

## SYLLABUS COURSE DESCRIPTION

<b>COURSE TITLE</b>	<b>Computer Systems Architecture</b>
<b>COURSE CODE</b>	76240
<b>SCIENTIFIC SECTOR</b>	INF/01
<b>DEGREE</b>	Bachelor in Computer Science
<b>SEMESTER</b>	1st
<b>YEAR</b>	1st
<b>CREDITS</b>	6
<b>TOTAL LECTURING HOURS</b>	40
<b>TOTAL LAB HOURS</b>	20
<b>ATTENDANCE</b>	Attendance is not mandatory, but it is strongly recommended.
<b>PREREQUISITES</b>	
<b>COURSE PAGE</b>	<a href="https://ole.unibz.it/">https://ole.unibz.it/</a>
<b>SPECIFIC EDUCATIONAL OBJECTIVES</b>	<p>Type of course: "di base" for L-31          Scientific area: "Formazione informatica di base" for L-31          The goal of this course is to give students an understanding of:</p> <ul style="list-style-type: none"> <li>• the architecture and organization of modern computers;</li> <li>• the basic of the circuit logic involved in their construction;</li> <li>• the foundation of their programming in assembly language.</li> </ul>
<b>LECTURER</b>	<a href="#">Nicola Gigante</a>
<b>SCIENTIFIC SECTOR OF THE LECTURER</b>	INF/01
<b>TEACHING LANGUAGE</b>	<b>Italian</b>
<b>OFFICE HOURS</b>	Tuesday 15:00-17:00 <a href="mailto:nicola.gigante@unibz.it">nicola.gigante@unibz.it</a> Faculty of Computer Science, Piazza Domenicani 3, Office POS 2.01
<b>TEACHING ASSISTANT</b>	Nicola Gigante <a href="#">Enrico Franconi</a>
<b>OFFICE HOURS</b>	Friday 10:00-12:00 <a href="mailto:enrico.franconi@unibz.it">enrico.franconi@unibz.it</a>

	Piazza Domenicani, 3 –Faculty of Computer Science, Piazza Domenicani 3, Office POS 3.06,
<b>LIST OF TOPICS COVERED</b>	<ul style="list-style-type: none"> <li>• Computer systems organization: processors, primary memory, secondary memory, input/output and parallel architectures.</li> <li>• Boolean algebra and gates: Boolean algebra, gates, implementation of Boolean functions, circuit equivalence.</li> <li>• Digital circuits: arithmetic circuits, clocks, memory, CPU chips, buses.</li> <li>• Microarchitecture: design of the microarchitecture level, performance optimization.</li> <li>• Introduction to Instruction Set: data types, instruction formats, addressing, instruction types, flow of control.</li> <li>• Introduction to Assembly language</li> </ul>
<b>TEACHING FORMAT</b>	This course will be delivered through a combination of formal lectures and labs.

<b>LEARNING OUTCOMES</b>	<p><b>Knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Understand the key principles, the structures and the organization of computer systems;</li> <li>• Know the fundamental principles of programming.</li> </ul> <p><b>Applying knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Be able to develop programs to interact with microcontrollers and the operating system of modern computers.</li> </ul> <p><b>Making judgments</b></p> <ul style="list-style-type: none"> <li>• Be able to collect and interpret useful data and to judge information systems and their applicability;</li> <li>• Be able to work autonomously according to the own level of knowledge and understanding.</li> </ul> <p><b>Communication skills</b></p> <ul style="list-style-type: none"> <li>• Be able to use one of the three languages English, Italian and German, and be able to use technical terms and communication appropriately.</li> </ul> <p><b>Ability to learn</b></p> <ul style="list-style-type: none"> <li>• Have developed learning capabilities to pursue further studies with some degree of autonomy;</li> <li>• Be able to follow the fast technological evolution and to learn cutting edge IT technologies and innovative aspects of last generation information systems.</li> </ul>
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<b>ASSESSMENT</b>	<p>Written exam: the assessment consists of:</p> <ul style="list-style-type: none"> <li>• theoretical questions and exercises (some exercises can be related to what was explained during the Lab)</li> </ul> <p>The aim of the written exam is to check the understanding of fundamental concepts and whether the candidates have also acquired detailed knowledge about computer systems architecture. This is done through open questions about both the theoretical content and the lab exercises. The score related to each part contributes to the final grade. Specifically, to pass the exam, the students must be obtained 18/30.</p>
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<b>ASSESSMENT LANGUAGE</b>	<b>Italian</b>
<b>EVALUATION CRITERIA AND CRITERIA FOR AWARDING MARKS</b>	<p>Theoretical questions (70%) and exercises related to what has been explained during the lab (30%).</p> <p>The written exam questions will be evaluated in terms of correctness and clarity.</p>
<b>REQUIRED READINGS</b>	<ul style="list-style-type: none"> <li>• S. Tanenbaum, Todd Austin, Architettura degli elaboratori. Un approccio strutturale (sesta edizione)</li> <li>• Additional material will be provided during the lessons and labs.</li> </ul> <p><a href="mailto:David.Gebhardi@unibz.it">David.Gebhardi@unibz.it</a></p> <p>Subject Librarian: David Gebhardi, <a href="mailto:David.Gebhardi@unibz.it">David.Gebhardi@unibz.it</a></p>
<b>SUPPLEMENTARY READINGS</b>	<p>Computer Architecture 6th Edition          A Quantitative Approach by John Hennessy David Patterson          for modern parallel architectures</p>
<b>SOFTWARE USED</b>	<p><i>C/C++ or Mplab.</i>  <a href="mailto:cs-tech@inf.unibz.it">cs-tech@inf.unibz.it</a></p>