1.1. Course description

NAME OF THE COURSE	Computer systems					
Code	PMIC25	Year of study	UGU-3			
Course teacher		Credits (ECTS)	8,0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			45		45	
Status of the course	mandatory	Percentage of application of e-learning	25			
COURSE DESCRIPTION						
Course objectives	The aim of the course is to acquaint students with basic concepts related to computer architecture, operating systems and computer networks. This includes acquiring basic knowledge of processor and computer system architecture and the role of the operating system in managing those systems. They would also be introduced to the basics of computer networks, network protocols, and different network models and architectures.					
Course enrolment requirements and entry competences required for the course	Enrolled course: Introduction to Computer Science Basic computer skills					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Name and explain basic terms and concepts related to digital computer systems. Identify the various functional components of a computer system, understand their functions and the flow of instructions and data Understand the roles of the control system in the computer and briefly explain the basic concepts related to the operating system (process management, scheduling, memory, file system, I/O) Describe the basic mechanisms of information/data transmission over the network State and explain the purpose of the ISO-OSI model and explain the details of individual levels of the model					
Course content broken down in detail by weekly class schedule (syllabus)	Lectures: 1. Development of computing machines, historical models and generations of computers 2. Simplified microprocessor model 3. CPU instructions, addressing, dataflow 4. Memory system and architecture 5. Advanced processor architectures - an overview of modern trends 6. Operating systems basics 7. Processes and threads 8. Scheduling, mutual exclusion 9. Memory management, virtual memory 10. File system 11. Computer networks basics (division, topologies) 12. Network architectures 13. Network layer - TCP / IP 14. Transfer layer - TCP, UDP 15. Computer network application layer Exercises: 1. Boolean algebra, logical functions and minimization 2. Logic circuits - logic gates and realization of functions 3. Sequential logic circuits 4. Writing processor commands - assembler					

	5. UNIX shell basics 6. File system 7. Access rights, executing commands from the shell 8. Write and run shell scripts 9. Introduction to computer networks - types of devices, cables, connections 10. Network protocols 11. IPv4 addresses 12. IPv4 subnet 13. Computer network security						
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	Lecture and laboratory attendance, active participation in course activities, homework and project realization, final 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	3	Research		Experimental work	
	Oral exam	0,5	Report		Homework assignments	
	Seminar essay		Essay			
	Tests	1	Practical training	3		
	Written exam	0,5	Project			

Grading and evaluating student work in class and at the final exam	Attendance/Participation (10%) Project (30%) Final/Oral Exam (60%)

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	Silberschatz, Galvin, Gagne: „Operating System Concepts", 8th edition, Wiley (2008)	0	
	J. L. Hennessy and D. Patterson: „Computer Architecture, A Quantitative Approach", Morgan Kaufmann; 5th edition	0	
	A.S.Tanenbaum, "Computer Networks", 5th Ed., Prentice-Hall, 2011	0	

Optional literature (at the time of submission of study programme proposal)	Online course materials
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)	