Faculty of Electrical Engineering / POWER SYSTEMS AND AUTOMATIC CONTROL / Computer programming I

Course:	Computer programming I			
Course ID	**Course status**	**Semester**	**ECTS credits**	**Lessons** (Lessons+Exercises+Laboratory)
8654	Mandatory	3	6	2+1+2
Programs	POWER SYSTEMS AND AUTOMATIC CONTROL			
Prerequisites	None			
Aims	To familiarize students with basics of structural programming languages, with accent put on control-flow statements, functions, structures, operations with files, as well as elements of complex (linked) data types.			
Learning outcomes	After passing this exam, student will be able to: 1. Create a C program that corresponds to a given algorithmic scheme. 2. Create a C program that includes the input, processing and printing of data. 3. Properly use the flow control structures in the C programming language (if selection, while and for loops). 4. Explain the difference between the basic algorithms for searching and sorting arrays. 5. Explain the characteristics of complex data types - lists, graphs and trees.			
Lecturer / Teaching assistant	Ph.D. Prof. dr Slobodan Đukanović – teacher M.Sc. Nikola Bulatović – assistant M.Sc. Stefan Vujović – assistant			
Methodology	Lectures, exercises and laboratory exercises, individual work on practical tasks, consultations.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Introduction. Development of program languages.			
I week exercises	Introduction to CodeBlocks programming environment.			
II week lectures	Programming terminology.			
II week exercises	Elementary programs in the C programming language.			
III week lectures	Control-flow statements. Elementary data types.			
III week exercises	Control-flow statements. Elementary data types.			
IV week lectures	Arrays and strings. Program structure in C programming language. Input and output.			
IV week exercises	Work with arrays and strings			
V week lectures	Pointers. Functions. Call by value and by reference.			
V week exercises	Work with pointers and functions.			
VI week lectures	First test			
VI week exercises	First test			
VII week lectures	Recursion. Function as an argument of a function. Static and global variables.			
VII week exercises	Work with recursive functions, static and global variables.			
VIII week lectures	Files. Structures, unions and enumerations.			
VIII week exercises	Work with files and structures.			
IX week lectures	Program libraries.			
IX week exercises	Work with program libraries.			
X week lectures	Lists			
X week exercises	Work with lists			
XI week lectures	Second test			
XI week exercises	Second test			
XII week lectures	Graph – basics.			
XII week exercises	Work with graphs.			
XIII week lectures	Trees. Binary trees.			
XIII week exercises	Work with binary trees.			

XIV week lectures	Test correction
XIV week exercises	Test correction
XV week lectures	Final exam
XV week exercises	Final exam
Student workload	Per week: Working hours: 6 credits x 40/30 = 8 hours. Working hours structure: 2 hours for teaching 1 hour for exercises 2 hour for laboratory exercises 3 hours for individual work, including consultations. Per semester: Teaching and the final exam: (8 hours) x 16 = 128 hours. Necessary preparation (before semester): 2 x (8 hours) = 16 hours. Total work hours for the course: 6 x 30 hours = 180 hours Additional hours for preparing correction of the final exam, including the exam taking: up to 36 hours. Work hours structure: 128 hours (lectures) + 16 hours (preparation) + 36 hours (additional work)

Per week	**Per semester**
6 credits x 40/30=8 hours and 0 minuts 2 sat(a) theoretical classes 2 sat(a) practical classes 1 excercises **3 hour(s) i 0 minuts** of independent work, including consultations	Classes and final exam: **8 hour(s) i 0 minuts x 16 =128 hour(s) i 0 minuts** Necessary preparation before the beginning of the semester (administration, registration, certification): **8 hour(s) i 0 minuts x 2 =16 hour(s) i 0 minuts** Total workload for the subject: **6 x 30=180 hour(s)** Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) **36 hour(s) i 0 minuts** Workload structure: **128 hour(s) i 0 minuts (cources), 16 hour(s) i 0 minuts (preparation), 36 hour(s) i 0 minuts (additional work)**
Student obligations	Lessons attendance is mandatory for students, as well as doing home and laboratory exercises and test.
Consultations	
Literature	S. Djukanović, I. Djurović, and V. Popović-Bugarin, Programski jezik C sa zbirkom urađenih zadataka, Narodna knjiga, Podgorica, 2018. B. W. Kernighan, D. M. Ritchie, Programski jezik C, Savremena administracija, Beograd, 1992.
Examination methods	- Laboratory exercises carry 10 points. - Test carries 40 points. - Final exam carries 50 points. - Oral exam (optional) Student gets the passing grade by collecting 50 points at least.
Special remarks	
Comment	

Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points