GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00037548					
Field of study	Green Technologies					
Date of commencement of studies	October 2020		Academic year of realisation of subject		2020/2021	
Education level	first-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		English	
Semester of study	1		ECTS credits		4.0	
Learning profile	general academic profile		Assessment form		assessment	
Conducting unit	Department of Physical Chemistry -> Faculty of Chemistry					
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Jacek Czub				
	Teachers	prof. dr hab. inż. Jacek Czub mgr Cyprian Kleist				

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	45.0	0.0	0.0	60
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie: Computer science -- lecture and practicals - Moodle ID: 6620 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=6620						

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	60	2.0	38.0	100

Subject objectives	The aim of the subject is to teach the students skills in usage of computers for evaluation and anaysis of the experimental results. Skills in using software for engineers, esp. chemical engineers, including data bases, will also be trained. Another aim is to give students basic knowledge in statistics of one variable and two variables (linear regression), as well as in the fundamentals of algorithms and hardware of digital computers.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_K06] has awareness of the importance of non-technical aspects and effects of engineering activities, including its impact on the environment and the associated responsibility for decisions.	Student acquires knowledge about modern computers, including computer architecture, representation of various types of data in computer memory and basic programming. Stident acquires introductory knowledge on numerical methods and statistics.	[SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice [SK3] Assessment of ability to organize work
	[K6_U03] is able to use information and communication technologies relevant to the common tasks of engineering, is able to use known methods and mathematical-physical models to describe and explain phenomena and chemical processes	Student knows how to effectively use text editors and spreadsheets and is capable of creating simple python programs for solving engineering and scientific problems. Student knows how to apply rudimentary statistical reasoning and numerical methods.	[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment

Subject contents	LECTURES: History of computers, architecture of a numerical computer, algorithms and flow charts, numerical formats of different types of data, basic classes of software (operating systems), digital-to-analog and analog-todigital conversion, basic programming in python; elementary statistics of one and two variables, linear regression, statistical tests, numerical instability, solving non-linear equations (e.g. bisection method), numerical interpolation and integration. LABORATORY: General section: using advanced functionalities of MSOffice class software (Word, Excel), basic programming in python Applied section: solving four assigned problems in linear regression, solving non-linear equations, numerical interpolation and numerical integration.
Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	final test in lectures	50.0%	30.0%
	solving four numerical assignments	100.0%	70.0%

Recommended reading	Basic literature	1. R. Johnson, Elementary Statistics, Boston 1992 and later editions 2. B. Carnahan, H. A. Luther, J. O. Wilkes, Applied Numerical Methods, New York 1984 and later editions
	Supplementary literature	1. Lecture notes, examples, text problems and briefs published in the website of the Department of Physical Chemistry or given to the students.
	eResources addresses	Computer science -- lecture and practicals - Moodle ID: 6620 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=6620

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable