyses and interpret results, summarize and clearly communicate empirical findings, proficiency in interpreting R outputs and ability to write and execute relevant R code.
Required readings	Wooldridge, J.M, Introductory Econometrics: A Modern Approach 7th edition, South-Western College Publishers (2018).