GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Fundamentals of Naval Architects and Marine Eng., PG_00060458		
Field of study	Mechanical and Naval Engineering		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
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	Part-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam
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 inż. Cezary Żrodowski	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	27.0	9.0	0.0	0.0	0.0	36

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	36	8.0	81.0	125

Subject objectives

Familiarization of the students with the basic technical and organizational problems characteristic of the maritime industry, in particular shipbuilding.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W12] has a knowledge on hydromechanics, thermodynamics, machine construction, ecology, materials science and electronics necessary to understand the construction and operation principles of ocean technology objects and equipment	The student solves basic problems related to the design of the hull and the selection of propulsion of typical commercial ships.	[SW3] Assessment of knowledge contained in written work and projects
[K6_U12] 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 formulates a set of main and auxiliary design requirements and boundary conditions for typical merchant ships. The student formulates and interprets basic balance equations of buoyancy, power, energy.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information
[K6_U13] 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 independently designs the hull shape and presents it in the form of a lines plan drawing.	[SU1] Assessment of task fulfilment
[K6_W14] 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 performs design tasks in the environment of a specialized CAD/CAM/CAE system.	[SW2] Assessment of knowledge contained in presentation

<table>
<tr><td>Subject contents</td><td>1. Organization of maritime transport and shipbuilding industry.
2. Legal regulations (IMO, Classification Societies, International Conventions).
3. Technical documentation standards.
4. Basics of flotation physics, elements of ship theory.
5. Ship design process - Evans Spiral, V-Model.
6. Basics of hull structure design.
7. Basics of propulsion selection.
8. Ship life cycle management.
9. Specialized CAD/CAM/CAE/PLM software for the maritime industry.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></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>Written exam</td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>1. Papanikolau A.: Ship Design Methodologies of Preliminary Design, Springer, 2015
2. Michalski J.P.: Podstawy teorii projektowania okrętów, Gdańsk, Wyd. PG, 2013
3. Watson D.: Practical ship design , Amsterdam, Elsevier, 1998.
4. Pacześniak J., Staszewski J.: Projektowanie morskich statków handlowych, Gdańsk, Wyd. PG, 1984 (3 części).
5. Schneekluth H.: Ship design for efficiency and economy, London, Butterworths, 1987.
6. Buczkowki L.: Podstawy budownictwa okrętowego, Gdańsk, Wyd. PG, 1973 (3 części).</td></tr><tr><td>Supplementary literature</td><td>1. Chuchla Z.: Morski statek transportowy. Eksploatacja i elementy zarządzania, Gdynia, Wydawnictwo AMW 2009
2. Chuchla Z.: Zarządzanie morskim statkiem transportowym oraz jego ekploatacja, Gdynia, Wydawnictwo AMW 2005
3. Krasowska K., Popek M.: Ładunkoznawstwo, Wydawnictwo Uczelniane AM Gdynia, Gdynia, 2006.
4. Scharnow R.: (1996), Ładunkoznawstwo okrętowe, Wydawnictwo Wyższej Szkoły Morskiej w Gdyni, Gdynia 1996
5. Stopford M.: Maritime economics, Routledge, New York, 2009
6. George R.: Ninety Percent of Everything, Picador, 2014
7. Lorange P.: Shipping Strategy, Cambridge University Press 2010
8. Unger R.W.: The Ship in the Medieval Economy, ACLS Humanities 2008
9. Levinson M.: The Box, Princeton University Press, 2016</td></tr><tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>A. Definitions, e.g.:
1. Hull fullness factor
2. Tonnage
3. Length between verticals
4. Freeboard
B. Problem-based tasks, e.g.:
1. What should the designer do if there is excess of freeboard and too little bow height?
2. Why are floor rise and a designl trim at the stern used on small vessels?
3. What is the purpose of the bow superstructure (forecastle)?
4. When and for what purpose can the aft deck (poop deck) be lowered?</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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