## 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

<table>
<thead>
<tr>
<th>Total lecturing hours</th>
<th>36</th>
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<tbody>
<tr>
<td>Total lab hours</td>
<td>-</td>
</tr>
<tr>
<td>Total exercise hours</td>
<td>18</td>
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## Attendance
Strongly suggested, but not required

## Prerequisites
There is no formal pre-requisite for this subject. However, a bachelor-level introductory course in statistics 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
<table>
<thead>
<tr>
<th><strong>Teaching language</strong></th>
<th>English</th>
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<tbody>
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<td><strong>Office hours</strong></td>
<td>TBA</td>
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| **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 exercises, 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 an in-class presentation 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 results.  
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. |
| 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.