GDAŃSK UNIVERSITY OF TECHNOLOGY

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

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Test from the lecture</td><td>30.0%</td><td>30.0%</td></tr>
<tr><td>Computer laboratory</td><td>50.0%</td><td>70.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1) Szymczak C., Elements of Optimal Design, PWN, 1998,(in Polish)

2) Brandt A.M., Criteria and Methods of Optimal Design, PWN, 1977,(in Polsh)

3) Tarnowski W.: Fundamentals of Technical Design. Skrypt Wyższej Szkoły Inżynierskiej w Koszalinie, Koszalin 1989. (In Polish)</td></tr>
<tr><td>Supplementary literature</td><td>1) Bochenek B., Krużelecki J.: Optimization of Stability of Structures, PK, 2007 (in Polish)

2) Arora J.S., Introduction to Optimal Design, Elsevier, 2004</td></tr>
<tr><td>eResources addresses</td><td>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</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">- ,Optimal design of simple structures

- Analysis and optimization of simple shell structures</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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