

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Information Engineering		Code 1010324321010320388
Field of study Electrical Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 2
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 14 Classes: - Laboratory: 15 Project/seminars: -		No. of credits 4
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 Technical sciences		ECTS distribution (number and %) 4 100% 4 100%
Responsible for subject / lecturer: Prof. dr hab. inż. Wojciech Szelaĝ email: Wojciech.Szelaĝ@put.poznan.pl tel. 61 665 2116 Faculty of Electrical Engineering ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge concerning computer science, mathematics, computer hardware, Windows operating system and application software
2	Skills	Handling of computer, Windows operating system, and basic application software
3	Social competencies	Awareness of the necessity of broadening knowledge and skills. Ability to respect the rules being in force during lectures in a large group of people and ability to communicate with the nearest neighborhood and with the lecturers.
Assumptions and objectives of the course: Learning of basic knowledge concerning computer science as well as construction and operating principles of microcomputers; learning how to devise simple algorithms; learning the basics of structural and object programming in the C++ programming language.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. characterize: the structure and operating principles of a microcomputer system, memories used in a computer, basic tasks of an operating system, basics means of information encoding, widely-used application software - [K_W11 +++]		
2. characterize the method of creating computer programs in the C++ programming language - [K_W11 +++]		
Skills:		
1. formulate simple algorithms, implement respective computer programs in the C++ programming language - [K_U04 +++]		
2. use programming environments and computing tools appropriate in the work of an electrical engineer - [K_U13 +]		
Social competencies:		
1. ability to think and act responsibly and individually in the area connected with usage of computer software to increase work efficiency of an electrical engineer and improve enterprise economical significance - [K_K04 ++]		
2. ability to learn, ability to manage confidently different situations concerning exploitation of computer hardware and software - [K_K01++]		
Assessment methods of study outcomes		

<p>Lectures: written test verifying both theoretical knowledge and practical skills (formulation of simple algorithms and writing computer programmes in the C++ programming language).</p> <p>Laboratories: bonuses for practical knowledge acquired during previous laboratories, practical verification of C++ programming skills (test), evaluation of knowledge and skills connected with the realization of programming projects</p> <p>Additional points for activity during lectures, in particular for: preparing answers for questions provided by the lecturer; preparing solutions for problems provided by the lecturer, careful elaboration of tasks ? within self-study, efficient and brilliant solving of current problems, ability of co-operation within a team realizing a detailed task in the laboratory, usage of elements and techniques exceeding presented didactic material.</p>		
Course description		
<p>Numerical systems, integer and floating point representation of numbers, information encoding, working principles of digital systems, structure of computer system, buses, general characteristics of processors, RAM and ROM. Chosen application software. C++ programming language. Structural programming. Introduction to object programming in C++. Structure of a class, inheritance. Programming in the C++ Builder environment.</p> <p>Applied methods of education: a) lecture with multimedia presentation (including: drawings, photographs, animations, sound, films) supplemented by examples given on the board,) Interactive lecture with questions to students or specific students, c) ? Student activity is taken into account during the course of the assessment, d) The theory presented in close connection with practice and current knowledge of students.</p>		
Basic bibliography:		
<ol style="list-style-type: none"> 1. Cormen T., Leiserson C., Rivest R., Wprowadzenie do algorytmów, WNT, Warszawa, 2000. 2. Grębosz J., Symfonia C++ standard: programowanie w języku C++ orientowane obiektowo. T. 1/2, Instytut Fizyki Jądrowej im. H. Niewodniczańskiego, Polska Akademia Nauk Kraków, 2008. 3. Metzger P., Anatomia PC, Helion, 2007. 4. Praca zbiorowa, C++ Builder 5, Vademecum profesjonalisty, Helion, 2002. 		
Additional bibliography:		
<ol style="list-style-type: none"> 1. Wróblewski P., Algorytmy, struktury danych i techniki programowania, Helion 2003. 2. Stasiewicz A., Ćwiczenia C++11 Nowy standard, Helion, 2012. 		
Result of average student's workload		
Activity	Time (working hours)	
1. participation in lectures	14	
2. participation in laboratories	15	
3. preparation for laboratories and elaboration of reports and projects	34	
4. preparation of answers for questions and problems put forward by the lecturer	10	
5. participation in consultations concerning lectures and laboratories	14	
6. preparation for a written test	10	
Student's workload		
Source of workload	hours	ECTS
Total workload	97	4
Contact hours	39	1
Practical activities	51	2