GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Information Technologies, PG_00003105		
Field of study	Automation, Robotics and Control Systems		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	Subject group	
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	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Intelligent and Decision Support Systems -> Faculty of Electrical and Control Engineering -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Tomasz Zubowicz	
	Teachers	dr inż. Tomasz Zubowicz	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

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	30	4.0	16.0	50

Subject objectives

The course is to provide participants with an opportunity to learn the fundamental aspects of using computers for storage, transmission and processing of data and information in engineering applications. Provided illustrations reflect up-to-date scientific and technical challenges.

Learning outcomes

Course outcome	Subject outcome	Method of verification

Subject contents

The Information Technology (TI) course consists of thematic modules that consider problems related to the storage, transmission and processing of data or information. The course introduction covers the topics of the construction and operation of a computer. The 'information and data-storage' module covers topics such as, e.g., information and data representation; databases (with emphasis on their relational form); Big Data problem and data warehousing. The 'communication' module introduces the essence of the communication notion and the technical resources required to establish and operate a communication channel in a safe and reliable manner. In particular, topics covered in this module concern both the physical and software layers. The former includes i.e. wired and wireless communication links, computer networks, their history and development. The latter includes, among others, concepts of packet and protocol as well as ISO/OSI and TCP/IP models. The 'data and information processing' module introduces course participants to problems related to computer programming, including C and Python coding, as well as basic concepts of the description and design of algorithms and their evaluation (e.g. computational complexity). Moreover, the problems of programming paradigms are introduced, with an emphasis on object-oriented programming (including the basics of class diagrams). A collection of good practices in the form of design patterns is also discussed. Furthermore, course participants acquire knowledge of the basics of computer and web application design and architecture, as well as their security (encryption fundamentals). The module is concluded with modern methods of software development and the tools used in this process. In particular, the concepts of agile software development, version control systems (e.g. git) and the role and techniques of automated code testing are presented. The course summary focuses on current TI issues and challenges.

Prerequisites and co-requisites

Not applicable.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Final score [Test (K - max. 60 pts.; time: 90 min.; form: on-line) + Group assignments (G - max. 3 x 10 pts.; form: home work) + Bonus points (B)]/ max{K + G}	50.0%	100.0%

Recommended reading

Basic literature

1. DuBois P.: MySQL, MIKOM, Warszawa 2000.
2. Kierzkowski A.: PHP 4. Tworzenie stron WWW. Ćwiczenia praktyczne, HELION Wydawnictwo S.A. Gliwice 2002.
3. Krzymowski B.: Access 2000 PL, Help, Warszawa 1999.
4. Elmasri R. Shamkant B.: Wprowadzenie do systemów baz danych, HELION Wydawnictwo S.A. Gliwice 2002.

	Supplementary literature	http://moodle.ely.pg.gda.pl
	eResources addresses	Supplementary http://www.w3schools.com - Base information for developers
Example issues/ example questions/ tasks being completed	1. What is a computer? 2. What is a programming language? 3. What is the computer representation of a web page? 4. What is computer programming about? 5. What are the basic computer components and how do they influence its overall performance? 6. What are the basic CPU components and what are their functions?	
Work placement	Not applicable	

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