Specification for the book of courses

Study program	Electrical Engineering and Computer Science		
Module	Common		
Type and level of studies	Undergraduate Academic Studies		
The name of the course	Fundamentals of Algorithms and Programming		
Lecturer (for lectures)	Janković S. Dragan, Predić B. Bratislav, Ćirić M. Vladimir		
Lecturer/associate (for exercises)	Radmanović M. Miloš, Veljković Ž. Nataša, Milenković M. Aleksandar, Đorđević Z. Dušan, Puflović M. Darko, Veljanovski T. Marija		
Lecturer/associate (for OFE)	Radmanović M. Miloš, Veljković Ž. Nataša, Milenković M. Aleksandar, Đorđević Z. Dušan, Puflović M. Darko, Veljanovski T. Marija		
Number of ECTS	7	**Course status (obligatory/elective)**	Obligatory
Prerequisites			
Course objectives	To enable students to acquire knowledge of algorithmic problem solving and structured programming. To introduce basic data types, basic programing structures, and programming in language C.		
Course outcomes	At the end of the course the student will be able to understand the algorithms and algoritmic representations, and to solve simple problems algorithmically. Students will be able to implement algorithmic solution to the problem in the programming language C.		
Course outline			
Theoretical teaching	Algorithms, basic programming concepts and different algorithms representations. The graphical representation of algorithms. Control structures. Nested control structures. Types and data structures. The basic data types. Structured data types: linear, nonlinear. Examples of algorithms. Programming language C. Phase in the development of C programs. The structure of the program. Data Types in C. Constants. Operators. Operators priority. The structure of C and the main function. Standard input and output. Flow control. Arrays and matrices. Decomposition and functions in the C-in. Functions and parameters. The parameters of the function main. Recursive functions. Standard C libraries. Derived data types: pointers, structures, nested structures, self-referencing structures, unions. Dynamic memory allocation. Preprocessor directives. Memory class identifiers. Strings. Arrays of pointers, a matrix of strings. Input, output. Files. Text and binary file types.		
Practical teaching (exercises, OFE, study and research	Programming in C. Working with C compilers and debugers. Variables and expressions. Flow control. Mathematical calculations. Arrays and strings. Multidimensional arrays. Functions. Files. Practical examples.		
Textbooks/references			
1	Kernighan, Brian W., and Dennis M. Ritchie. The C programming language. 2006.		
2	Grupa autora, „Algoritmi i programiranje: zbirka rešenih zadataka na programskom jeziku C“, Zbirka rešenih zadataka, Elektronski fakultet, Niš, 2012,		
3	L.Kraus, Programski jezik C sa rešenim zadacima, Akademska misao, Beograd 2006		
4	L.Kraus, Rešeni zadaci iz programskog jezika C, Akademska misao, Beograd 2005.		
5			

Number of classes of active education per week during semester/trimester/year

Lectures	Exercises	OFE	Study and research work	Other classes
3	2	1	0	0

Teaching methods	Lectures. Lab. exercises. Homeworks, and projects, student seminars (presentation and discussion of students' work).

Grade (maximum number of points 100)

Pre-exam duties	Points	Final exam	Points
Activity during lectures	20	**Written exam**	40
Exercises		**Oral exam**	
Colloquia	40		
Projects			