GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Computer-aided design, PG_00061908		
Field of study	Materials Engineering		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study
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	Division of Magnetic Properties of Materials -> Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marek Augustyniak	
	Teachers	dr inż. Marek Augustyniak	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	30.0	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	5.0	50.0	100

Subject objectives

The class is supposed to guide students in practical skills related to the computer-aided design. The choice of tools is based on the desire to provide solutions as versatile as possible. In particular, the student shall be helped with:

- understanding and creating standard paper product documentation (AutoCAD and similar programs)

- understanding the specifics of 3D design, based on at least one of the currently popular programs (Fusion)

- application of engineering simulation methods, primarily based on the FEA (free Salome pre-processor, ANSYS computing system)

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U01] Can properly use selected analytical, simulation and experimental methods, as well as devices for measuring the fundamental properties of materials and technological processes.	The ability to use appropriately selected analytical, simulation and experimental methods as well as devices enabling the measurement of basic quantities characterizing materials and technological processes is increasing.	[SU2] Assessment of ability to analyse information
[K6_W05] Has the knowledge of mechanics, technology and electrical engineering, including engineering graphics and using computer aid, the use of databases in the design of technological processes.	Knowledge in the field of mechanics, technology and electrical engineering is increasing, including engineering graphics and the use of computer-aided technology, the use of databases in the design of technological processes	[SW3] Assessment of knowledge contained in written work and projects
[K6_K01] Understands the need to improve professional and personal competencies; is conscious of own limitations and knows when to turn to experts, properly establishes priorities helping to accomplish tasks defined by oneself or others.	Students must have basic or advanced skills. Make it a priority.	[SK2] Assessment of progress of work
[K6_U03] Can critically analyze and evaluate the functioning – particularly in the context of materials engineering –existing technical solutions, particularly equipment, objects, systems, processes.	The ability to critically analyze the functioning and evaluate - especially in connection with materials engineering - existing technical solutions, in particular devices, facilities, systems, processes, increases.	[SU1] Assessment of task fulfilment

Subject contents

Spreadsheet: revision of skillsAutoCAD or equivalent program: interface basics, commands, 2D exercises.ANSYS or equivalent program: physics simulation of single parts (mechanics, heat transfer, optional electromagnetism) - comparison with analytical solutions and experiment, where possibleSALOME + Calculix - free software for 3D modeling and FEM calculations

FUSION 360 or OnShape- a popular, intuitive 3D modeling program, with calculation modules and the option of designing printed circuit boards

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Student participation intensity	80.0%	50.0%
Completing design tasks	70.0%	50.0%

Recommended reading

Basic literature	Software manuals (PDF, online training courses)
Supplementary literature	----
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

AutoCAD: Appartment Planning

Fusion 360: Designing a Simple Part from Scratch

Salome + Calculix: simple part vibration calculation; work with models from the GrabCAD portal

ANSYS: prediction of the durability of the car towbar

Work placement

The acquired skills are directly applicable in industry.