

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Information Engineering		Code 1010331211010330388
Field of study Automatic Control and Robotics	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: 60 Classes: - Laboratory: 30 Project/seminars: -		No. of credits 8
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 %) 8 100% 8 100%
Responsible for subject / lecturer: dr inż. Piotr Kaczmarek email: piotr.kaczmarek@put.poznan.pl tel. +48616652886 Faculty of Electrical Engineering ul. Piotrowo 3A 60-965 Poznań		Responsible for subject / lecturer: dr inż. Piotr Kaczmarek email: piotr.kaczmarek@put.poznan.pl tel. +48616652886 Faculty of Electrical Engineering ul. Piotrowo 3A 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	basic knowledge from high school program in mathematics , computer science and logic
2	Skills	Student is able to obtain information from the literature , databases, and other sources; he or she has the skills of self-education in order to improve and update professional skills . He or she speaks English at a level sufficient to B2 communication , as well as reading comprehension cards catalog, application notes, manuals, equipment and descriptions of tools.
3	Social competencies	He or she understands the need and knows the possibilities of lifelong learning, improving professional, personal and social, skills can inspire and organize the learning of others.
Assumptions and objectives of the course: -The aim of the course is to teach procedural programming and object-oriented language C and C ++, introduction to basic libraries and tools supporting PC programming. Theoretical background is supported by practical excercises. In addition, the lecture covers to familiarize students with the architecture of PCs, computer networks and communication interfaces and contemporary trends in the development of information systems		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Student has theoretical and practical knowledge related to selected algorithms and data structures and methods and techniques of procedural programming and object-oriented - [[K_W10]]		
2. Student has knowledge orelated to computer architectures, systems, and computer networks and operating systems - [[K_W13]]		
Skills:		
1. The student is able to construct a simple solution algorithm engineering tasks and implement, test, and run it in your chosen development environment on a PC for selected operating systems - [K_U10]		
2. The student is able to work individually and in a team; is able to estimate the time needed for the commissioned work; able to develop and implement a work schedule to ensure deadline - [K_U02]		
Social competencies:		
1. The student is aware of and understands the validity of non-technical aspects and effects of engineering activities including its impact on the environment and the resulting responsibility for the decisions - [K_K02]		

Assessment methods of study outcomes		
<p>Lecture: written examination concerning the rules of procedural and object-oriented programming , architecture PC and communication interfaces</p> <p>Laboratory: checking practical skills and object-oriented procedural programming in C and C++, evaluation of the test, working on classes and homework</p>		
Course description		
<p>Lecture: Number systems , basic data types , loops and conditional statements , functions, pointers, structures and dynamic data types , file handling , basic algorithms (sorting, recursive and iterative methods) , object-oriented programming , polymorphism , inheritance, OpenGL , network application programming client -server , creating a window application , processor architecture , contemporary development trends and techniques for increasing processor performance computing , data storage methods , computer networks and communication interfaces (Ethernet , USB , rs232 , rs485 , firewire , bluetooth) , the method of implementation of the physical layer networks computing and communication interfaces (wireless networks , wired , fiber) , Graphics and parallel processing methods</p> <p>Laboratory : Programming in C and C ++, handling and formatting input / output , learning the use of loops and conditionals , organizing the program code by using the function . The use of tables , indices and dynamic data structures (lists one and two) . Create and design of simple objects , the use of inheritance and polymorphism , use operatorów , supporting the use of programming libraries (OpenGL , STL , windows sokets)</p>		
Basic bibliography:		
<ol style="list-style-type: none"> 1. Bruce Eckel, Thinking in C++, Volume 2: Practical Programming 2. Bjarne Stroustrup, Programming: Principles and Practice Using C++ (2nd Edition) 3. Irv Englander, The Architecture of Computer Hardware, Systems Software, and Networking: An Information Technology Approach 4. e-learning platform: moodle.put.poznan.pl 		
Additional bibliography:		
Result of average student's workload		
Activity	Time (working hours)	
1. Lecture	60	
2. Laboratories	30	
3. Preparation Exam / Assessment lecture	35	
4. Prepare for Training and performance reports	35	
5. Examination and consultation	5	
Student's workload		
Source of workload	hours	ECTS
Total workload	190	8
Contact hours	95	4
Practical activities	95	4