COURSE DESCRIPTION CARD - SYLLABUS

Course name
Information technology - basic course [S1IChiP1>TI-pp]

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

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
0

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
30

Number of credit points

2,00

Coordinators

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Lecturers

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.

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:

ability to use mathcad mathematical software and office. (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:

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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

Issues concerning application of digital tools in the field of chemical technology and engineering.

Course topics

Mathcad: Basic learning how to enter and edit formulas, getting used to the specifics of the program-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 of equations- find command. Solving ordinary differential equations and systems – odesolve command.
Word: Formatting tables, figures, and text, using automatic (active) endnotes, signatures, references. Writing using styles (Heading 1, 2...), generating tables of contents. Basic features in file review mode.
Excel: Formatting text, calculations with formulas, statistical elements, graphs.
Other tools: Basic options for creating chemical formulas.

Teaching methods

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

Bibliography

Basic
Gajewski R., Janczewski M., PTC Mathcad Prime 3.0. Obliczenia i programowanie, PWN 2014.
Office 2010: praktyczny kurs: PowerPoint 2010, Word 2010, Excel 2010, Access 2010 / Alicja Żarowska-Mazur, Waldemar Węglarz. Autor: Żarowska-Mazur, Alicja., Węglarz, Waldemar. Wydawnictwo Naukowe PWN, 2012.
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	2,00
Classes requiring direct contact with the teacher	32	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	18	1,00