



Subject card

Subject name and code	Fundamentals of the Ship Systems, PG_00060583						
Field of study	Design and Construction of Yachts						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2027/2028		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study 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	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Division of Marine Power Plants -> Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Zbigniew Korczewski					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	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 teach the build, requirements and principles of exploiting the marine power plant and pipeline systems.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U04] has skills that allow for self-education and preparation for work in an industrial environment, including the application of occupational health and safety rules	Student knows how to use public available as well as specialized and dedicated Internet resources and software when selecting criteria and comparative analysis of different types of ship systems. Applies general principles of proper use of equipment and systems during laboratory exercises on a computer simulator.			[SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment		
	[K6_W05] has well-organised knowledge in the field of design, construction, and operation of yachts	Student describes and explains the purpose of the solutions used in relation to typical ship system solutions. Explains the general construction of typical solutions structural ship installations on ships with internal combustion engines. Indicates the classification conditions affecting the structure of the installation.			[SW1] Assessment of factual knowledge		
	[K6_W07] has knowledge of the principles of sustainable development	Student is able to determine the influence of technical solutions applied in ship power system (e.g. type of main propulsion) on environmental risks.			[SW1] Assessment of factual knowledge		

Subject contents	<p>Course content – lecture Lecture</p> <p>The definition of the maritime system, function and classification of the maritime systems, formal and legal requirements in regards to the system and maritime equipment, the ship's movement ability - general information about the power transmission system, general information about the maritime systems, fire protection systems, bilge and ballast systems, sanitary systems of the ship, ventilation and conditioning, ship's refrigeration system and equipment. Dynamic positioning systems. Mooring and anchoring systems. Reliability of the ship's functioning. Ecological aspects of maritime systems' usage.</p> <p>Laboratory</p> <p>General construction, principle of operation, preparation for operation and use of selected ship systems - exercises on the simulator of ship systems and ship power system.</p>											
Prerequisites and co-requisites	Knowledge of the subjects: Technical mechanics, Construction and operating of machinery											
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="451 792 794 824">Subject passing criteria</th> <th data-bbox="794 792 1137 824">Passing threshold</th> <th data-bbox="1137 792 1487 824">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 824 794 855">Practical skills - laboratory</td> <td data-bbox="794 824 1137 855">100.0%</td> <td data-bbox="1137 824 1487 855">15.0%</td> </tr> <tr> <td data-bbox="451 855 794 887">Midterm colloquium - lecture</td> <td data-bbox="794 855 1137 887">51.0%</td> <td data-bbox="1137 855 1487 887">85.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Practical skills - laboratory	100.0%	15.0%	Midterm colloquium - lecture	51.0%	85.0%
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Recommended reading	<p>Basic literature</p> <p>Supplementary literature</p> <p>eResources addresses</p>	<ol style="list-style-type: none"> <li>Balcerski A.: Siłownie okrętowe. Podstawy termodynamiki, silniki i napędy główne, urządzenia pomocnicze, instalacje. Skrypt PG, Gdańsk 1990.</li> <li>Giernalczyk M., Górski Z.: Siłownie okrętowe Część 2 Instalacje okrętowe. Akademia Morska w Gdyni, Gdynia 2016</li> <li>Urbański P.: Instalacje okrętów i obiektów oceanotechnicznych. Wyd. PG 1991</li> <li>Wojnowski W.: Okrętowe siłownie spalinowe Wyd. PG 1999</li> <li>Urbański P.: Instalacje spalinowych siłowni okrętowych. Skrypt PG, Gdańsk 1994</li> <li>Więckiewicz W.: Instalacje kadłubowe statków morskich. WSM 1988</li> <li>Szarejko J.: Technologia rurociągów okrętowych WM 1968</li> <li>Przepisy klasyfikacji i budowy statków morskich.</li> <li>Taylor D.A.: Introduction to Marine Engineering. Elsevier Butterworth-Heinemann, Oxford 2000</li> </ol>										
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> <li>The main energy systems of the ship - classification, functions.</li> <li>General scheme of ballast system.</li> <li>General propulsion efficiency vs. general energy efficiency - interpretation.</li> <li>Construction and principle of operation of freshwater production equipment.</li> <li>Methods of reducing NOx and SOx emissions.</li> <li>Equipment redundancy in marine power systems.</li> <li>Difference between ventilation and air conditioning.</li> </ol>											
Practical activities within the subject	Not applicable											

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