Study program: Communication Technologies

Course title: Introduction to computer science

Professor/assistant: Miloš B. Stojanović

Type of course: compulsory

ECTS credits: none

Pre-requisites:

Aims of the course:
Introducing students with the mathematical basics of Modern computer technologies, basics of combinational and sequential circuits, as well as the basics of computers and their hardware.

Learning outcomes:
Students are able to: analyze, optimize and realize bool functions, use basic combinational and sequential circuits for the realization of complex logical and arithmetic functions as well as perform the design and synthesis of finite state machines.

Syllabus

Theoretical part
Introduction and a brief history of computing. Basics of Computing: Numerical systems (decade, binary, octal, hexadecimal) and number conversions between different systems. Presentation of numerical and non-numerical data: text, sound, images, video. Bool's algebra, logical circuits. Bool functions: definition, representation, minimization. Combination networks, synthesis of combination networks. Sequential networks, synthesis of sequential networks (finite state machines). Computer hardware. Computer architecture. Central Processor Architecture. CPU instructions. Input / output devices.

Practical part
Analysis, optimization and realization of bool functions, realization of complex logical and arithmetic functions using combinational and sequential circuits. Design and synthesis of finite state machines.

Literature
1.B. Lazić, Osnovi računarske tehnike, Akademska misao, Beograd, 2006.
2.Ž. Tošić, Osnovi računarske tehnike, Čuperak plavi, Niš, 1994.
3.W. Stallings, Organizacija i arhitektura računara, CET, 2013.

Number of active classes 60			Other forms of teaching:
Lectures: 30	Practical classes: 30	Research work:	

Teaching methods
Theoretical and practical teaching in combination with interactive teaching with practical problem solving.

Grading system (maximum 100 points), **grading scale** from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.

Pre-exam obligations	points	Final exam	points
activity during theoretical lectures	**10**	written exam	**30**
practical training	**40**	oral exam	
colloquium(s)/seminar papers	**20**		
Sum	**70**	**Sum**	**30**