



Subject card

Subject name and code	, PG_00056269						
Field of study	Design and Construction of Yachts						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2024/2025		
Education level	first-cycle studies	Subject group					
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			Polish		
Semester of study	6	ECTS credits			3.0		
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. Maciej Kahsin				
	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						
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		25.0	75
Subject objectives	Lectures scope is to present methods of laminated composites structural analysis with use of classical laminate theory and numerical tools.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_K03	Student gains knowledge of composite laminate material characteristics.			[SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice		
	K6_W06	Student uses FEA software in design process of laminated structures.			[SW3] Assessment of knowledge contained in written work and projects		
	K6_U05	Student is able to use numerical tools in problems concerning design of laminate composites.			[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task		
	K6_W05	Student is able to use Classical Laminate Theory (CLT in problems concerning yacht design.			[SW3] Assessment of knowledge contained in written work and projects		
Subject contents	Introduction to FEM, basic characteristics of laminates, constitutive equations of laminates, stress and strain in laminate, coupling load/deformation (ABD matrix), strength of laminate composites						
Prerequisites and co-requisites	Strength of Materials, Numerical Methods						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Reports assessment		51.0%		100.0%		

Recommended reading	Basic literature	<p>Carlsson, L. A., Gillespie, J. W., (eds.), Delaware Composites Design Encyclopedia, Technomic Publishing Company, Lancaster, PA</p> <p>Hull, D., An Introduction to Composite Materials, Cambridge University Press, 1981.</p> <p>Gere, J. M., Timoshenko, S. P., Mechanics of Materials, II ed., PWS-Kent Publishing Company, Boston, 1984.</p>
	Supplementary literature	John D. Fenton, Numerical methods, Institute of Hydraulic Engineering and Water Resources Management Vienna University of Technology, 2019
	eResources addresses	Adresy na platformie eNauczenie:
Example issues/ example questions/ tasks being completed	<p>Reduction of twist-bending coupling in composite laminate.</p> <p>Determine stress pattern in composite laminate section.</p> <p>Determine maximum load in composite laminate structure.</p>	
Work placement	Not applicable	