GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00059973		
Field of study	Environmental Engineering		
Date of commencement of studies	February 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	2	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Biomedical Engineering -> Faculty of Electronics, Telecommunications and Informatics		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Piotr Jasiński	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	15.0	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	5.0	19.0	54

Subject objectives

The course will discuss issues related to the processes of control of indoor microclimate. The topics of the course will include the basic issues of climate and microclimate of closed rooms, measurements of physical quantities (including humidity and air temperature, gas concentration) affecting the climate and human well-being, indicators of human comfort and discomfort. A description and issues related to microclimate control systems will be presented, both in the form of theoretical considerations, but also practical solutions actually used will be presented.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_U06	has the basic skills to implement and test the known automatic control systems, to correct the characteristics, to evaluate the stability of the systems	[SU3] Assessment of ability to use knowledge gained from the subject
[K7_W11] has knowledge to analyze, evaluate and optimize processes, objects and systems of environmental engineering and knows the principles of rational energy management and resources	has the ability to assess damage to peripheral elements of automation	[SW1] Assessment of factual knowledge
K7_W04	has the ability to assess the stability of automatic control systems regulation	[SW1] Assessment of factual knowledge

Subject contents

Basic concepts of automation, basic principles of automatic control, classification of automation systems.Elements of automatic control systems: measuring devices, controllers, actuators. Basic members of linear automatic control systems. Analysis of linear control systems in the time domain. Open-loop and closed-loop systems. Impulse response. Step response. Frequency analysis of linear control systems. Stability of linear automatic control systems: concept and stability criteria. Automation actuators. Sensors in automation. Control systems in heating, ventilation and air conditioning.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Tests	50.0%	30.0%
Exam	50.0%	70.0%

Recommended reading

Basic literature

Kwiatkowski W.: Wprowadzenie do Automatyki, Warszawa 2005.
Craig J.: Wprowadzenie do robotyki. WNT, Warszawa 1995
Morecki A. I in.:Podstawy robotyki, WNT, Warszawa 2002 (wyd. II)
Olszewski I in.: Podstawy mechatroniki, REA, Warszawa 2006.

	Supplementary literature	Bishop H.R.: Mechatronic Systems, Sensors and Actuators, CRC Press 2008
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Calculate stability of regulation system	
Work placement	Not applicable	