## Syllabus

### Course title
Advanced Statistics

### Course code
46001

### Scientific sector
SECS/S-02

### Degree
- PhD in Mountain Environment and Agriculture (MEA)
- PhD in Sustainable Energy and Technologies (SET)

### Semester
1°

### Year
1°

### Academic year
2022-2023

### Credits
3

### Modular
NO

### Total lecturing hours
30

### Total lab hours

### Total exercise hours
0

### Attendance
Yes

### Prerequisites

### Course page

### Specific educational objectives
The course delves into basic concepts in descriptive and inferential statistics. It is designed for acquiring knowledge and professional skills. The students will be enabled to independent treatment of statistical research issues. The use of the software R is foreseen.

### Lecturer
Prof. Maria Letizia Bertotti,  
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tel. 0471 017130,  
http://www.unibz.it/en/sciencetechnology/people/StaffDetails.html?personid=26965&hstf=26965

### Scientific sector of the Lecturer
MAT/07

### Teaching language
English

### Office hours
by appointment

### Teaching assistant (if any)

### Office hours

### List of topics covered
- Motivation and a Review of Key Concepts of Statistics
- Descriptive Statistics
- Elements of Probability
- Random Variables
- Discrete Probability Distributions
- Continuous Probability Distributions
- Parameters of a distribution
- Special Random Variables
<table>
<thead>
<tr>
<th><strong>Teaching format</strong></th>
<th>Frontal lectures.</th>
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| **Learning outcomes** | **Knowledge and understanding**  
Knowledge and understanding of concepts and methods of statistics for data analysis.  
**Applying knowledge and understanding**  
Ability to understand the role of statistics in applications and to identify appropriate statistical methods for data analysis. Use of the software R.  
**Making judgements**  
Ability to choose a right approach and convenient tools towards tackling problems and questions.  
**Communication skills**  
Ability to clearly and correctly describe the suitable approach to a given question and/or the results of a statistical analysis.  
**Learning skills**  
Ability to autonomously extend and adapt the acquisition and assimilation of the symbolism, methods and tools of this course. |
| **Assessment** | Collaboration in exercises. Presentation of a specific topic. |
| **Assessment language** | English |
| **Evaluation criteria and criteria for awarding marks** |  |
| **Required readings** | Ross, Sheldon M., Introduction to probability and statistics for engineers and scientists, 6th ed., Amsterdam et al., Elsevier Academic Press |
| **Supplementary readings** |  |
| **Software used** | R (see "The R Project for Statistical Computing" at [https://www.r-project.org](https://www.r-project.org)) |