

Syllabus

Course description

Course title	Statistics
Course code	43078
Scientific sector	SECS-S/02
Degree	Bachelor in Industrial and Mechanical Engineering
Semester	I
Year	(optional)
Academic year	2022/2023
Credits	3
Modular	No

Total lecturing hours	18
Total lab hours	
Total exercise hours	12
Attendance	Not required, but strongly suggested
Prerequisites	Basic Math at a Bachelor course level
Course page	See https://ole.unibz.it/course/view.php?id=10144

Specific educational objectives	<p>Applied Statistics: The course is designed for acquiring practical skills and knowledge. The students will be able to:</p> <ul style="list-style-type: none"> • analyze their own data statistically and to present them graphically • judge critically scientific results and conclusions • use specific functions of the statistical software package R • apply methods of inferential statistics
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Lecturer	Giovanni Modanese
Scientific sector of the lecturer	MAT-07
Teaching language	English
Office hours	By appointment
Teaching assistant (if any)	
List of topics covered (Applied Statistics)	<ol style="list-style-type: none"> 1. Introduction to descriptive statistics and probability 2. Random variables discrete and continuous 3. Confidence intervals 4. Hypothesis testing 5. Correlation and linear regression
Teaching format (Applied Statistics)	Frontal lectures, exercises on the PC with R
Learning outcomes	Knowledge and understanding

	<p>Knowledge of the most important statistical tests, understanding their rationale, conditions of usage and their results.</p> <p>Applying knowledge and understanding Identification of appropriate statistical method for data analysis; independent application of tests using software package R.</p> <p>Making judgements Critical reviewing of own scientific work and of original publications; interpretation of statistical analyses in the context of environmental sciences.</p> <p>Communication skills Ability to present results of statistical analyses correctly and intelligibly at the level of scientific publications.</p> <p>Learning skills Ability to recognize situations in which statistical analysis is necessary. Ability to judge the appropriateness of statistical methods, even if not explicitly treated in this course.</p>
Assessment	<p>Written exam. The duration of the exam will be 80 minutes. This will include 6-8 questions which will allow to reach a maximum of 30 points. The student will be allowed to consult only a sheet of formulas and use a scientific calculator.</p>
Assessment language	English
Evaluation criteria and criteria for awarding marks	The written exam will be passed if the student reaches at least 18 points.
Required readings	<p>Teacher's slides in OLE.</p> <p>Heumann, Christian/ Schomaker, Michael/ Srivastava, Shalabh. Introduction to Statistics and Data Analysis: With Exercises, Solutions and Applications in R, Part I (2016). Web. ISBN 3-319-46162-1, Springer International</p>
Supplementary readings	<p>James, Witten, Hastie, Tibshirani. An Introduction to Statistical Learning with Applications in R, Springer 2013, freely available at http://www-bcf.usc.edu/~gareth/ISL/index.html</p>