# Analysis of Experimental Data and Applied Statistics

## Prof. Angelo Finco

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

The main aims of the course are: an understanding of certain possible aspects of experimental data collection, and the ability to analyse experimental data collected through the use of certain statistical techniques and IT tools such as spreadsheets. Students attending this course will learn how to analyse experimental data by using spreadsheets and applying experimental data analysis techniques.

***COURSE CONTENT***

Introduction

 The meaning of measuring, precision, accuracy

The experimental datum

 Characteristics of the experimental datum

 The data loggers

 Measurements from traditional weather sensors (voltage, current, resistive, pulsed)

 Measurements from fast weather sensors

Spreadsheets

 Functions

 Charts

 The pivot table

Descriptive statistics

 Position indices (mean, median, mode)

 Dispersion indices (percentiles, variance, standard deviation, box plot)

Correlation and regression

 Covariance

 The Pearson coefficient

 Simple and multiple linear regressions

PCA - principal component analysis

Spatialisation of the datum

 Data spatialisation techniques

***READING LIST***

Taylor, *Introduzione all'analisi degli errori. Lo studio delle incertezze nelle misure fisiche.*

Jolliffe, *Principal Component Analysis.*

Goovaerts, *Geostatistics for natural evaluation.*

***TEACHING METHOD***

Workshop lectures, computer lessons.

***ASSESSMENT METHOD AND CRITERIA***

An oral exam with computer-based data processing.

***NOTES AND PREREQUISITES***

The course is aimed at all students interested in a more in-depth study of the use of spreadsheets and statistical data analysis techniques.
There are no prerequisites for attending the course.

*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.*