

## Syllabus

### Course description

<b>Course title</b>	Statistics
<b>Course code</b>	43078
<b>Scientific sector</b>	SECS/01
<b>Degree</b>	Bachelor in Industrial and Mechanical Engineering (L-9), Bachelor in Wood Engineering (L-9)
<b>Semester</b>	1
<b>Year</b>	1
<b>Academic year</b>	2020/2021
<b>Credits</b>	3
<b>Modular</b>	No

<b>Total lecturing hours</b>	18
<b>Total lab hours</b>	-
<b>Total exercise hours</b>	12
<b>Attendance</b>	Recommended
<b>Prerequisites</b>	Solid basic knowledge of mathematics
<b>Course page</b>	

<b>Specific educational objectives</b>	<ul style="list-style-type: none"> <li>○ type of course: basic</li> <li>○ scientific area: statistics</li> </ul> <p>The aim is to allow attendances to be able to</p> <ul style="list-style-type: none"> <li>- Gather and describe data</li> <li>- Plot and analyse data</li> <li>- Use basic commands of R software</li> </ul>
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<b>Scientific sector of the lecturers</b>	SECS01
<b>Lecturer</b>	Fabiola Del Greco M. <a href="mailto:Fabiola.DelGreco@unibz.it">Fabiola.DelGreco@unibz.it</a>
<b>Teaching language</b>	English
<b>Office hours</b>	According to individual arrangement
<b>Teaching assistant</b>	-
<b>List of topics covered</b>	Descriptive statistics (measures of location and dispersion). Assessment of data quality; identification of outliers. Distributions. Graphical presentation of data. Contingency tables. Association. Correlation. Linear Regression.

<b>Teaching format</b>	Frontal lectures, exercises on the PC
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<b>Learning outcomes</b>	<b>Knowledge and understanding</b>
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	<p>of the basic concepts of Descriptive and Inferential Statistics.</p> <p><b>Applying knowledge and understanding</b> Starting from those basic concepts, the student will be able to carry on his/her own experimental study; to evaluate data quality and reliability; to identify the correct statistical method for the data; to perform those analyses with the software R.</p> <p><b>Making judgments</b> Analysis and interpretation of the data in their own research and work field.</p> <p><b>Communication skills</b> Ability of presenting results of statistical analyses clearly and in the correct way.</p> <p><b>Learning skills</b> Abstraction and formalization ability of phenomena under study in their field, and application of the statistical methods studied.</p>
<p><b>Assessment</b></p>	<p>Written exam and Project work. The length of the written exam will be 90 minutes. This will include 8/10 questions (that is exercises and theory 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 calculator to perform simple calculations. The ability to accurately trace the solution will be more important than the final calculation result. The programming language R will not be concretely examined. However, the student may be asked to correctly interpret numerical and graphical outputs generated using R. The Project work will consist of a team work (2/3 students) with an applied work to be presented with 4 slides (1. Data and scientific hypothesis to be analyzed; 2. Method used; 3. Results; 4. Conclusions).</p>
<p><b>Assessment language</b></p>	<p>English</p>
<p><b>Evaluation criteria and criteria for awarding marks</b></p>	<p>The written exam will be the 80% of the final grade; the Project work will be the 20% of it. The written exam will be pass if the student reach at least 18 points over 30. In the Project work, the ability to identify a scientific hypothesis and the appropriate statistical method, and the ability to synthesize and present data and results, will be evaluated.</p>

<b>Required readings</b>	Slides and lab materials will be available online on the Reserve Collections electronic platform.
<b>Supplementary readings</b>	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