POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)
pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Information technology (Advanced course)

Course

Field of study
Chemical and process engineering

Year/Semester
1/1

Area of study (specialization)

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
Tutorials	Projects/seminars	
	30	

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

dr inż. Magdalena Emmons-Burzyńska

magdalena.emmons-burzynska@put.poznan.pl

Faculty of Chemical Technology

ul. Berdychowo 4, 60-965 Poznań

tel. 61 647 5980

Responsible for the course/lecturer:

dr inż. Beata Rukowicz

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Faculty of Chemical Technology

ul. Berdychowo 4, 60-965 Poznań

tel. 61 665 3782

Prerequisites

Fundamental knowledge realted to computers and their importance for human society.

Course objective

To familiarize students with the specifics of computers. To indicate the width of areas of use of digital machines in the scientific, design and engineering environment, as well as in the area of functioning of society. Special sensitisation of students to a number of non-intuitive phenomena occurring during design, numerical or simulation calculations. The subject is profiled from a technical point of view, with particular emphasis on the application of digital tools in the field of chemical technology and engineering.

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Course-related learning outcomes

Knowledge

The effect of teaching this subject is the knowledge of the advantages and limitations of using computer-aided techniques. Special emphasis is placed on the knowledge of the realities of computer-aided design and the characteristics of conducting simulation calculations. (K_W15)

Skills

bility to use Mathcad mathematical software. The student is able to connect to the local database and a remote database. The student is able to use databases to create database requests in the form of queries, is able to create databases, modify them, place data in them and find data in them. (K_U06)

Social competences

The student is aware of the importance of digital devices for human society. Particular emphasis is placed on the impact of digital machines on the quality and efficiency of design and analytical tasks, with particular emphasis on the chemical technology environment. (K_K02)

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Ongoing check of the degree of mastery of the material on colloquia. In the case of stationary classes, colloquia are given in a computer laboratory, while in the case of online classes colloquia are given using the university's network and computer infrastructure (VPN) via the Remote Desktop Protocol (RDP) using a remote desktop connection tool.

Programme content

Basic learning how to enter and edit formulas, getting used to the specifics of Mathcad's operation - for example, to perform calculations "live". Mathematical operators: differential, integral, sum, etc... Symbolic calculations. Importing data from a text or excel file. Saving data to file. Graphs of data and 2D functions, and also 3D. Calculations with matrices and vectors. Units, conversion to different systems e.g. SI to CGS etc. Simple statistics e.g. average, median, standard deviation, etc. Linear (slope, intercept) and non-linear (genfit) regression. Solving equations and systems - given find. Solving ordinary differential equations and systems - given odesolve. Solving of partial differential equations and systems - given pdesolve.

MSAccess: access to a database located in a local file, access to a database located on a server, create a database, search and organize information. Building simple queries and complex queries using basic SQL syntax. Using conditional expressions, searching with wildcard expressions. Protecting databases against unauthorized access.

Teaching methods

Presentation of the functioning of applied tools, current exercises performed by students in computer laboratories.

Bibliography

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Basic

Gajewski R., Janczewski M., PTC Mathcad Prime 3.0. Obliczenia i programowanie, PWN 2014.

Access 2013 PL. Kurs, Danuta Mendrala, Marcin Szeliga, Helion, 2013

Additional

Technologia informacyjna / Jae K. Shim, Joel G. Siegel, Robert Chi ; przeł. [z jęz. ang.] Adam Oracz. Autor: Shim, Jae K., Siegel, Joel G., Chi, Robert., Oracz, Adam . Tł. Dom Wydawniczy ABC, 1999.

Breakdown of average student's workload

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

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[1] delete or add other activities as appropriate