

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject An introduction to programming		Code 1010331511010334957
Field of study Information Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 1
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 30 Classes: - Laboratory: 30 Project/seminars: -		No. of credits 6
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art technical sciences		ECTS distribution (number and %) 6 100%
Responsible for subject / lecturer: dr Jerzy Bartoszek email: jerzy.bartoszek@put.poznan.pl tel. 61 665-3713, 61 665-2378 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	has basic knowledge from the high school [PRK 4]
2	Skills	can carry out tasks corresponding to the high school program [PRK 4]
3	Social competencies	has social skills resulting from the high school [PRK 4]
Assumptions and objectives of the course: Basic programming styles and programming concepts with examples of programs in C++/C.		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. knows and understands the advanced knowledge in the field of basic programming constructs, algorithms implementation, paradigms and programming styles, methods for verifying the correctness of programs, formal languages, compilers and platforms - [[K1_W05 (P6S_WG)]]		
Skills: 1. can use programming environments and platforms to write, execute and test simple coded programs in the imperative, object and declarative programming languages, use analytical, simulation and experimental methods for this purpose - [[K1_U10 (P6S_UW)]] 2. has skills to construct algorithms using basic algorithmic techniques, analyze their complexity and evaluate them - [[K1_U09 (P6S_UW)]]		
Social competencies: 1. is ready to critically evaluate his knowledge in the field of computer science and recognize the importance of knowledge in solving cognitive and practical problems in the area of computer science - [K1_K01 (P6S-KK)]]		
Assessment methods of study outcomes		
Lectures: written tests, pass criterion of 50% points. Laboratory: exercises tests and laboratory reports.		
Course description		

<p>Lectures: Introduction: the structure of simple programs, selected data types, arithmetical and logical operators, expressions, assignments, conditionals, loops, simple I/O statements, namespaces. An introduction to functions. Dynamic and static arrays. References. Structures and operator overloading. Text and binary files. Header files. Dynamic data structures. Selected elements of C. Course update 2017: Pointers and dynamic memory allocation: RAll, smart pointers, make_unique, make_shared. More about functions and their parameters: function overloading, passing arguments, templates, lambdas.</p> <p>Laboratory: An introduction: main, int, std::string, arithmetic operators, if/else, cin/cout, debugger. Simple types and Loops. SVN. Funtions. Dynamic and static arrays. References: std::vector, std::array, for_each, auto. Structures. Text and binary files: std::fstream, reinterpret_cast. Header files. Namespaces. Function and operator overloading. Pointers and dynamic memory allocation: RAll, smart pointers, make_unique, make_shared. Lambdas. Templates. How to read C programs?: printf, scanf, malloc, free, static and dynamic arrays.</p> <p>Teaching methods: lectures - with multimedia presentation, additional topics included in Moodle course laboratory - with multimedia presentation, additional topics included in Moodle course, used tools enable students to perform tasks at home</p>		
<p>Basic bibliography:</p> <ol style="list-style-type: none"> 1. Grębosz J., Symfonia C++ standard, Programowanie w języku C++ orientowane obiektowo, T.1 i 2 2. Stroustrup B., Programming - Principles and Practice Using C++ 3. http://en.cppreference.com/w/ 4. https://isocpp.org/faq 5. https://msdn.microsoft.com/en-us/library/3bstk3k5.aspx 6. http://www.cplusplus.com/ 		
<p>Additional bibliography:</p> <ol style="list-style-type: none"> 1. Banachowski L., Kreczmar A., Rytter W., Analysis of Algorithms and Data Structures, Addison Wesley, 1991 		
<p>Result of average student's workload</p>		
<p>Activity</p>		<p>Time (working hours)</p>
1. participation in lectures		30
2. participations in labs.		30
3. exam, consultation		10
4. preparation for labs., reports		45
5. preparation for tests and exam		35
<p>Student's workload</p>		
<p>Source of workload</p>	<p>hours</p>	<p>ECTS</p>
Total workload	150	6
Contact hours	75	3
Practical activities	75	3