GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00056316		
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	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	15.0	0.0	0.0	60

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	60	10.0	30.0	100

Subject objectives

Acquainting the student with the issues of heating, cooling and air-conditioning of rooms

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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 knows the construction and operation problems of heating, cooling and air-conditioning systems	[SW1] Assessment of factual knowledge
[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 is able to carry out an economic analysis of heating, refrigeration and air-conditioning systems in rooms	[SU1] Assessment of task fulfilment
[K6_W05] has an organized knowledge on design, construction and operation of ocean technology objects and systems	The student knows the basic methods used in the laboratory technique related to heat transfer	[SW3] Assessment of knowledge contained in written work and projects

Subject contents

Heating installations on ships. Heating factors (steam, thermal oil, electricity). Heating installations on tankers and chemical tankers. Climate - thermal comfort. Humid air parameters, i-X diagram, humid air transformation. Air conditioning on ships - design solutions. Characteristics of loads (hygroscopic and non-hygroscopic). Microclimate in the hold. Cargo hold ventilation - design solutions. Ventilation of the gym. Refrigeration equipment. Cooling circuits. Compressor refrigeration equipment. Refrigerants. Chilled holds. Refrigerated containers. Cold insulation. Fish cooling and freezing. Ice makers.

Prerequisites and co-requisites

Thermodynamics

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
colloquium of lectures	60.0%	50.0%
Passing exercises and laboratory	60.0%	50.0%

Recommended reading	Basic literature	1. Piotrowski - Okrętowe urządzenia chłodnicze. WM Gdańsk 1977 2. K. Gutkowski, D. Butrymowicz - Chłodnictwo i klimatyzacja, WNT Warszawa 2007 3. P. Urbański - Instalacje spalinowych siłowni okrętowych, Skrypt PG Gdańsk 1991 4. W. Wasiluk - Klimatyzacja pomieszczeń na statkach morskich, Skrypt PG Gdańsk 1975 5. R. Michalski, W . Zeńczak - Okrętowe olejowe systemy grzewcze przysposobione do odzyskiwania energii odpadowej. Zagadnienia Eksploatacji Maszyn 2003
	Supplementary literature	Online catalogs
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	