



## Subject card

Subject name and code	Basics of automation, PG_00055281						
Field of study	Design and Construction of Yachts						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2022/2023		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study Subject group related to practical vocational preparation		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	4	ECTS credits			3.0		
Learning profile	practical profile	Assessment form			assessment		
Conducting unit	Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Mohammad Ghaemi				
	Teachers		mgr inż. Damian Jakowski dr inż. Mohammad Ghaemi				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	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		10.0		20.0	75
Subject objectives	The aim is to get acquainted with the basis of control theory and with the structures and elements of basic automation systems, as well as general information on the design of control systems.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_W04		The student is able to assess usefulness of typical methods and tools applied in engineering to select the proper method and tool for solving the simple problems in the range of control system		[SW1] Assessment of factual knowledge		
	K6_U05		The student is able to formulate simple engineering problems and its specification in the range of control system		[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject		

Subject contents	<p>1. Introduction and basic concepts</p> <p>2. Classification of control systems</p> <p>3. Modeling of dynamical systems and description of elements of automation systems</p> <p>4. Types of mathematical models of dynamical systems: differential equation, transfer function, block diagram, linearization</p> <p>5. Transition function and time characteristics</p> <p>6. Feedback</p> <p>7. Analysis of control systems in the plot of time and in the plot of frequency</p> <p>8. Stability of linear control systems</p> <p>9. Regulators</p>		
Prerequisites and co-requisites	Prerequesties:1. Mathematics, 2. Physics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exercises	51.0%	34.0%
	Lecture	56.0%	66.0%
Recommended reading	Basic literature	Nise N. S., <a href="#">Control System Engineering</a> , 8th Edition, John Wiley & Sons Inc., 2019.	
	Supplementary literature	<p>- Friedland B., <a href="#">Control System Design</a>, McGraw Hill Co., 1986.</p> <p>- Ogata K., <a href="#">Modern Control Engineering</a>, 4th edition, Prentice-Hall, 2009.</p> <p>- Raven, F. H., <a href="#">Automatic control engineering</a>, McGraw Hill Co., 1986.</p>	
	eResources addresses	<p>Podstawowe</p> <p><a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29730">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29730</a> - The course page on the e-learning platform of GUT</p>	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		