

SYLLABUS

COURSE DESCRIPTION

COURSE TITLE	Architecture of Digital Systems
COURSE CODE	75006
SCIENTIFIC SECTOR	ING-INF/01
DEGREE	Bachelor in Computer Science and Engineering
SEMESTER	1st Semester
YEAR	1st
CREDITS	8

TOTAL LECTURING HOURS	48
TOTAL LAB HOURS	24
PREREQUISITES	None
COURSE PAGE	https://ole.unibz.it/

SPECIFIC EDUCATIONAL OBJECTIVES	<ul style="list-style-type: none"> Type of course: "affine o integrative" for L-31 and "caratterizzanti" for L-08 Scientific area: "discipline informatiche" for L-31 and "formazione interdisciplinare" for L-8 <p>The goal of this course is to give students an understanding of the architecture and organization of modern computers, together with the basics of the circuit logic involved in their construction on the one hand, and with the foundations of their programming in assembly language on the other hand.</p>
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LECTURER	Andrea Janes
SCIENTIFIC SECTOR OF THE LECTURER	ING-INF/01
TEACHING LANGUAGE	English
OFFICE HOURS	Room 1.09, ajanes@unibz.it , +39 0471 016132; during the lecture time span, Monday 16:00 - 18:00, arrange beforehand by email.
TEACHING ASSISTANT	Danila Piatov, Syed Mehdi Abbas Rizvi
OFFICE HOURS	Room 1.04, arrange beforehand by email.
LIST OF TOPICS COVERED	<ul style="list-style-type: none"> Boolean logic Digital circuits Computer abstractions and technology Performance of computer systems Instruction sets Arithmetic in computer systems The processor Assembly language

TEACHING FORMAT	Frontal lectures and exercises in the lab
LEARNING OUTCOMES	<p>Knowledge and understanding:</p> <ul style="list-style-type: none"> understand the key principles, the structures and the organization of computer systems <p>Applying knowledge and understanding:</p> <ul style="list-style-type: none"> ability to apply the knowledge and understanding to the design of hardware and/or software which meets specified requirements <p>Making judgments</p> <ul style="list-style-type: none"> be able to work autonomously according to the own level of knowledge <p>Communication skills</p> <ul style="list-style-type: none"> be able to explain a project activity or a scientific study, also to non-experts <p>Learning skills</p> <ul style="list-style-type: none"> be able to learn the innovative features of state-of-the-art technologies and information systems
ASSESSMENT	During all parts of the assessment, students have to demonstrate their knowledge and understanding of the contents of the syllabus. During the lab, students have to demonstrate their ability to solve small problems using the Assembly language. The oral exam will be assessed based on the clarity of answers, mastery of language (also with respect to teaching language), ability to summarize, evaluate, and establish relationships between topics. The project activity will be assessed based on the demonstrated ability to apply the knowledge of the lecture, creativity, skills in critical thinking, and the ability to summarize theoretical content in own words.
ASSESSMENT LANGUAGE	English
EVALUATION CRITERIA AND CRITERIA FOR AWARDING MARKS	<p>The assessment is based on a final written exam, the lab exercises, and a midterm exam. For students who participate in the midterm and the lab, the final mark will be a weighted average of the midterm mark (33%), the lab mark (33%), and the final written exam (34%).</p> <p>Students that do not take the midterm and/or do not follow the lab, during the final exam have to answer a set of additional questions that count as the midterm mark (33%) and/or have to solve a set of lab-like exercises that count as the lab mark (33%).</p> <p>In case of a positive mark of the midterm and/or the lab exercises, the mark/s will count for all 3 regular exam sessions.</p>
REQUIRED READINGS	Lecture notes that will be distributed during the lecturing hours
SUPPLEMENTARY READINGS	Tannenbaum, A. S., Austing, T.: Structured Computer Organization (6th Edition), Prentice Hall, 2012
SOFTWARE USED	MARS MIPS simulator (http://courses.missouristate.edu/kenvollmar/mars/) http://www.neuroproductions.be/logic-lab/