GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Ship Pumps and Compressors, PG_00060562		
Field of study	Naval Architecture and Offshore Structures		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2027/2028
Education level	first-cycle studies	Subject group	Optional subject group Subject group related to scientific research in the field of study
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	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute Of Naval Architecture -> Faculty Of Mechanical Engineering And Ship Technology -> Wydziały Politechniki Gdańskiej		
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	25.0	75

Subject objectives

To acquaint students with the principles of designing and operating pumping (and compressor) installations

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W03] has knowledge of hydromechanics, thermodynamics, machine design, ecology, materials science necessary to understand the principles of construction and operation of ocean engineering facilities and equipment	The student describes the elements of the pipeline system, the method of their assembly and explains the processes occurring during the flow of liquid or gas through the pipeline system	[SW1] Assessment of factual knowledge
[K6_U06] in compliance with a formulated specification and with the aid of appropriate tools and methods, is able to complete a simple engineering task within the range of design, construction and operation of ocean technology objects and systems	The student designs pipeline installations. Specifies the parameters characterizing the piping system. Selects the appropriate pump or compressor for the designed installatio	[SU1] Assessment of task fulfilment

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
Exam	60.0%	50.0%
Exercise	60.0%	50.0%

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	

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