UNIVERSITÀ DI PAVIA

Anno Accademico 2020/2021

COMPUTER ARCHITECTURE

Enrollment year	2018/2019
Academic year	2020/2021
Regulations	DM270
Academic discipline	ING-INF/05 (DATA PROCESSING SYSTEMS)
Department	DEPARTMENT OF ELECTRICAL,COMPUTER AND BIOMEDICAL ENGINEERING
Course	BIOENGINEERING
Curriculum	PERCORSO COMUNE
Year of study	3°
Period	2nd semester (08/03/2021 - 14/06/2021)
ECTS	6
Lesson hours	50 lesson hours
Language	Italian
Activity type	WRITTEN AND ORAL TEST
Teacher	DANESE GIOVANNI (titolare) - 6 ECTS
Prerequisites	The topics of the course presupposes the knowledge of the concepts faced during the "fondamenti di informatica" course.
Learning outcomes	The teaching introduces the architecture of microprocessors and microcomputers, explaining its behavior by the usage of the Assembly Language. The teaching aims to emphasize the relations among the computer architecture, the microelectronics techniques and the base software organization. The practice lessons relate to the Assembly Language and the tuning of simple programs in a dedicated development environment.
Course contents	Computer Architecture Module: Architecture of a processor Functional blocks: memory, arithmetic unit, input and output units, control unit. Unit interconnection: bus. Interruption. Hardware e software.

	Functional blocks flow chart for a processor. Instruction flow and data flow. Information representation, relative numbers, conversion between representations, real numbers. Aritmetic unit, Ripple Carry adder and Carry Look Ahead adder. Assembly language Addressing techniques and Assembly instructions. Interrupts management. Assembler, linker-loader, developmente environment and simulator. Examples.
Teaching methods	Lectures (hours/year in lecture theatre): 37.5 Practical class (hours/year in lecture theatre): 12.5 Practicals / Workshops (hours/year in lecture theatre): 0
Reccomended or required readings	Patterson D.A., Hennessy J.L. Computer organization and design: the hardware-software interface. Morgan Kaufmann Publishers, 2014, V edition.
Assessment methods	The exam of the Computer Architecture module consists of a written test followed by a practical exercise based on assembly programming, validation and debugging.
Further information	
Sustainable development goals - Agenda 2030	$lbl_legenda_sviluppo_sostenibile