Fakultät für Wirtschaftswissenschaften
Facoltà di Economia
Faculty of Economics and Management

Syllabus
Course description

Course title	**Advanced Quantitative Methods - module 2**
Course code	29054
Scientific sector	Secs-S/01
Degree	PhD in Economics and Finance
Semester and academic year	1st Semester
Year	2021/22
Credits	2
Modular	3

Total lecturing hours	10
Total office hours	Not foreseen
Total exercise hours	Not foreseen
Attendance	required
Prerequisites	N/A
Course page	-
Specific educational objectives	The course refers to the typical educational activities and belongs to the scientific area of statistics. This course introduces advanced econometric tools for making inferences and predictions from high-dimensional and complex data. The course will focus particularly on regression and supervised methods. All the methods covered in class are illustrated using real data sets commonly found in business and finance. within the R statistical computing environment. At the end of the course, the students will be able to implement and apply statistical learning and forecasting tools that are appropriate for high-dimensional data. They will be also able to draw conclusions from their analyses in the context of real data.

Lecturer	Davide Ferrari Office E205 e-mail: Davide.Ferrari2@unibz.it
Scientific sector of the lecturer	SECS-S/01
Teaching language	English
Office hours	TBA
Lecturing assistant	N/A
List of topics covered	Linear models for high-dimensional data: inference and hypothesis testing Model selection and post-selection inference. Instrumental variables in a high-dimensional setting.
Teaching format	Frontal lectures, exercises and computer labs.

Learning outcomes	• Knowledge and ability to apply high-dimensional econometric models in a variety of situations. • Knowledge and ability to apply inference and hypothesis testing methods in the high-dimensional setting. • Knowledge and ability to apply of quantitative methods for model selection and post-model selection inference.

Assessment	2 Homework assignments (50% of the final grade in the course). Individual data analysis project (50% of the final grade in the course).
Assessment language	English
Evaluation criteria and criteria for awarding marks	The homework assignments consists of several exercises and review questions. The data analysis project involves statistical analyses on real data related to the contents of the course using the statistical software R. To receive a passing grade in the course, students must obtain a positive evaluation in both homework assignments and data analysis project.

Required readings	Lecture notes with references will be provided during lectures.
Supplementary readings	**-**