



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Information Technologies

Course

Field of study

Biomedical Engineering

Area of study (specialization)

Year/Semester

1/1

Profile of study

Level of study

First-cycle studies

Form of study

full-time

Course offered in

Polish

Requirements

compulsory

Number of hours

Lecture

15

Tutorials

Laboratory classes

15

Projects/seminars

Other (e.g. online)

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

Roman Konieczny PhD

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Fculy of Mechanical Engineering

ul. Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Student has knowledge of information technology and the basics of computer science in In secondary school level. Student is familiar with computer hardware and system software and use basic applications like: word processing, spreadsheet, presentation graphics program. Student can use internet technologies for communication and information acquiring.



Course objective

To familiarize students with the basic operations of computer hardware and software in the processes of data processing, transmitting, presenting and information security. Preparing students for the wide application of information technologies in engineering issues

Course-related learning outcomes

Knowledge

Student describes how information is represented in digital systems. Student can describe functional model of computer system, data processing organization and interface standards. Student defines the basic structures of algorithms and methods for describing algorithms. Student can describe the structure of computer networks, basic network services, computer network configuration and basic principles of data security in computer systems.

Skills

Student can use system software to support hardware and data organization and utility software for computational tasks and presentation of results. Can formalize simple algorithmic actions and describe them using Visual Basic. Can automate activities in application software using Visual Basic for Applications.

Social competences

Student is open to the implementation of modern information technology in science and technology. Student can use Internet technologies for communication, teamwork and information search. Student can acquire new knowledge on the subject.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Forming rating:

a) for the lectures:

- Based on answers to questions concerning the material discussed in previous lectures

b) for the laboratories:

- On the basis of an assessment of the current progress of tasks

Summary rating:

a) for the lectures - verify the assumed effects of education is provided by:

- Assessment of knowledge and skills indicated in a written test which checks theoretical knowledge and its practical application. The test consists of 5 open questions and one problem-related issue. A pass requires 50% correct answers.

b) for the laboratories - to verify the assumed effects of education is provided by:

- Prepare an assessment of the student's individual laboratory classes and evaluation skills related to the implementation of laboratory exercises



- Continuous assessment, for each class (oral answers)
- Assessment of practical skills during the tasks performed on the computer workstation

Programme content

Lecture:

1. Applying information technology in science and technology. Digital representation of information.
2. Functional and structural model of computer. Organization of data processing in digital systems.
3. System and utility software. Methods of description of algorithms. Correctness of the algorithm.
Data structures, operations on data.
4. Basic numerical and graphical algorithms.
5. Customizing the application using Visual Basic for Applications.
6. Computer networks.
7. Security of data in computer systems.

Laboratory classes:

1. Using spreadsheets in computational and data presentation tasks.
2. Programming computational algorithms using Visual Basic.
3. Decision and iteration structures, written in Visual Basic.
4. Customizing the applications to specific needs using Visual Basic for Applications environment.

Teaching methods

Lecture: multimedia presentation illustrated with examples on the board, solving sample tasks by the lecturer

Laboratory exercises: practical exercises, performing tasks at a computer station

Bibliography

Basic

1. A. Hamrol (red.), Elementy informatyki dla inżynierów mechaników, Wydawnictwo Politechniki Poznańskiej, Poznań, 2001
2. M. Lewandowski, Więcej niż Excel 2007, Wydawnictwo Helion, Gliwice, 2010

Additional

1. T. Jankowski, Od podstaw VBA/ Excel, Wydawnictwo Mikom, Warszawa, 2004
2. T. Willis, B. Newsome, Visual Basic 2010. Od podstaw, Wydawnictwo Helion, Gliwice, 2011



Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	32	1,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests) ¹	18	0,5

¹ delete or add other activities as appropriate