GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00056315		
Field of study	Ocean Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2024/2025
Education level	first-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	5	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam
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 hab. inż. Damian Bocheński	
	Teachers		

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	5.0	50.0	100

Subject objectives

To acquaint students with the principles of design and operation of pipeline installations

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	The student designs pipeline installations. It determines the basic parameters characterizing the pipeline installation. Selects appropriate pumps or compressors for the designed installation.	[SU1] Assessment of task fulfilment
[K6_W06] has an organized knowledge on engineering methods and design tools allowing the conducting of projects within the construction and operation of ocean technology objects and systems	The student explains the processes occuring during the flow of liquid or gas through the pipeline system	[SW1] Assessment of factual knowledge
[K6_W05] has an organized knowledge on design, construction and operation of ocean technology objects and systems	The student describes the elements of the pipeline system and the method of their assembly	[SW1] Assessment of factual knowledge

Subject contents

LECTURE Classification of pumps and pipeline installations. Energy balance of the pipeline installation. Characteristics of pipelines. Working conditions and pump characteristics. Vortex pumps, principle of operation, efficiency, high speed discriminant. Structural elements of centrifugal pumps. Cavitation. Application of centrifugal pumps. Positive displacement pumps, principle of operation, efficiency of positive displacement pumps and their application in a marine power plant. Compressor classification. Displacement compressors, work diagram, multi-stage compression. Vortex compressors - fans and blowers. EXERCISE Principles of calculating flow resistance. Rules for the selection of fittings. Calculations of selected installations in a marine engine room. Selection of pumps and compressors.

Prerequisites and co-requisites

Thermodynamics, Fluid mechanics

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Exercise	60.0%	40.0%
Exam	60.0%	60.0%

Recommended reading	Basic literature	1.Troskolański A.T., Łazarkiewicz Sz.: Pompy wirowe. WNT Warszawa, 1973. 2.Jędral W.: Pompy wirowe. PWN Warszawa, 2001. 3.Perepeczko A.: Okrętowe pompy, sprężarki i wentylatory. Wyd. Morskie 1976 4.Grabarczyk Cz.: Przepływ cieczy w przewodach (metody obliczeniowe). Enviratech Poznań, 1997.
	Supplementary literature	Online catalogs
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	