



# UNIVERSITÀ DI PAVIA

Anno Accademico 2020/2021

## PRINCIPLES OF COMPUTER SCIENCE

Enrollment year	2020/2021
Academic year	2020/2021
Regulations	DM270
Academic discipline	ING-INF/05 (DATA PROCESSING SYSTEMS)
Department	DEPARTMENT OF ELECTRICAL, COMPUTER AND BIOMEDICAL ENGINEERING
Course	INDUSTRIAL ENGINEERING
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	1st semester (28/09/2020 - 22/01/2021)
ECTS	9
Lesson hours	68 lesson hours
Language	Italian
Activity type	WRITTEN TEST
Teacher	CUSANO CLAUDIO (titolare) - 9 ECTS
Prerequisites	=
Learning outcomes	<p>The aim of the course is to make the students aware of the fundamental principles of computer science.</p> <p>Students will be able to understand the role of hardware and software components in an information systems.</p> <p>Moreover, at the end of the course the students should be able to write programs in the C programming language.</p>
Course contents	<p>This course is divided in two parts: the first part is about the C programming language while the second gives an overview of computer science as a discipline.</p> <p>The first part addresses the main concepts about the C programming language (variables, expressions, control structures...). Programming</p>

	<p>techniques, methodologies and tools will be also shown. Finally, it will be given an overview of the main functionalities provided by the C standard library.</p> <p>The second part will cover the following topics:</p> <ul style="list-style-type: none"> <li>- Representation of the information: integers and rational numbers; representation of negative numbers; fixed and floating point representations. Encoding of text and multimedia.</li> <li>- Computer architecture: Von Neumann's architecture; machine language; instruction execution cycle; memory devices and input/output devices.</li> <li>- Algorithms: definitions and properties; analysis of their correctness and complexity. Search and sorting algorithms.</li> <li>- Data structures: arrays, lists and binary search trees.</li> <li>- Operating systems and networking: management of processes and memory.</li> <li>- Brief overview of computation theory.</li> </ul>
<b>Teaching methods</b>	<p>Lectures (hours/year in lecture theatre): 68  Practical class (hours/year in lecture theatre): 0  Practicals / Workshops (hours/year in lecture theatre): 0</p>
<b>Reccomended or required readings</b>	<p>J. Glenn Brookshear. Computer Science: An Overview</p>
<b>Assessment methods</b>	<p>Two independent tests about the two main parts of the course.</p>
<b>Further information</b>	<p>Two independent tests about the two main parts of the course.</p>
<b>Sustainable development goals - Agenda 2030</b>	<p><a href="#">\$lbl legenda sviluppo sostenibile</a></p>