

## 表 GDAŃSK UNIVERSITY OF TECHNOLOGY

## Subject card

Subject name and code	, PG_00041838								
Field of study	Ocean Engineering, Ocean Engineering								
Date of commencement of studies	October 2020		Academic year of realisation of subject			2021/2022			
Education level	first-cycle studies		Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study			
Mode of study	Part-time studies		Mode of delivery			at the university			
Year of study	2		Language of instruction			Polish			
Semester of study	4		ECTS credits			4.0			
Learning profile	general academic profile		Assessment form			assessment			
Conducting unit	Faculty of Ocean Eng	ineering and S	hip Technology	y					
Name and surname of lecturer (lecturers)	Subject supervisor		dr Marek Zellma						
	Teachers		dr Marek Zellma						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
	Number of study hours	20.0	10.0	0.0	0.0		0.0	30	
	E-learning hours included: 0.0								
	Adresy na platformie eNauczanie:								
Learning activity and number of study hours	Learning activity	arning activity Participation ir classes includ plan		a didactic Participation in ed in study consultation hours		Self-study SUM		SUM	
	Number of study hours	30		10.0		60.0		100	
Subject objectives	The aim is to know the basics of the control theory and the structures and elements of basic automation systems as well as the general information about the design of control systems.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	[K6_U05] can formulate a simple engineering task and its specification within the range of design, construction and operation of ocean technology objects and systems		He/she can assess the usefulness of the typical methods and tools and select and apply the right method and tools to perform a simple engineering task in the field of automation.			[SU1] Assessment of task fulfilment			
	[K6_W04] has a basic knowledge in IT, electronics, automation and control, computer graphics useful to understand the possibilities of their application in ocean technology		He/she has the knowledge about methods and design tools that enable carrying out some projects in the field of control systems [SU3] Assessment of ability to use knowledge gained from the subject He/she can formulate the simple engineering tasks and their specification in the field of automation and robotics			[SW1] Assessment of factual knowledge			

Subject contents	1 Introduction and basic concepts						
	2. Classification of control systems						
	3. Modeling of dynamic systems and description of elements of automation systems						
	4. Types of mathematical models of dynamic systems: differential equation, transmittance, block diagram, state space model, model transformations						
	5. Transition function and time characteristics						
	6. Feedback						
	7. Analysis of control systems in the domain of time and in the domain of frequency						
	8. Stability of control systems						
	9. Regulators and principles of their design and selection						
Prerequisites and co-requisites	Mathematics, physics, technical mechanics						
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade				
and criteria	colloquy	55.0%	100.0%				
Recommended reading	Basic literature 1. Domachowski Z., Automatyka i robotyka - podstawy, Wydawnictw PG, Gdańsk, 2003						
		2. Nise N. S., Control system engineering, John Whiley & Sons Inc., 2000					
		<ol> <li>Próchnicki W., Dzida M., Zbiór zadań z podstaw automatyki, skrypt dla studentów Wydziału Oceanotechniki i Okrętownictwa Pg. Gdańsk, 1993.</li> </ol>					
	Supplementary literature       1. Friedland B., Control System Design, McGraw Hill Co., 1986,         2. Bubnicki Z., Teoria i algorytmy sterowania, PWN, Warszawa 20         3. Kaczorek T., Teoria sterowania i systemów, PWN, Warszawa 1999,         4. Ogata K.,Modem Control Engineering, 4th edition, Prentice Hal						
		<ol> <li>2002,</li> <li>Perycz S.,Podstawy automatyki, skrypt dla Instytutu Okrętowego PG, Gdańsk 1983,</li> <li>Raven F.,H., Automatic control engineering, McGraw Hill Co., 1986</li> </ol>					
	eResources addresses						
Example issues/ example questions/ tasks being completed	Stability of control systems						
	. Regulators and principles of their design and selection						
	Types of mathematical models of dynamic systems:						
Work placement	Not applicable						