Poznan University of Technology European Credit Transfer System
Faculty of Electronics and Telecommunications

STUDY MODULE DESCRIPTION FORM

Name of the module/subject **An Itroduction to Computing**	Code **1010804111010820031**

Field of study **Electronics and Telecommunications**	Profile of study (general academic, practical) **general academic**	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) **part-time**

No. of hours				No. of credits
Lecture: **25**	Classes: **-**	Laboratory: **20**	Project/seminars: **-**	**6**

Status of the course in the study program (Basic, major, other) **major**	(university-wide, from another field) **university-wide**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**6 100%**
Technical sciences	**6 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of mathematics K1_W01
2	**Skills**	Is able to retrieve and interpret information from books and Internet K1_U01
3	**Social competencies**	Student understands a necessity to acquire a new knowledge and skills stemming from a chosen field of studies. K1_K01

Assumptions and objectives of the course:

The aim of the subject is to deliver to a student a basic knowledge of algorithms, data structure, computational complexity, and princicples of object programming in C++.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Knows the principles of construction of computer programs ; has knowledge from the area of computing science; knows the syntax of C, C++, - [K1_W09]

2. Has a basic knowledge of algorithms (sorting, greedy algorithms, searching, graph algorithms) and data structures (tables, binary trees, graphs) - [[K1_W09]]

Skills:

1. Is able to write software for basic computational algorithms, using C/C++ programming languages - [K1_U13]

2. Uses high level programming languages: C, C++ - [K1_U13]

3. Is able to write and run programs to solve selected problems in telecommunication - [K1_U13]

Social competencies:

1. Is aware of the limitations of his/her current knowledge and skills; is committed to further self-study. - [K1_K01]

2. Demonstrates responsibility and professionalism in solving technical problems. Is able to participate in collaborative projects. - [K1_K02]

Assessment methods of study outcomes

Forming assessment:

Lectures: Written exam; exam is passed when student receives at least 50% points. Exam can be taken after the completion of laboratories.

Laboratories:

- evaluation and assessment of knowledge increment that need to be effective in solving problems covering all tasks within a given subject area;
- continuous assessment during daily classroom practice - rewarding knowledge increment in skills in management of using rules and methods learnt in class.

Course description

- computers? architecture
- complexity
- greedy algorithms
- recursion
- structure of C programs
- basic data structures
- operators and expressions
- control statements, recursion vs. iteration
- arrays
- functions
- functions with multiple parameters
- function templates
- sorting and searching algorithms
- pointers and dynamic memory allocation
- structure of C++ program
- classes and objects
- Inheritance
- Polymorphism
- class templates
- object oriented programming

Basic bibliography:

1. D.E. Knuth, The art of computer programming, Addison-Wesley Publishing Company, Reading, MA, 1968, 1973.

2. T.H. Cormen, C.E. Leiserson, R.L. Rivest, C. Stein, Introduction to Algrithms, The MIT Press; third edition edition (July 31, 2009)

3. Paul Deitel, Harvey Deitel, C++ How to Program, Prentice Hall; 9 edition (February 22, 2013)

Additional bibliography:

1. N. Wirth, Algorytmy + struktury danych = programy, WNT, Warszawa, 1980

Result of average student's workload

Activity	Time (working hours)
1. Lectures	45
2. Laboratories	40
3. Preparation for lectures	40
4. Preparation for laboratories	50
5. Exam	4
6. Discussion of exam otucomes	4

Student’s workload

Source of workload	hours	ECTS
Total workload	160	6
Contact hours	50	2
Practical activities	100	4