GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Analysis of constructive connections of medical devices, PG_00057881
Field of study	Mechanical and Medical Engineering

Date of commencement of studies	February 2024	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	
Mode of study	Full-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	assessment

Conducting unit	Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology

Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Michał Wodtke
	Teachers	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	30.0	0.0	30
	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	30	0.0	0.0	30

Subject objectives	The goal of the course is to acquire the ability to perform advanced computational analysis of structural nodes, especially medical devices. To achieve the goal, programs using numerical methods, mainly the Finite Element Method, will be used.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U08] He/she can formulate and verify hypotheses for simple engineering problems and research	The student is able to check the correctness of the assumptions made to analyse the problem using engineering tools	[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information
	[K7_U04] He/she can use programming-communicative techniques concerning to the scope of engineering tasks	The student learns advanced techniques for conducting computational analysis of structural nodes and can apply them to solve his own problem.	[SU4] Assessment of ability to use methods and tools
	[K7_K03] He/she can analyze and realize given tasks proposing entrepreneur and creative activities	The student is able to critically interpret the obtained results of the analysis and propose solutions to the observed problems.	[SK5] Assessment of ability to solve problems that arise in practice

Subject contents	Within the framework of the course, students will perform analyses of structural nodes of selected equipment using engineering tools in particular numerical methods.
	The framework program of the subject includes:
	- introduction to numerical methods implemented in engineering tools,
	- introduction to basic problems of analysis,
	- conducting computational analyses of selected structural nodes
Prerequisites and co-requisites	Mechanics, Fundamentals of Machine Design, Engineering graphics

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Solution of the problem task II	50.0%	50.0%
	Solution of the problem task I	50.0%	50.0%

| Recommended reading | Basic literature | 1. Dietrich (red.): Fundamentals of Machine Design (in polish), WNT 2008

2. Krzesiński G. (i inni): Finite Elementh Method in Finite Element Method in mechanics of materials and structures (in polish). Wyd. Politechniki Warszawskiej 2015.

3. Help of FEM software (e.g. Ansys). |
|---|---|---|
| | Supplementary literature | not applicable |
| | eResources addresses | Adresy na platformie eNauczanie: |

| Example issues/ example questions/ tasks being completed | Perform analysis of the frame / arm / body of the device.

Conduct an analysis of the device component connection.

Conduct an analysis of the effect of the selected structural parameter of the device node on its stiffness / strength. |
|---|---|
| Work placement | Not applicable |

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