**Business Analytics and data driven decision making**

Prof. Giovanni Guastella

***COURSE AIMS AND INTENDED LEARNING OUTCOMES***

The digitalisation of business procedures has allowed organisations to access an unparalleled quantity of data and information about business management. Standard business analytics tools based on spreadsheets and pivot tables are clearly insufficient to manage such an information quantity effectively. The course aims at providing students with the advanced instruments for business analytics, with a focus on regression analysis, and at illustrating how these instruments can be integrated into business decision processes.

At the end of the course, the student will be able to identify the business decision problems and translate them into analytical terms based on available data and using the acquired instruments. The mix between theoretical lectures and empirical laboratories will allow the students not only to acquire the basic analytical instruments but also to get familiar with their practical use.

***COURSE CONTENT***

Course presentation

Analytical thinking in business decision process

Business problems and data science solutions

A/B testing in decision making

Linear regression and inference

Logistic regression

Instrumental variables estimation

Quasi-experimental designs

Bootstrap-based inference

Out-of-sample validation

Regularisation, Lasso and Ridge regression

Class lectures are integrated with laboratories using the R environment for statistical computing.

***READING LIST***

Materials are provided by the instructor.

***TEACHING METHOD***

Theoretical lectures and laboratories

***ASSESSMENT METHOD AND CRITERIA***

The acquisition of knowledge will be assessed with a written test in which students will answer multiple short questions based on the analysis of case studies reporting the results of empirical analysis. The acquisition of competencies will be assessed through different problem sets to be delivered by a due date during the course. In each problem set, students will be provided with sample data and a set of questions to be answered by applying the theoretical and practical skills acquired during lectures and lad hours.

The final grade of the written exam will be assigned valuing the correctness of the answers provided. The final grade of the problem sets will be determined by the correctness of the analysis, the results, and the procedure used to obtain them.

***NOTES AND PREREQUISITES***

Basic knowledge of statistical inference at the undergraduate level is required. Knowledge of the R language is not a prerequisite but constitutes an advantage,

The instructor receives students in his office. Students are requested to send an email to schedule the meeting.