STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Information Engineering**	Code **1010321311010320388**

Field of study **Electrical 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: **-** Project/seminars: **-**	No. of credits **3**

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 %**)** **3 100%** **3 100%**

Responsible for subject / lecturer:

Prof. dr hab. inż. Wojciech Szeląg
email: Wojciech.Szelag@put.poznan.pl
tel. 61 665 2116
Wydział Elektryczny
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: fields and application areas of computer science, the structure of a microcomputer system, basic tasks of an operating system, basics means of information encoding, the method of devising iterative and recursive algorithms - [K_W11 +++]

2. exemplify simple algorithms of solvable analytically problems from mathematics and physics, illustrate sorting algorithms, characterize the method of creating computer programs in the C++ programming language - [K_W11 +++]

Skills:

1. formulate simple algorithms and elaborate 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). 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.

Course description

History of computer science, its application areas and research directions. 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. Operating systems, computer networks. Internet, intranet. Algorithms and data structures. Chosen algorithms of analytically solvable mathematical and physical problems, and sorting?s algorithms. Programming languages. C++ programming language. Structural programming. Introduction to object programming. 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	30
2. preparation of answers for questions and problems put forward by the lecturer	13
3. participation in consultations	11
4. preparation for a written test	18

Student's workload

Source of workload	hours	ECTS
Total workload	72	3
Contact hours	41	2
Practical activities	0	0