GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	CDIO Project I, PG_00050284		
Field of study	Mechanical Engineering, Mechanical Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2022/2023
Education level	first-cycle studies	Subject group	Optional subject group
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	5	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Norbert Piotrowski	
	Teachers	dr inż. Norbert Piotrowski dr inż. Piotr Sender	

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	5.0	65.0	100

Subject objectives	Learn the skills necessary to design, implement, and operate real-world systems and products. Gain technical knowledge, communication, teamwork, and problem-solving skills.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U03] is able to identify, formulate and develop the documentation of a simple design or technological task, including the description of the results of this task in Polish or in a foreign language and to present the results using computer software or other aiding tools	The student is able to discuss the consecutive phases and tasks of the project life cycle. The student is able to create technical documentation for particular tasks of the project. The student knows what computer programs can be used to support the creation of individual elements of documentation.	[SU4] Assessment of ability to use methods and tools
[K6_U02] is able to work in a team and individually, also in multi-disciplinary teams, is able to draw a plan of completing a construction or technological design, shows self-learning abilities	The student is able to create a project team, organise its work and manage it efficiently. In particular: to define roles in a project, to establish competences, tasks and to determine objectives and the division of labour. The student is able to create a plan of any construction or technological project.	[SU4] Assessment of ability to use methods and tools
K6_U01	The student is able to independently obtain information from various sources necessary to solve problems posed in the project.	[SU2] Assessment of ability to analyse information
[K6_K01] is aware of the need for complementing the knowledge throughout the whole life, is able to select proper methods of teaching and learning, critically assesses the possessed knowledge; is aware of the importance of professional conduct and following the rules of professional ethics; is able to show resourcefulness and innovation in the realisation of professional projects	The student is aware of the need of lifelong learning, improving professional, personal and social competences, resulting from the changing reality and diversity of conducted projects. The student is ready to undertake work connected with design.	[SK5] Assessment of ability to solve problems that arise in practice
K6_U09	The student is able to develop a technological process of manufacturing typical mechanical parts and tools.	[SU1] Assessment of task fulfilment

Subject contents

Introduction and explanation of the importance of the CDIO initiative. Team building session. Building commitment of team members in desktop and remote work. Tools to create space for online teamwork. Ways to build active communication, discussion and presentation online. Design stages: adopting a team project plan, developing a Gantt chart, determining the necessary resources and how to obtain them. Designing according to the principles of the design thinking process: empathy, problem definition, idea generation, prototype building and testing. Evaluating designs and presentations.Translated with www.DeepL.com/Translator (free version)

Prerequisites and co-requisites

Knowledge of basic product modeling in CAD, machine manufacturing processes including technologies for machining their components, and information techniques.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Project	50.0%	100.0%

Recommended reading

Basic literature

Edward Crawley, Johan Malmqvist, Sören Östlund, Doris Brodeur: Rethinking Engineering Education, The CDIO Approach, 2007.

Verganti Roberto: Design Driven Innovation: Changing the Rules of Competition by Radically Innovating What Things Mean, 2009.

Tim Brown: Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation, 2009

	Supplementary literature	Chrościcki Zbigniew: Zarządzanie projektem zespołami zadaniowymi, Wyd. C.H. Beck, Warszawa 2001. Trocki Michał: Metodyki zarządzania projektami, Bizarre, Warszawa 2011.
	eResources addresses	Adresy na platformie eNauczanie: CDIO Project I, P, MiBM, sem. 05, zima 22/23 (M:00050284) - Moodle ID: 26858 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26858
Example issues/ example questions/ tasks being completed	Use of new technologies in product and process design.Methods of incremental manufacturing.The use of virtual and augmented reality technologies.Application of artificial intelligence algorithms to solve technical problems.Technological process development using CAD/CAM systems.Robot systems in manufacturing systems.	
Work placement	Not applicable	