



Subject card

Subject name and code	Computer Aided Design of the Hull, PG_00060542						
Field of study	Design and Construction of Yachts, Naval Architecture and Offshore Structures						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2024/2025		
Education level	first-cycle studies		Subject group		Optional subject group 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	2		Language of instruction		Polish Opportunity of passing the subject as part of the activities of the CAD KSTO KORAB section		
Semester of study	4		ECTS credits		4.0		
Learning profile	general academic 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 hab. sztuki Paweł Gelesz				
			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	0.0	30.0	0.0	45
	E-learning hours included: 0.0						
	Additional information: It is possible to develop skills beyond the scope of the program in the CAD section of the KSTO KORAB club						
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	45		5.0		50.0	100
Subject objectives	Getting to know the characteristics of the available CAD/CAM/CAE computer-aided design software for the maritime industry and mastering the skills of its use on selected examples of hull design.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U02] can work individually and in a team, communicate through various techniques in professional environment and also record, analyse, and present the results of work, can estimate the time needed to complete a given task		The student demonstrates knowledge of individual and team work techniques built into modern CAD software		[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		
	[K6_W04] has knowledge in the field of computer science, electronics, electrical engineering, automation and control, information technology, computer graphics, useful for understanding the possibilities of their use in ocean engineering		141 / 5,000 Translation results Translation result The student correctly selects CAD tools for various design problems, taking into account the advantages and disadvantages of mesh and parametric geometry.		[SW3] Assessment of knowledge contained in written work and projects		
	[K6_K03] is aware of the impact of non-technical aspects on the engineer's work and the impact of engineering activities on the natural environment		The student is able to use functionalities of CAD tools, supporting sustainable design		[SK2] Assessment of progress of work		

Subject contents	<p>1. CAD/CAM/CAE software for maritime industry, functionality, requirements, comparison of available programs.</p> <p>2. Modeling of parametric hull shape and propeller</p> <p>3. Modeling of hull compartmentation</p> <p>4. Calculation of ship hydrostatics and stability</p> <p>5. Hydrodynamic resistance simulation (CFD)</p> <p>6. Strength simulations (MES)</p> <p>7. Optimization of parametric shape with MDO software</p> <p>8. Generating of 2D documentation on the basis of 3D model.</p>		
Prerequisites and co-requisites	Basic computer skills.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Presentation of selected subject	50.0%	30.0%
	Realisation of ongoing exercises	50.0%	70.0%
Recommended reading	Basic literature	<p>Carl Machover: "C4"</p> <p>User's manuals for selected programs:</p> <ol style="list-style-type: none"> 1. Inventor 2. SolidWorks 3. Siemens NX 4. AVEVA Marine 5. Maat Hydro 6. Star-CCM+ 7. PolyCAD 8. Delft Ship 9. NAPA 10. FORAN 11. Maxsurf 	
	Supplementary literature	e-learning course o eNauczanie platform	

	eResources addresses	Podstawowe https://www.machinedesign.com/ - Machine Design https://cad.pl/ - CAD Forum Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1. Parametric model of hull form. 2. Associative model of hull assembly. 3. CFD simulation of propeller. 4. FEA simulation of simple structure.	
Work placement	Not applicable	

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