GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Tallships and Mega-yachts design, PG_00061844		
Field of study	Design and Construction of Yachts		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2025/2026
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	6	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	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	dr inż. Artur Karczewski	
	Teachers	dr hab. sztuki Paweł Gełesz dr inż. Artur Karczewski dr inż. Mateusz Kędzierski mgr inż. Olga Kazimierska	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	15.0	0.0	15.0	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	0.0	0.0	60

Subject objectives

The aim of the course is to provide students with advanced knowledge and practical skills in the design of large sailing vessels and mega-yachts, taking into account aspects of hydromechanics, structural design, naval architecture, ergonomics, and safety. The course is intended to prepare students to solve complex design problems by integrating technical, operational, aesthetic, and environmental requirements.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U02] can work individually and in a team, communicate through various techniques in professional environment and also record, analyse, and present the results of work, can estimate the time needed to complete a given task	Ability to work independently and in teams, and skills in preparing reports and technical documentation.	[SU1] Assessment of task fulfilment [SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
[K6_K03] is aware of the impact of non-technical aspects on the engineer's work and the impact of engineering activities on the natural environment	Awareness of the influence of non-technical factors on the work of an engineer, as well as the impact of engineering activities on the natural environment.	[SK5] Assessment of ability to solve problems that arise in practice
[K6_W04] has knowledge in the field of computer science, electronics, electrical engineering, automation and control, information technology, computer graphics, useful for understanding the possibilities of their use in ocean engineering	Knowledge of broadly understood engineering principles and the ability to apply them in solving design tasks.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects

<table>
<tr><td>Subject contents</td><td>Course content – lecture
Lecture Topics:
- Introduction to the design of sailing ships and megayachts: basic concepts, types, and examples of architecture; design considerations: regulations, classification, and division of vessels > 24 m; sail propulsion types and characteristics; design assumptions and definition of main parameters; hull shape; resistance calculations; definition of auxiliary propulsion system parameters; stability calculations; forecasting sail speed; operational and design requirements for the power units of sailing ships, superyachts, and megayachts; typical propulsion systems of yachts and sailing ships; propulsion systems specific to yachts and sailing ships; electrical systems and yacht power balance; general ship installations of yachts and sailing ships; HVAC systems and comfort on yachts.
Course content – exercises
Design practices are designed to help students acquire the skills necessary to initially determine the main and auxiliary parameters of sailing ships and megayachts.
Topics:
- Determining main parameters, defining the hull shape, verifying resistance, propulsion, and stability calculations, and preparing design documentation.
Course content – project
The project aims to acquire skills in working with sailing ships and megayachts by completing and solving a design task in selected areas:
- general plan, hull shape, interior layout, rigging design, deck design, engine room design
The project leader selects the main theme. Teamwork</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Knowledge of the basics of ship design.</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Lectures - midterm tests</td><td>60.0%</td><td>50.0%</td></tr>
<tr><td>Project - report</td><td>100.0%</td><td>25.0%</td></tr>
<tr><td>Practice - report</td><td>100.0%</td><td>25.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>A. Papanikolaou, Ship Design, Methodologies of Preliminary Design, London: Springer, 2014.</td></tr>
<tr><td>Supplementary literature</td><td>F. Chapman, A Treatise on Ship-Building, 1760.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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