# Applied Statistics and Big Data (Business Intelligence)

Prof. Riccardo Bramante; Prof. Mauro Minella

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

The course is structured into modules, and includes informatics and statistics disciplines applied to data management and analysis. The course aims to provide students with the ability to organise and analyse corporate information according to consolidated statistical and IT techniques. The course describes various applications in Business Management and Finance areas.

At the end of the course, students will be able to:

* write procedures and functions independently and integrate them into Microsoft Excel to expand its basic functions.
* automate analysis operations and statistical simulations in Excel.
* turn simple ‘Excel sheets’ into real dynamic and interactive applications.
* understand Excel potential to automate data collection and identify statistical and economic trends.
* Use statistical tools to address and solve real problems.
* Read and interpret results deriving from models for data with a large number of variables.

***COURSE CONTENT***

Module 1: *Prof. Mauro Minella*

– Visual Basic programming language for Applications

– Graphic user interfaces

– Macro Automation

– Integration of advanced functions in the Excel environment

– Connection to external structured and semi-structured data sources

Module 2: *Prof. Riccardo Bramante*

– Point estimate, interval estimate and parametric hypothesis testing

– Variance analysis, multiple linear regression and logistic regression

– Downsizing (main components analysis)

– modern techniques for variable estimate and selection in regression models (LASSO)

***READING LIST***

For the first module:

U. Moscato-M. Minella, *Apprendere* *Visual Basic for Applications con Microsoft Excel,* McGraw-Hill, 2016.

S. Chapra, *Introduction to VBA for Excel,* Pearson, 2010.

For the second module

S. Borra-A. Di Ciaccio, *Statistica 3/ed - Metodologie per le scienze economiche e sociali,* McGraw-Hill, 2014.

Detailed syllabus and further study material will be available online on the dedicated Blackboard platform.

***TEACHING METHOD***

This blended course includes in-class activities (50%) and distance activities (50%). In-class activities will include interactive lessons. Online activities will include (asynchronous) video lessons, practical and (synchronous) live feedback webinars. The syllabus with the detailed course programme will be communicated on Blackboard.

***ASSESSMENT METHOD AND CRITERIA***

*A) Ongoing assessment*

For students who opt for the ongoing assessment: 50% of the assessment will be based on two written tests (one in class and an individual one) assigned during the course as per the modalities, content and timelines published in the Blackboard area reserved for students enrolled in the course; 50% of the assessment will be based on a final written test to be taken in the IT lab with the Excel software.

*B) Final assessment*

Students who opt for a final assessment on official exam dates will sit a final written exam.

***NOTES AND PREREQUISITES***

*Preliminary knowledge*

The course requires a basic knowledge of Microsoft Excel and a basic knowledge of statistics (data analysis and theory of probability). The introductory lectures, however, will focus on consolidating some basic concepts.

In case the current Covid-19 health emergency does not allow frontal teaching, remote teaching will be carried out following procedures that will be promptly notified to students.

Further information can be found on the lecturer's webpage at http://docenti.unicatt.it/web/searchByName.do?language=ENG, or on the Faculty notice board.