STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Information Engineering**			Code **1010331221010330388**
Field of study **Automatic Control and Robotics**	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) **full-time**		
No. of hours Lecture: **-** Classes: **-** Laboratory: **30** Project/seminars: **-**			No. of credits **2**
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 %) **2 100%** **2 100%**

Responsible for subject / lecturer:

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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 object-oriented programming in C ++ Introduction to basic libraries and tools supporting PC programming .

Subject of this semester is implemented in the form of laboratory classes .

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
Checking practical skills and object-oriented procedural programming in C and C++, evaluation of the test, working on classes and homework and group project

Course description
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 opreratorów , supporting the use of programming libraries (OpenGL , STL , windows sokets)

Basic bibliography:

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

Additional bibliography:

Result of average student's workload

Activity	**Time (working hours)**
1. Laboratories	30
2. Preparation for the exercise and performance reports	60

Student's workload

Source of workload	**hours**	**ECTS**
Total workload	190	8
Contact hours	95	4
Practical activities	95	4