

## COURSE DESCRIPTION – ACADEMIC YEAR 2016/2017

<b>Course title</b>	<b>Statistical Methods</b>
<b>Course code</b>	72127
<b>Scientific sector</b>	MAT/06
<b>Degree</b>	Master in Computer Science (LM-18)
<b>Semester</b>	1
<b>Year</b>	1
<b>Credits</b>	4
<b>Modular</b>	No

<b>Total lecturing hours</b>	24
<b>Total lab hours</b>	--
<b>Total exercise hours</b>	12
<b>Attendance</b>	Not compulsory
<b>Prerequisites</b>	Basic mathematical skills.
<b>Course page</b>	None. Students should refer to their notes taken during lectures and exercise classes, and consult the suggested textbook and readings.

<b>Specific educational objectives</b>	<p>The course belongs to the type "affini o integrative – formazione affine".</p> <p>Specific educational objectives are theoretical and applied knowledge of descriptive and inferential statistics for applications in computer science.</p>
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<b>Lecturer</b>	<a href="#">Leonardo Ricci</a>
<b>Contact</b>	<a href="#">Piazza Domenicani 3</a> , Room 1.04, <a href="mailto:Leonardo.Ricci@unibz.it">Leonardo.Ricci@unibz.it</a> and <a href="mailto:leonardo.ricci@unibz.it">leonardo.ricci@unibz.it</a>
<b>Scientific sector of lecturer</b>	FIS/01
<b>Teaching language</b>	English
<b>Office hours</b>	During the lecture time span: Tuesday, 12.45-13:45
<b>Lecturing Assistant (if any)</b>	--
<b>Contact LA</b>	--
<b>Office hours LA</b>	--
<b>List of topics</b>	<ul style="list-style-type: none"> <li>• Discrete random variables and their distributions: probability; random variables; probability distributions; expected values.</li> <li>• Statistical Inference: tests of significance and p-values; Bayes' theorem; a short account on decision-making.</li> <li>• Correlation and regression.</li> <li>• Time series analysis: basic smoothing techniques (averaging methods, exponential smoothing techniques); short account on more advanced fitting techniques.</li> <li>• Dynamic systems and Markov chains: Markov processes, states, transition probabilities and matrices; remarkable applications.</li> </ul>
<b>Teaching format</b>	Frontal lectures and project work during the exercise hours.

<b>Learning outcomes</b>	Knowledge and understanding:
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	<ul style="list-style-type: none"> <li>• Thoroughly understand the scientific method of investigation.</li> <li>• Understand methods of mathematics and of statistics that support Information Technology and its applications.</li> </ul> <p>Applying knowledge and understanding:</p> <ul style="list-style-type: none"> <li>• Be able to design and execute experimental analyses on information systems or their components.</li> </ul> <p>Making judgments</p> <ul style="list-style-type: none"> <li>• Be able to work autonomously according to the own level of knowledge</li> </ul> <p>Communication skills</p> <ul style="list-style-type: none"> <li>• Be able to structure and write scientific documentation.</li> </ul> <p>Learning skills</p> <ul style="list-style-type: none"> <li>• Have developed learning capabilities to pursue further studies with a high degree of autonomy.</li> <li>• Be able to learn the innovative features of state-of-the-art technologies and information systems</li> </ul>
<b>Assessment</b>	Written final exam only [100 % of mark]. The exam consists of 4-6 exercises.
<b>Assessment language</b>	English
<b>Evaluation criteria and criteria for awarding marks</b>	Correctness of answers / calculations.
<b>Required readings</b>	<ol style="list-style-type: none"> <li>1. D. Freedman, R. Pisani, R. Purves, "Statistics" (International student edition, 4th edition), W.W. Norton &amp; Company, 2007;</li> <li>2. I. Miller, M. Miller, "John E. Freund's Mathematical Statistics with Applications" (7th Edition), Pearson;</li> <li>3. M. Baron, "Probability and Statistics for Computer Scientists" (1st edition), Chapman and Hall/CRC, 2006.</li> </ol>
<b>Supplementary readings</b>	--
<b>Software used</b>	--