GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00061828		
Field of study	Management and Production Engineering		
Date of commencement of studies	February 2023	Academic year of realisation of subject	2023/2024
Education level	second-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	3	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Zakład Technologii Biomateriałów -> Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Michał Bartmański	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	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	0.0	0.0	45

Subject objectives

The purpose of the course is to familiarize students with the basics of using 3D printing technology with composite materials.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_K01] is aware of the need to expand knowledge and verify the methods of solving problems by consulting experts	The student is able to propose the right material for 3D printing.	[SK2] Assessment of progress of work
[K7_K02] is aware of the importance and understanding of non-technical aspects and effects of engineering activities, including its impact on the environment, and the related responsibility for decisions made demonstrates knowledge of actions to reduce risk and anticipate the social impact of engineering and manufacturing activities	The student is able to assess the risks associated with the use of 3D printing technology, including the impact on the environment.	[SK5] Assessment of ability to solve problems that arise in practice
[K7_W01] knows and understands to a greater extent selected issues in the field of management and quality sciences and mechanical engineering, their location in the field of social sciences and engineering and technical sciences, as well as relationships with related disciplines, and sees the possibility of applying the knowledge in practice.	The student knows the principles of 3D printer for printing polymer, ceramic and composite materials.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
[K7_U01] can obtain information from literature, databases and others sources, also in English or another foreign language recognized as the language of international communication in a given engineering discipline; is able to integrate the obtained information, interpret it, as well as draw conclusions and formulate and justify opinions.	The student is able, based on available literature sources, to select the appropriate type of 3D printer for the material used for printing.	[SU2] Assessment of ability to analyse information

<table>
<tr><td>Subject contents</td><td colspan="3">1. Basics of 3D printing2. application areas of 3D printing.3. Quality control of 3D printing.4. Types of printers and other devices for 3D creation.5. Types of 3D technology.6. Use of 3D technology to print composite materials.7. Preparation and processing of models for 3D printing of composite materials.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td colspan="3"></td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Laboratory report</td><td>56.0%</td><td>40.0%</td></tr>
<tr><td>Colloquium</td><td>56.0%</td><td>60.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Budzik G., Druk 3d jako element przemysłu przyszłości analiza rynku i tendencje rozwoju, ISBN 978-83-7934-610-3
Richard Horne i Kalani Kirk Hausman, Druk 3D dla początkujących (wydanie drugie)</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">English-language scientific publications in 3D printing of composite materials.</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">1 What is 3D printing.2. What are the application areas of 3D printing?3. Types of printers and other devices for 3D creation.4. Types of 3D printing technologies.5. Areas of application of 3D printing of composite materials in industry.</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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