Study program:	Technics and Informatics, Electrical and Computer Engineering, Information Technologies, Engineering Management
Course title:	Computer Architecture
Level of study:	Undergraduate studies
Lecturer(s):	Ranđić S. Siniša
Language:	English
Type of Course:	Obligatory, Obligatory, Obligatory, Elective
Semester:	Spring
ECTS:	6
Prerequisities:	-

Course objective

Operation modes of classic von Neumann computer. Operation types and data types and structures. Memory subsystem hierarchy and management. Input/output subsystem and data transfer within computer and between computer and surrounding. Getting to know aspects of computer architecture needed to acquire knowledge from other areas of computer science, such as computer networks and operating systems.

Course learning outcomes

Student can:
- Describe classic von Neumann machine and its basic functional units;
- Identify instruction execution modes and their machine language and assembly language representation;
- Describe different instruction formats;
- Write simple machine programs;
- Identify main memory technologies;
- Describe principles of memory hierarchy and management;
- Describe cache and virtual memory principles;
- Describe usage of interrupts for programmed input/output and data transfer;
- Identify different types of buses in computer system.

Course contents

Theoretical classes

Basic organization of von Neumann machine.

Control unit; fetch-decode-execute cycle.

Instruction sets and types (data manipulation, control, input/output). Instruction formats. Addressing modes. Input/output operations and interrupts.

Subprograms calling and return mechanism. Machine programming.

Memory systems and technologies. Memory hierarchy. Organization of main memory. Cache memory. Virtual memory.

Programmed input/output. Interrupt driven input/output. Buses and arbitration. Direct memory access.

Practical classes

Practical application and examination of gained knowledge through work with particular computer architectures and their simulators.

Literature:

1.	William Stallings, "Computer Organization and Architecture: Designing for Performance", 9th ed., Pearson, March 2012
2.	Jovan Đorđević, "Computer Architecture", Akademska misao, Belgrade, 2005
3.	
4.	
5.	

Number of active teaching hours

Lectures: 3	Practice: 2	Other: 0	Miscellaneous:	Study examination:

Teaching methods

Interactive teaching methods with practical demonstrations.

Assessment methods (maximum 100 points)

Exam prerequisites	points	Final exam	points
Activity during lectures	5	Written examination	20
Practical classes	15	Oral examination	20
Colloquiums	30		
Seminars	10		