GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00058877		
Field of study	Nanotechnology		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Solid State Physics -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Maciej Bobrowski	
	Teachers	dr hab. Maciej Bobrowski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	30.0	0.0	0.0	45

E-learning hours included: 0.0

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	3.0	50

Subject objectives

(Word/Excel/Linux/C/Latex):

1. training to work with Word and Excel,
2. training to work under Linuks operating system,
3. training basics of programming in C/C++ language: variables, logical instructions, loops, one- and two-dimensional arrays, structures and objects
4. training to work with Latex system: compiling, preambule, mathematics equations.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U01	Student can for himself find solutions of exercises sent to students by teacher by learning from literature, teacher's materials and from other books.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject
K6_U03	Student can on his own use elements of structural programming and can write programs.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
K6_W04	Student can practically create and operate spreadsheets, multimedia presentations and word-processing documents.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation

Subject contents	Part 1. Word-like program and Spreadsheet. Basic skills (working with a limited amount of data and formulas. Working with variables and forms. Tasks requiring multi-stage operations. Part 2a. Linux operating system.Instructor's introduction: Linux among other operating systems, history, applications,structure, system advantages / disadvantages, future. Graphic and text mode, load,slimming the system, work optimization, external devices: disks, printers,scanners, etc.Commands / programs / processes. The way of executing commands (options, parameters).Directory tree, tree navigation, creating / deleting directories,copying files and directories with options, data backup,listing files with options, special characters, file names,changing the location and / or renaming of files / directories,safe browsing of the contents of files, permissions to files / directories in the systemmultiple users, deleting files and directories with files,standard streams (STDOUT, STDERR, STDIN), redirecting data streams,input stream redirection, pipe mark, and combining commands into complex command harvesters,searching the contents of files (grep), searching for files or directories (find),working with data columns (awk language, but only for this purpose),background, foreground: fg, bg, &, additions: mouse copy, command history (upper / lower arrows),tabulator (command completion, finding files / directories) electronic manuals for commands,Editing text files: vi and vim editors:modes of operation (editing and commands), saving changes / content, navigatinghorizontally and vertically, data buffering (yanking) with rows and columns,extras: (de) capitalization, searching, connecting lines, replacing characters / words,Undo / redo commands, the ~ / .vimrc file, and vim configuration file options.Shell configuration, shell variables, configuration files, examples of actions and effectson variables, processes, activities on processes, computer resources, work monitoring.Networking: lecturer's introduction (topology, devices, hardware solutions),logging into remote computers, checking network configuration, viewing other users,copying data between computers, programs launched from other computers,Windows / Linux cooperation.+ competence testExamples of problems to be solved on the test: a. Using the df -k command and the awk language (in one command that uses streams), verify thatthe amount of used space on a given disk partition and the amount of empty space on a given disk partitionadd up to the total volume of the corresponding disk partition. b. With the ifconfig command and toolssearching data in text files, try to find assigned IP addresses (in TCP IP protocol)to network cards that are marked with the symbols and interfaces, e.g. eth0, eth1 network interface.It is supposed to be one complex command that will print IP addresses one below the other. Part 2b. Latex document storage system. Instructor's introduction: what is Latex and why, history, application, possibilities,system advantages / disadvantages. Source / Build. Description of the minimum requirements for writing mathematical formulas:page layouts, (sub) chapters, preamble, packages, variables, compilation, getting dvi, ps, pdf files.Document composition system in latex, due to time constraints the wholelimited to almost exclusively mathematical formulas:pattern writing modes (in the text line, separately), available environments,one-liners, multi-line (equation derivation), Greek symbols for variablesand symbols of typical mathematical functions (trying to guess latex notations),fractions, integrals, sums, differentials, determinants, matrices and other symbols, possibly time-related.+ test.Example of problems to be solved on the test:- Having the final layout of the document in the pdf file and the template-file at your disposalto the Latex source code, get the same pdf document as obtained by the tutor. After part 2 -- a test from Linux and Latex. Part 3. Programming. The mosty likely -- in C or C++, less likely -- in Python: writing codes, from smaller up to larger codes, compilation, variables, constants, data structures, one- and two-dimensional tables, lists, loops and conditional statements, libraries, At the end -- a test, i.e. a program to be written individually during the classes. During the lectures -- additionaly: comparison of laguages, of different elements of languages, different types of programming (object, structural, script, etc.), Plus a lot of examples.
Prerequisites and co-requisites	No prerequisites. One anticipates processing basic informations on operating systems and basics of programming.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
tests on laboratories	51.0%	100.0%

Recommended reading

Basic literature	1. Brian. W. Kernighan, Dennis. M. Ritchie, ,,ANSI C".
Supplementary literature	1. John S. Gray, ,,Communiction between processes in Unix", RM, Warszawa, 1998. 2. Dale Dougherty, Arnold Robbins, sed and awk, O'Reilly, 2002, 3. William H. Press, Saul. A. Teukolsky, William T. Vetterling, Brian P. Flannery, Numerical recipes in C, Cambridge Univ. Press, 1992, 4. Eleen Frisch, Unix, System Administration, O'Reilly, 1996,
eResources addresses	Adresy na platformie eNauczanie: Wstęp do informatyki 2024 - Moodle ID: 41360 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=41360

Example issues/ example questions/ tasks being completed	Part 1:@ Spreadsheet: create an algorithm that will compare the list of people actually present at e.g. a conference to the available list of all potential participants.@ Spreadsheet: Define the angle between two vectors in 3D or n-dimensional space@ Python: programming a numerical solution to the Brownian motion problem with a constant force forcing a particle to move or modeling a simple stock exchange simulator Part 2:@ Having the final layout of the document in the pdf file and the template-file at your disposalto the latex source code, get the same pdf document as obtained by the teacher.@ Using the df -k command and the awk language (in one command that uses streams), check thatthe amount of used space on a given disk partition and the amount of empty space on a given disk partitionadd up to the total volume of the corresponding disk partition.@ The task is more difficult. With the ifconfig command and toolssearching data in text files, try to find assigned IP addresses (in TCP IP protocol)to network cards marked with interface symbols, e.g. network interface eth0, eth1.It is supposed to be one complex command that will print IP addresses one below the other.
Work placement	Not applicable

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