Study program: Information Technology	
Course title: PROGRAMMING LANGUAGES	
Teacher(s): Vanja V. Luković, Marija D. Blagojević	
Course status: mandatory	
Number of ECTS credits: 6	
Prerequisite courses: none	

Course objectives

Familiarity with structured languages and complete mastery of the C language as a general-purpose language and its advantages over other languages. Pointers, dynamic memory allocation, bit operations. Introduction to structures, arrays, lists and working with files. Familiarity with classes and objects, as the basis of object-oriented programming.

Learning outcomes

The student knows how to use all the advantages of the C language as a general-purpose language and one of the best structured languages. It has full command of pointers and functions. Using bitwise operations, dynamic memory allocation, arrays, structures, lists and files. Student is good at controlling the flow of programs and applies programming logic in solving tasks and in everyday life. Knows the concept of object-oriented approach, and uses classes and objects in the programming language C++.

Content of the course

Theoretical teaching

Language C and C++. Detailed description of language basics, program structure. Data types. Input/output data conversion. Operators and expressions, conversions and order of calculation. Control structures: sequence, selections, cycles and jumps. Pointers and arrays: addresses and pointers; address arithmetic; dynamic memory allocation. Program modularization (functions), argument transfer mechanism. Recursive functions, function pointers, main program arguments, library functions. Visibility, binding and lifetime of variables. Defining and using structures, unions and lists. Definition of files and functions for working with files (opening, closing, input/output). Preprocessor Commands. Basics of object-oriented concept: abstraction, encapsulation and classification. Class definition, attributes, member functions, and objects.

Practical teaching

Creating programs in the C language that include program flow control, functions, arrays, structures, files. Creating programs in C++ using objects and classes. Determining how to execute the program. Testing the program.

Literature

[1] Kraus L., Programski jezik C sa rešenim zadacima, Akademska misao, Beograd, 2014, ISBN 978-86-7466-511-4.

[2] Kraus L., Programski jezik C++ sa rešenim zadacima (C++), Akademska misao, Beograd, 2015, ISBN 978-86-7466-582-4.

[3] Urošević V., Programski jezik C, Udžbenik, Tehnički fakultet, Čačak, 2008, ISBN 978-86-7776-068-7.

[4] Kupusinac, A. Programski jezik C++, FTN Novi Sad, 2020. ISBN - 978-86-6022-257-4

[5] Harvey Deitel, Paul Deitel, C How to Program, eBook, Global Edition , Cambridge University Press, 2016, ISBN: 978129211098

[6] Bjarne Stroustrup, The C++Programming Language, 2013, ISBN 978-0-321-56384-2

[7] Kunal Pimparkhede, Computer programming with C++, Cambridge University Press, 2017, ISBN: 9781316506806

Number of active teaching classes: 4	Theoretical teaching: 2	Practical teaching: 2

Teaching methods

Realization of lectures and exercises according to the model of interactive teaching (teaching methods: popular lecture, discussion, methods of practical work, workshops); activated forms of learning: verbal meaningful receptive learning, discovery learning, cooperative learning, practical learning.

Evaluation of knowledge (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
Activities during teaching process	10	Final exam (written):	70
Practical teaching	/	Final exam (oral):	/
Colloquium	20		
Practical teaching	/		