



Country BULGARIA	Institution Vasil Levski National Military University	Module Programming languages (C++)	ECTS 5.0
Service ICT Languages English, Bulgarian	Minimum Qualification for Lecturers <ul style="list-style-type: none"> English: Common European Framework of Reference for Languages (CEFR) Level B2 or NATO STANAG 6001 Level 2. Fundamentals of Computer Programming. Computer science. Programming languages (C++) 		
Prerequisites for international participants: <ul style="list-style-type: none"> English: Common European Framework of Reference for Languages (CEFR) Level B1 or NATO STANAG Level 2. 3rd year of national (military) higher education. Knowledge of Object Oriented Programming with C++. 		Goal of the Module: <ul style="list-style-type: none"> To present different computer languages and learn one To learn basic data structures, functions, strings and other elements of code writing. To write and execute programs with the programming language C++. To deep study programming, develop algorithmic thinking and then add technological knowledge regarding the C++ language. Iteration and recursion. 	

Learning outcomes	Knowledge	<ul style="list-style-type: none"> basic coding skills, using the programming language C++ and the development environment Visual Studio. study a software application. functional programming with C++ base concepts when working with methods.
	Skills	<ul style="list-style-type: none"> Write programs with language C++ and develop projects To search and to fix mistakes. create console based programs. practical skills which can use in any future training in programming and software development.
	Competences	<ul style="list-style-type: none"> write and execute programs with the programming language C++ in Visual Studio. define, invoke and use methods in C++, how to take and pass parameters and to return values. Code writing and solving problems. algorithmic thinking.
Verification of learning outcomes		
<ul style="list-style-type: none"> Observation: Throughout the course students are to accomplish different practical tasks individually or in teams. This course has two chapters. During the tasks students are to be evaluated for competences. Test: At the end of each chapter, the students have to accomplish specific practical tasks, which include usage of software instruments and techniques learned throughout the course. 		



Module Details		
Study topics	class hours	Details
Chapter I "Fundamentals of Computer Programming with C++"		
Simple Conditional Statements	15	<ul style="list-style-type: none">• Introduction to Programming. Primitive Types and Variables. – 4 hours• Console Input and Output. Operators and Expressions. – 4 hours• Conditional operators – 4 hours• Strings – 4 hours
Programming Principles	16	<ul style="list-style-type: none">• Loops-for, while, do...while. – 6 hours• Arrays. - 6 hours• Arrays example – 4 hours
Chapter II "Creating and Using Objects"		
Basics of Computer Programming with C++	14	<ul style="list-style-type: none">• Iteration -4 hours• Functions. – 6 hours• Numeral Systems. Recursion – 6 hours
Practical Exam Preparation	15	<ul style="list-style-type: none">• Practical Problems for Programming Exam 1. - 4 hours• Practical Problems for Programming Exam 2. - 4 hours• Practical Problems for Programming Exam.3 - 4 hours• Practical Exam Preparation . - 3 hours
Additional hours to increase the learning outcomes		
Self-Study	30	<ul style="list-style-type: none">• Enhancing knowledge by Comparison different computer language standards.• Reflection of the topics issued.
Total	60	Lections: 30 Practice: 30

This study course description is created and revised at "Programming languages (C++)" Department and accepted at Faculty council.

Developed by:

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REFERENCES:

1. Stanley B. Lippmann, "C++ Primer (5th Edition)", Addison-Wesley, 2019.
2. John Paul Mueller, "C++ All-in-One For Dummies", 2014, 978-1118823781
3. Tony Gaddis, "Starting Out with C++ from Control Structures to Objects plus", Addison-Wesley Professional, 2014, 978-0133796339
4. Robert Lafore, „Object Oriented Programming In C++", Sams; 4 Edition, 2008, 978-8131722824
5. Наков, Св. и колектив, "Основи на програмирането със C++." Faber Publishing, София, 2019, 978-619-00-0951-1