



## 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 2023	Academic year of realisation of subject			2025/2026		
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 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		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	<p>1. Troskoleński A.T., Łazarkiewicz Sz.: Pompy wirowe. WNT Warszawa, 1973.</p> <p>2. Jędral W.: Pompy wirowe. PWN Warszawa, 2001.</p> <p>3. Perepeczko A.: Okrętowe pompy, sprężarki i wentylatory. Wyd. Morskie 1976</p> <p>4. Grabarczyk Cz.: Przepływ cieczy w przewodach (metody obliczeniowe). Enviratech Poznań, 1997.</p>
	Supplementary literature	Online catalogs
	eResources addresses	Adresy na platformie eNauczenie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	