GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Manufacturing of Composite Hull, PG_00060613		
Field of study	Design and Construction of Yachts		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2028/2029
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	3	Language of instruction	Polish
Semester of study	5	ECTS credits	6.0
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. Cezary Żrodowski	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	30.0	15.0	75

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	75	8.0	67.0	150

Subject objectives

Familiarizing students with the basic principles of composite yacht hull construction technology, which is dominant in the modern yacht industry.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W02] has knowledge in the field of technical mechanics, fluid mechanics, strength of materials, necessary to understand the basic physical phenomena occurring in ocean engineering	The student understands the influence of the technological process on the strength properties of composite hulls.	[SW3] Assessment of knowledge contained in written work and projects
[K6_U06] able to perform basic engineering tasks in the field of yacht design, construction and operation according to the formulated specification, using appropriate methods and tools	The student correctly performs the design task covering issues related to the manufacture and operation of the composite hull.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject
[K6_W06] has well-organised knowledge of engineering methods and design tools enabling the conducting of projects in the field of construction and operation of yachts	The student correctly selects the methods and supporting CAD/CAE tools to solve the given problem in the design and manufacture of a composite hull.	[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects

Subject contents	Course content – lecture 1. Introduction to traditional and the latest composite materials in yacht and aviation technology (glass, aramid and carbon fiber, spacers, prepreg, infusion) 2. Preparation of the 3D model for the execution of the physical model (feasibility on 3 and 5-axis machine tools, surface quality, technological allowances, simulation of CNC machining) 3. Execution of a physical model in CNC technology and manually (preparation of material for processing, basing and fixing the material, rough and fine machining, covering the model with a leveling layer, manual final processing of the model) 4. Mold making (model preparation, mold lamination, mold stiffening structure, demoulding) 5. Production of the hull in technology (from mold preparation to removal of the hull) in contact technology, vacuum bag, infusion, LRTM., RTM, prepreg 6. Composite hull postprocessing (manual, water, laser treatment) 7. Quality control (3D scanning) 8. Material tests (strength, thermal and chemical) of composite samples. 9. Organization of work in a yacht shipyard 10. Special issues (racing and military units, elements of sails, equipment)
Prerequisites and co-requisites	Intermediate computer skills, especially in the field of 3D CAD

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Written test	50.0%	50.0%
Completion of project tasks	50.0%	50.0%

Recommended reading	Basic literature	1. Lars Larsson, Michał Orych, Rolf E. Eliasson: Podstawy projektowania jachtów 2. Witold Tobis: Budowa i naprawa jachtów z laminatów 3. Tadeusz Sołtyk: Budowanie jachtów 4. FiberSim manual 5. Siemens NX Composites Program Manual 6. Ansys Granta EduPack manual
	Supplementary literature	e-larning course on the eNauczanie platform
	eResources addresses	

Example issues/ example questions/ tasks being completed	Components of the composite hull manufacturing process: - digital model - physical model - making and demoulding the mould - preparation of the mold for production (surface, separating layer) - manufacturing of the hull in the selected technology Opportunity to pass the course as part of the KSTO KORAB activity
Practical activites within the subject	Not applicable

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