GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Prototyping in Yacht Design, PG_00056251		
Field of study	Design and Construction of Yachts		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	
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	2.0
Learning profile	practical profile	Assessment form	assessment
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	dr inż. Konrad Marszałkowski dr inż. Cezary Żrodowski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	0.0	30

E-learning hours included: 0.0

Address on the e-learning platform: https://w_przygtowaniu

Additional information:
The lecture can be provided in remote mode in case of necessity

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	30	4.0	16.0	50

Subject objectives

To familiarize students with prototyping techniques in the yacht industry, including:a) hull - hand-made model, CNC (model and form)b) equipment (3D printing)c) drive and devices (modular profiles)

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U05	The student independently defines particular technical tasks necessary to complete the given hull or device prototype.	[SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment
K6_U06	The student prepares a digital 3D model to make a prototype in CNC technology or 3D printing.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
K6_W05	The student presents the entire process of building a prototype for the selected type of yacht and the materials used.	[SW3] Assessment of knowledge contained in written work and projects

Subject contents

Prototyping techniques in the yachting industry, including:
1. creating a digital 3D model of the hull
2. hand-made model of the hull
3. CNC (hull model and / or mold)
4. equipment and machine parts (prototyping and additive manufacturing - FDM, SLS, SLM)
5. equipment and machine parts - working prototypes (modular profiles)

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Completion of exercises	75.0%	50.0%
Test	50.0%	50.0%

Recommended reading	Basic literature	1. JeanClaude Andre: From Additive Manufacturing to 3D/4D Printing 2. G. Budzik, P. Siemiński: Techniki przyrostowe. Druk 3D. Drukarki 3D ?
	Supplementary literature	User manuals for Siemens NX and nTopology
	eResources addresses	Adresy na platformie eNauczanie: Prototypowanie w projektowaniu jachtu, W, PiBJ, sem.03, zimowy 23/24 - Moodle ID: 32553 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32553 Prototypowanie w projektowaniu jachtu, W, PiBJ, sem.03, zimowy 23/24 - Moodle ID: 32553 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32553
Example issues/ example questions/ tasks being completed	Exercises: 1. Prepare a digital model of the hull for CNC machining, based on theoretical lines. 2. Prepare a digital model of the selected part for 3D printing, based on the drawing. Test: 1. What is the difference between 3- to 5-axis CNC machining? 2. Spoecify the advantages and disadvantages of the FD M technology 3. What is the difference between SLM and SLS technology?	
Work placement	Not applicable	