



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						
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 od 2D documentation on the basis of 3D model.</p>											
Prerequisites and co-requisites	Basic computer skills.											
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="451 801 794 842">Subject passing criteria</th> <th data-bbox="794 801 1142 842">Passing threshold</th> <th data-bbox="1142 801 1487 842">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 842 794 873">Presentation of selected subject</td> <td data-bbox="794 842 1142 873">50.0%</td> <td data-bbox="1142 842 1487 873">30.0%</td> </tr> <tr> <td data-bbox="451 873 794 909">Realsation of ongoing exercises</td> <td data-bbox="794 873 1142 909">50.0%</td> <td data-bbox="1142 873 1487 909">70.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Presentation of selected subject	50.0%	30.0%	Realsation of ongoing exercises	50.0%	70.0%
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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	<ol style="list-style-type: none"> 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	