



Subject card

Subject name and code	, PG_00056273						
Field of study	Design and Construction of Yachts						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2023/2024		
Education level	first-cycle studies	Subject group			Optional subject group Subject group related to practical vocational preparation		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			English		
Semester of study	6	ECTS credits			2.0		
Learning profile	practical profile	Assessment form			assessment		
Conducting unit	Department of Theory and Ship Design -> 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	0.0	0.0	30.0	0.0	0.0	30
	E-learning hours included: 0.0						
	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		3.0		17.0	50
Subject objectives	Introduction to basic optimization techniques, used in context of computer aided design process. Activities cover parametric, boundary and topology optimization of 3D CAD geometry, based on defined structure loads.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_W06		The student presents the knowledge of the systematics of methods and IT tools used to optimize yacht designs based on FEM and CFD analyzes		[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	K6_U05		The student formulates optimization tasks, selects the right tools to solve them and presents the results.		[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		
	K6_W03		The student carries out complex, interdisciplinary project optimization tasks.		[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects		
	K6_W04		The student knows the basic CAD / CAE / MDO tools and is able to use them to implement simple engineering tasks.		[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
Subject contents	<p>Introduction to optimization theory (systematic, random, gradient and evolutionary methods)</p> <p>Optimization of 3D geometry (parametric, boundary, topology)</p> <p>Project of optimization of simple 3D part using 3D CAD and Model Center</p>						
Prerequisites and co-requisites	Parametric 3D modelling						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project completion	50.0%	75.0%
	Work progress	50.0%	25.0%
Recommended reading	Basic literature	Practical Aspects of Finite Element Simulation; Altair University, 3rd edition 03/2015 Practical Aspects of Structural Optimization - a Study Guide; 2nd edition 0362015	
	Supplementary literature	Siemens NX - User Guide Model Center - User Guide	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Topology optimization of ship hull bracket. Parametric optimization of ship hull dimensions, based od predefined model.		
Work placement	Not applicable		