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 Szeląg
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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

Lectures: written test verifying both theoretical knowledge and practical skills (formulation of simple algorithms and writing computer programms in the C++ programming language).

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

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 end techniques exceeding presented didactic material.

Course description

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.

Basic bibliography:

1. Cormen T., Leiserson C., Rivest R., Wprowadzenie do algorytmów, WNT, Warszawa, 2000.

2. Grębosz J., Synfonia C++ Standard, Edition, 2007.

3. Metzger P., Anatomia PC, Helion, 2001.

4. Praca zbiorowa, C++ Builder 5, Vademecum profesjonalisty, Helion, 2002.

Additional bibliography:

1. Wróblewski P., Algorytmy, struktury danych i techniki programowania, Helion 2003.

2. Stasiewicz A., C++ ćwiczenia praktyczne, Wyd. II, Helion, 2006.

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