NAME OF THE COURSE	Computer Architecture					
Code	PMIC10	Year of study	UGU-1			
Course teacher	prof.dr. sc. Andrina Granić	Credits (ECTS)	6,0			
Associate teachers	dr. sc. Jelena Nakić	Type of instruction (number of hours)	L	S	E	F
			30		30	
Status of the course	mandatory	Percentage of application of e-learning				

COURSE DESCRIPTION	
Course objectives	Acquisition of fundamental knowledge related to the computer architecture. Gaining theoretical knowledge and practical experience in essential aspects of computer system development, basic functional units and their roles, fetch, interpretation and execution of instructions, control and dataflow. Acquisition of knowledge related to contemporary and future trends in technology and computer architecture design.
Course enrolment requirements and entry competences required for the course	No formal prerequisites.
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. To name and explain fundamental terminology and concepts related to the essential roles and principles of digital computer systems. 2. To identify and critically evaluate functional units of computer system, to understand and explain main functions, control and dataflow. 3. To apply knowledge and skills of machine programming (assembler). 4. To analyze, describe and classify basic and complex logic circuits. 5. To describe a model of simple architecture microprocessor. 6. To apply basic principles of machine/assembly programming to simple microprocessor architecture.
Course content broken down in detail by weekly class schedule (syllabus)	Lectures: 1. Brief chronology of computer system development (2h) 2. Turing machine, von Neumann computer, program-stored computer (4h) 3. Generations of computer architecture (4h) 4. Microcomputers (2h) 5. Microprocessors (2h) 6. Instructions and addressing modes (4h) 7. Memory hierarchy, input-output, buses (4h) 8. CISC and RISC processors (2h) 9. Advanced computer architectures, multiprocessing systems, multicore processors(4h) 10. Trends in technology and computer architecture, future technologies (2h) Laboratory exercises: 1. Numeral systems. Conversion of numbers from one system to another. Arithmetic in other numeral systems. 2. Logical circuits. 3. Basic theorems of Boolean algebra. Forms of logical functions. Minterms and maxterms. 4. Algebraic method of minimization. Minimization by Karnaugh maps. 5. Minimization of incompletely specified functions. Conversion of function into NAND/NOR form. 6. Combinational logical circuits. 7. Sequential logical circuits.

	8. Midterm exam. 9. Microprocessor M6800 model. Programming model. 10. Addressing modes. 11. Program as a sequence of instructions. 12. Data transfer instructions. 13. Arithmetical and logical instructions. 14. Control instructions. 15. Final exam.

Format of instruction		
	☒ lectures ☐ seminars and workshops ☐ exercises ☐ on line in entirety ☒ partial e-learning ☐ field work	☐ independent assignments ☐ multimedia ☒ laboratory ☐ work with mentor ☐ homework assignments ☐

Student responsibilities	Active participation in all activities: lectures, consultations, practical work in the laboratory, final oral exam

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*

Name	Ects	Name	Ects	Name	Ects
Class attendance	1	Research		Experimental work	
Oral exam	1	Report		Homework assignments	0,5
Seminar essay		Essay		laboratory work	1
Tests	1	Practical training	1		
Written exam	0,5	Project			

Grading and evaluating student work in class and at the final exam	Two partial/written Exams (25% + 25%) or Written Exam (50%) Final/Oral Exam (50%).

Required literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
S. Ribarić: Građa računala: arhitektura i organizacija računarskih sustava, Algebra, Zagreb, 2011.	15	
U. Peruško: Digitalna elektronika, logičko i električko projektiranje, Third Edition, Školska knjiga, Zagreb, 1996	10	

Optional literature (at the time of submission of study programme proposal)	A. S. Tanenbaum: Structured Computer Organization. Prentice-Hall International, Third Edition, 1990. J. L. Hennessy and D. Patterson: Computer Architecture, A Quantitative Approach, Morgan Kaufmann Publication, Third Edition, 2003. all course material is available on-line

Quality assurance methods that ensure the acquisition of exit competences	student discussion, anonymous student evaluation questionnaire, student success rate, self-assessment
Other (as the proposer wishes to add)	