GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Design and Operation of Measurement Equipment, PG_00073392		
Field of study	Mechanical Engineering		
Date of commencement of studies	February 2026	Academic year of realisation of subject	2026/2027
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	English
Semester of study	2	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Division of Biomaterials Technology -> Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Michał Bartmański	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	45.0	0.0	0.0	60

E-learning hours included: 0.0

eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=9101

Moodle ID: 9101 Design and Operation of Measurement Equipment https://enauczanie.pg.edu.pl/2025/course/view.php?id=9101

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	60	5.0	10.0	75

Subject objectives

The aim of the course is to develop skills in designing and manufacturing components using additive technologies. The student learns the principles of CAD modelling, preparation of models for 3D printing, selection of process parameters, post-processing, and evaluation of the quality and properties of manufactured components.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W02] demonstrates a structured and theoretically grounded knowledge of the key topics in Mechanical Engineering enabling the analysis and modelling of mechanical systems, processes and devices	Explains the principles of designing and manufacturing components using additive technologies and the fundamentals of their technical evaluation.	[SW3] Assessment of knowledge contained in written work and projects
[K7_U02] formulates and solves technical problems specific to Mechanics and Mechanical Engineering using appropriate tools including CAD and MES systems, and prepares technical documentation	Selects 3D printing technology, process parameters, post-processing methods, and methods for evaluating the manufactured component.	[SU1] Assessment of task fulfilment
[K7_U04] creatively designs or modifies devices, processes or systems specific to Mechanics and Mechanical Engineering, using computer-aided design systems in the form of technical documentation, taking into account aspects of economic analysis, using appropriate tools and techniques	Designs and modifies components intended for additive manufacturing using CAD tools.	[SU1] Assessment of task fulfilment

<table>
<tr><td>Subject contents</td><td>Course content – lecture

Fundamentals of additive manufacturing technologies and their applications in mechanical engineering. CAD design for 3D printing. Model preparation, part orientation, and generation of support structures. Selection of technologies, materials, and process parameters. Post-processing, surface modification, and evaluation of manufactured components.

Course content – laboratory

Design and preparation of models for additive manufacturing. Operation of selected 3D printing systems, selection of process parameters, and fabrication of components. Support removal, post-processing, and selected surface modification methods. Evaluation of dimensional accuracy, surface quality, and selected functional properties.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Report</td><td>56.0%</td><td>100.0%</td></tr>
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<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>User manuals and technical documentation provided by manufacturers of 3D printers, CAD/CAM software, and slicing software.
Selected standards concerning additive manufacturing, manufacturing quality, and evaluation of 3D-printed components.
Peer-reviewed scientific publications on additive manufacturing, post-processing, and surface modification.</td></tr>
<tr><td>Supplementary literature</td><td>-</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>• CAD design for additive manufacturing.
• Technologies and materials used in 3D printing.
• Model preparation and selection of process parameters.
• Post-processing and surface modification of printed components.
• Evaluation of quality, accuracy, and properties of manufactured components.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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