GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	COMPUTER AIDED DESIGN, PG_00063447		
Field of study	Biotechnology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	1	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Process Engineering and Chemical Technology -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Iwona Cichowska-Kopczyńska	
	Teachers	dr inż. Iwona Cichowska-Kopczyńska	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	0.0	45.0	0.0	45

E-learning hours included: 0.0

Additional information:
Attendance at classes is mandatory. Absence is justified by a medical certificate. One unexcused absence is allowed. Absence does not release the student from the obligation catching up on arrears. The material should be studied on your own before the first class after returning.

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	45	2.0	28.0	75

Subject objectives

The aim of the course is to present the possibilities offered by the computer aided design software, the principles of software, selection of the software to solve a particular problem and algorithms of the design processes.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W04] selects methods of data analysis, including bioinformatics, statistical and molecular modeling, useful for solving technological and scientific problems in biotechnology and related fields	The student is able to correctly select and use tools to solve a given problem.	[SW3] Assessment of knowledge contained in written work and projects
[K7_U101] is able to formulate complex research problems and adopts appropriate methods, obtaining innovative solutions, cooperating with other people, both as a leader and a team member	The student is able to work creatively and effectively in the field of organization and design, using modern IT tools.	[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
[K7_K01] understands the need to constantly update knowledge based on the state of the art in accordance with the latest scientific literature, improve professional skills and the importance of teamwork	The student is aware of technological progress, responsibility and the need to follow it. Understands the need and is able to create educational situations conducive to deepening teamwork competences.	[SK1] Assessment of group work skills [SK3] Assessment of ability to organize work [SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice

<table>
<tr><td>Subject contents</td><td>Graphical representation of technological processes, including graphical representation of elements spatial projections on the plane: projection as the basic form of spatial projections on plane, spatial projections in orthogonal projections. Sections and interpenetration of objects flat and spatial. Spatial, assembly and manufacturing drawings. Technical Documentation. Strength analysis. Simulations of technological processes, thermodynamic models, principles
conducting simulations, sensitivity analysis, material and energy balances, process optimization technological.
In the first part of the semester, the student learns computer-aided software design, including issues of graphic presentation of technological processes, structures spatial devices and simulations of technological processes. In the second part of the semester, the student solves design tasks using the tools learned.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Computer skills, knowledge of the office software, geometry, dimensioning principles, basics of thermodynamics, process engineering, chemical technology, technological principles, principles of green chemistry, green engineering, chemical processing equipment.</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Graphic representation</td><td>60.0%</td><td>30.0%</td></tr>
<tr><td>Process design</td><td>60.0%</td><td>30.0%</td></tr>
<tr><td>Additional tasks</td><td>60.0%</td><td>10.0%</td></tr>
<tr><td>Simulations</td><td>60.0%</td><td>30.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>1. Pikoń J., AutoCAD 2002, Helion, Warszawa 2002.
2. Tarnowski Wojciech, Symulacja komputerowa procesów ciągłych, Koszalin, Wyższa Szkoła Inżynierska
w Koszalinie 1996.
3. Perkowski Piotr, Technika symulacji cyfrowej, Warszawa, Wydaw. Nauk.-Tech, 1980.
4. A. Jaskulski, Autodesk Inventor Professional 2018PL, PWN, 2017</td></tr>
<tr><td>Supplementary literature</td><td>1. Leigh J. R., Modelling and simulation, London, Peter Peregrinus, 1983.
2. Zeigler Bernard P., Teoria modelowania i symulacji, Warszawa, Państ. Wydaw. Naukowe, 1984.
3. Gierulski Wacław, Modelowanie i symulacja komputerowa :laboratorium : praca zbiorowa, Kielce, Politechnika. Świętokrzyska, 1996.
4. Fishman George S., Symulacja komputerowa :pojęcia i metody, Warszawa, Państ. Wydaw.
Ekonomiczne, 1981.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Graphical representation of the technological process, technological diagram,3D design of the device, simulation of the technological process, process optimization in terms of raw material consumption, waste emissions</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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