



Subject card

Subject name and code	Strenght Optimization of thin-walled metal structures, PG_00057297						
Field of study	Ocean Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Part-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			exam		
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 hab. inż. Tomasz Mikulski					
	Teachers	dr inż. Wojciech Puch dr hab. inż. Tomasz Mikulski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	9.0	0.0	9.0	0.0	0.0	18
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	18		10.0		22.0	50
Subject objectives	The lecture objective is teaching of formulation and solution of optimal design of thin-walled metal structures						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W05] has an organized, widened knowledge on design, construction and operation of ocean technology objects and systems	The student can choose the right one method and solve the problem of design optimization of thin-walled structure.			[SW1] Assessment of factual knowledge		
	[K7_W07] has knowledge on the development perspectives of ocean technology objects and systems, knows the newest and most relevant achievements in ocean technology	The student has systematized knowledge of the constructed ocean engineering structures and their development directions.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
	[K7_U07] in compliance with a formulated specification and with the aid of appropriate tools and methods, is able to complete an advanced engineering task within the range of design, construction and operation of ocean technology objects and systems	The student can formulate optimization problem strength metal thin-walled construction.			[SU4] Assessment of ability to use methods and tools		
Subject contents	1) Formulation of optimal design problems of structures, 2) Methods of solution of optimal structural design, 3) Application of optimal design of structures						
Prerequisites and co-requisites	Technical mechanics, Strength of materials, Ship structure mechanics						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test from the lecture	30.0%	30.0%
	Computer laboratory	50.0%	70.0%
Recommended reading	Basic literature	1) Szymczak C., Elements of Optimal Design, PWN, 1998,(in Polish) 2) Brandt A.M., Criteria and Methods of Optimal Design, PWN, 1977,(in Polish) 3) Tarnowski W.: Fundamentals of Technical Design. Skrypt Wyższej Szkoły Inżynierskiej w Koszalinie, Koszalin 1989. (In Polish)	
	Supplementary literature	1) Bochenek B., Kruzelecki J.: Optimization of Stability of Structures, PK, 2007 (in Polish) 2) Arora J.S., Introduction to Optimal Design, Elsevier, 2004	
	eResources addresses	Adresy na platformie eNauczanie: Optymalizacja wytrzymałościowa metalowych konstrukcji cienkościennych, Oce2, 2023/24 - Moodle ID: 14630 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=14630	
Example issues/ example questions/ tasks being completed	- ,Optimal design of simple structures - Analysis and optimization of simple shell structures		
Work placement	Not applicable		