



## Subject card

Subject name and code	Designing of Combustion Ship Power Plants, PG_00057344						
Field of study	Ocean Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-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	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			6.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Zakład Siłowni Okrętowych -> Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Piotr Bzura				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	45.0	15.0	0.0	30.0	0.0	90
	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	90		20.0		40.0	150
Subject objectives	Familiarizing students with all possibly all issues related to the design of combustion marine power plants						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_U07] in compliance with a formulated specification and with the aid of appropriate tools and methods, is able to complete an advanced engineering task within the range of design, construction and operation of ocean technology objects and systems		The student is able to choose the optimal solution to the problem related to the design of the marine power plant.		[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject		
	[K7_W05] has an organized, widened knowledge on design, construction and operation of ocean technology objects and systems		The student understands the energy transformation processes in ship machinery and equipment and the phenomena occurring in pipelines.		[SW2] Assessment of knowledge contained in presentation		
	[K7_W06] has an organized, widened knowledge on engineering methods and design tools allowing the conducting of advanced projects within the construction and operation of ocean technology objects and systems		The student is able to prepare a preliminary design of a marine power plant.		[SW2] Assessment of knowledge contained in presentation		
Subject contents	The procedure for the selection of various drive systems, propulsors, selection of main engines, generator sets and various machines and devices necessary in the power plant. Creation of integrated installations and power plant plan, analysis of energy, electrical and steam balances.						

Prerequisites and co-requisites	Knowledge of the subject Basics of ship power plants Knowledge of Piston Internal Combustion Engines Knowledge of thermodynamics Knowledge of Marine Power Plants Knowledge of Pumps and Compressors Knowledge of Boilers and Heat Exchangers		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	50.0%	100.0%
Recommended reading	Basic literature	1. Zygmunt Górski, Mariusz Giernalczyk. Siłownie okrętowe. Akademia Morska w Gdyni 2014. 2. Michalski R.: Siłownie okrętowe. Obliczenia wstępne oraz ogólne zasady doboru mechanizmów i urządzeń pomocniczych instalacji siłowni okrętowych. Skrypt Politechniki Szczecińskiej, Szczecin 1987.  3. Przepisy klasyfikacji i budowy statków morskich. PRS, Gdańsk 2004. 4. Urbański P.: Instalacje spalinowych siłowni okrętowych. Skrypt PG, Gdańsk 1994. 5. Wojnowski W.: Okrętowe siłownie spalinowe. Gdańsk, 1992	
	Supplementary literature	1. Project Guide MAN B&W  2. Project Guide Wartsila	
	eResources addresses	Adresy na platformie eNauczenie:	
Example issues/ example questions/ tasks being completed	1. Draw and describe an integrated fuel installation 2. Draw and describe the integrated lubricating oil installation 3. Describe and describe the propulsion system in which the propulsion power for the Nw ship, electrical power and heat $Q_0$ is obtained in two independently operating devices, namely in two main engines and from systems with the utilization of heat losses of exhaust gases from the main engines for the production of heat and obtaining electricity in the turbocharger.		
Work placement	Not applicable		