GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mechanics of Laminated Structures, PG_00056255
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	4	ECTS credits	3.0
Learning profile	practical profile	Assessment form	assessment

Conducting unit	Zakład Mechaniki Konstrukcji Oceanotechnicznych -> 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	dr inż. Maciej Kahsin

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	15.0	0.0	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	Scope of topics presented aims towards illustration of design methods concerning thin walled composite structures.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_U05	Student is able to choose appropriate physical problem formulation and suitable solving tools.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject
	K6_W05	Student is capable of using Classical Laminate Theory (CLT) during yacht design process.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
	K6_W03	Student can conduct Multiphysics FE simulations.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects

Subject contents	Material characteristics of laminates, mixture law, stiffness matrix of single generally oriented lamina, stiffness matrix of laminate, load-deformation coupling analysis, buckling of laminates, solution of dynamics problems.
Prerequisites and co-requisites	Mechanics, Strength of Materials, Numerical Methods.

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Report valuation	50.0%	60.0%
	Test	50.0%	40.0%

Recommended reading	Basic literature	1. J. Reddy: An Introduction to The Finite Element Method, McGraw-Hill, New York, 2005
		2. D. Chapelle, K. Bathe: The Finite Element Analysis of Shells Fundamentals, Springer-Verlag Berlin Heidelberg 2011
		3. Carlsson, L. A., Gillespie, J. W., (eds.), Delaware Composites Design Encyclopedia, TechnomicPublishing Company, Lancaster, PA
		4. Gere, J. M., Timoshenko, S. P., Mechanics of Materials, II ed., PWS-Kent Publishing Company,Boston, 1984.
	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 eNauczanie:
Example issues/ example questions/ tasks being completed	Generate code computing laminates stiffness matrix, Compute ABD matrix and present conclusions concerning load-deflection coupling, Compute first 10 eigen modes of laminated yacht hull, Analise behaviour of laminated structure operating in undulation condition.	
Work placement	Not applicable	