



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 2025		Academic year of realisation of subject		2026/2027		
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 Naval Architecture -> Faculty Of Mechanical Engineering And Ship Technology -> Wydział Politechniki Gdańskiej						
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_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		
	[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_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.		[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		
	[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		

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

Document generated electronically. Does not require a seal or signature.