Syllabus

Descrizione corso

Titolo insegnamento	Computer Systems Architecture
Codice insegnamento	76240
Titolo aggiuntivo	
Settore Scientifico-Disciplinare	INFO-01/A
Lingua	Inglese
Corso di Studio	Corso di laurea in Informatica
Altri Corsi di Studio (mutuati)	
Docenti	prof. Enrico Franconi, franconi@inf.unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/943
Assistente	
Semestre	Primo semestre
Anno/i di corso	1
CFU	6
Ore didattica frontale	40
Ore di laboratorio	20
Ore di studio individuale	90
Ore di ricevimento previste	18
Sintesi contenuti	• Computer abstractions and technology • Bits, datatypes, and arithmetic in computer systems • Gates, circuits, and combinational logic • Sequential logic • A simple processor architecture: the CPU • Instruction sets and assembly language
Argomenti dell'insegnamento	This course belongs to the type "Attività formative di base" and the subject area is "Informatica".

	The goal of this course is to give students an understanding of the architecture and organization of modern computers, the basic of the circuit logic involved in their construction, and the foundation of their programming in assembly language.
Parole chiave	Computer Architecture, Digital Logic, Assembly Language, Processor Design, Data Representation
Prerequisiti	There are no prerequisites for this course.
Insegnamenti propedeutici	
Modalità di insegnamento	The course includes frontal lectures and lab sessions.
Obbligo di frequenza	Attendance is not mandatory but strongly recommended.
Obiettivi formativi specifici e risultati di apprendimento attesi	Knowledge and Understanding - D1.19: Understand the key principles, the structures and the organization of computer systems Applying knowledge and understanding - D2.4: Ability to develop programs to interact with microcontrollers and the operating systems of modern computers. Ability to make judgments - D3.1: Be able to collect and interpret useful data and to judge information systems and their applicability. - D3.2: Be able to work autonomously according to the own level of knowledge and understanding. Communication skills - D4.1: Be able to use one of the three languages English, Italian and German, and be able to use technical terms and communication appropriately. Learning skills - D5.1: Have developed learning capabilities to pursue further studies with a high degree of autonomy. - D5.3: Be able to follow the fast technological evolution and to learn cutting edge IT technologies and innovative aspects of last generation information systems.
Obiettivi formativi specifici e risultati di apprendimento attesi (ulteriori info.)	

Modalità di esame	Written exam: a final written exam with exercises, and verification and transfer of knowledge questions; there will be no pure theoretical questions.
Criteri di valutazione	The exam questions will be evaluated based on correctness of answers, clarity of answers, ability to summarize, evaluate, and establish relationships between topics, skills in critical thinking, ability to summarize in own words.
Bibliografia obbligatoria	• Introduction to Computing Systems: From bits & gates to C & beyond. By Yale N. Patt and Sanjay J. Patel. McGraw Hill. • Principles of Computer Hardware. By Alan Clements. Oxford University Press. • The Architecture of Computer Hardware, Systems Software, and Networking - An Information Technology Approach by Irv Englander and Wilson Won. Wiley.
Bibliografia facoltativa	Additional material will be provided during lectures/labs.
Altre informazioni	- Digital Trainer (digital trainer box) - https://github.com/hneemann/Digital (digital circuits simulator) - https://peterhigginson.co.uk/lmc/ (Little Man Computer simulator)
Obiettivi di Sviluppo Sostenibile (SDGs)	Istruzione di qualità