University of Gdańsk

Subject card

Subject name and code	From problem to innovation: Design thinking workshops, PG_00179588						
Field of study	Chemistry						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2027/2028			
Education level	Master's studies		Subject group	Optional 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	4		ECTS credits	1.0			
Learning profile	academic		Assessment form	credit			
Conducting unit	Laboratory of Photocatalysis -> Department of Environmental Technology -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Anna Gołąbiewska					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	15.0	0.0	0.0	0.0	15
	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	15		5.0	5.0	25	
Subject objectives	The aim of the course is to develop students skills in identifying and defining problems, generating innovative solutions in the fields of chemistry and environmental protection, and working collaboratively using the design thinking methodology. Students will learn an iterative approach to design, empathetic user needs assessment, as well as prototyping and practical testing of solutions.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[CHEMMU2_W02] Has extended and in-depth knowledge in the field of basic chemistry.	The student demonstrates in-depth knowledge of general, analytical, organic, inorganic, and physical chemistry. The student understands the relationships between the structure and properties of chemical compounds. The student is able to explain reaction mechanisms and predict their course. The student interprets chemical phenomena based on physicochemical laws. The student integrates knowledge from various branches of chemistry to solve both theoretical and practical problems.	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report [SW5] implementation of a problem task
	[CHEMMU2_U10] Reads with understanding scientific and popular science chemical texts in English.	The student is able to identify the main theses and conclusions in scientific articles in the field of chemistry or environmental protection written in English. The student understands specialized chemical terminology and can interpret data presented in tables, graphs, and diagrams in English-language publications. The student is able to summarize or interpret the content of a scientific article in English while preserving its original meaning. The student is able to compare information from various English-language scientific sources, highlighting similarities and differences. The student is able to use English-language literature to justify project and research-related decisions.	[SU1] oral statement/conversation/ discussion [SU5] implementation of a problem task [SU8] observation of student's independent or team work
	[CHEMMU2_K02] Is able to undertake a variety of roles in the team, including supervisory ones.	The student actively participates in team work, demonstrating initiative and responsibility for assigned tasks. The student is able to take on the role of a leader in a project team, organizing group activities and coordinating work on problem-solving. The student demonstrates flexibility in assuming various roles within the team (leader, moderator, executor), depending on the needs of the project. The student supports team members in resolving conflicts and making collective decisions. The student is able to provide and receive constructive feedback in a team environment.	[SK8] observation of student's independent or team work

Course outcome	Subject outcome	Method of verification
[CHEMMU2_W11] Demonstrates general knowledge about the current trends in the development of chemistry as a science and the latest discoveries in this field.	The student is able to identify current research trends in selected areas of chemistry, such as materials chemistry, analytical chemistry, organic chemistry, or environmental chemistry. The student knows and understands the significance of recent advances in chemistry for technological development and solving environmental challenges. The student follows scientific literature and can discuss selected up-to-date publications related to chemical innovations. The student understands the directions of chemical research in the context of sustainable development, green chemistry, and the development of novel materials. The student is able to interpret the relevance of scientific discoveries for the future of the chemical industry and related fields.	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[CHEMMU2_U06] Presents the results of scientific discoveries in chemistry and related disciplines in an understandable way.	The student is able to prepare a clear oral or multimedia presentation on chemical or environmental topics. The student adapts the communication of scientific content to the audience's level of knowledge and needs (e.g., specialist or non-specialist). The student presents scientific data in a logical and structured manner, using appropriate visual tools (tables, graphs, diagrams). The student can synthesize knowledge from various sources to prepare an accessible presentation of research topics. The student effectively answers questions and clarifies doubts related to the presented content, maintaining clarity of expression.	[SU2] presentation/project/paper/ report
[CHEMMU2_U04] Applies acquired knowledge of chemistry and related scientific disciplines.	The student is able to apply knowledge from chemistry, biology, and environmental sciences to analyze and solve project or research problems. The student applies chemical laws and physicochemical relationships in practical engineering tasks. The student integrates knowledge from various disciplines (e.g., chemistry, ecotoxicology, environmental engineering) to develop innovative solutions. The student uses an interdisciplinary approach to assess the environmental impact of designed processes or products. The student can apply theoretical knowledge to interpret the results of experiments or computer simulations.	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report

Course outcome	Subject outcome	Method of verification
[CHEMMU2_K01] Knows the limitations of her/his own knowledge; understands the need for further education and can inspire other people to do so.	The student is able to recognize areas in which their knowledge is insufficient and requires further development. The student actively seeks opportunities for self-improvement, such as participating in additional courses, seminars, conferences, or using specialized literature. The student demonstrates an open attitude toward critical self-assessment and is committed to lifelong learning. The student encourages other team members to pursue knowledge and personal growth. The student is able to share information about useful knowledge sources and self-learning strategies with others.	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report [SK5] implementation of a problem task
[CHEMMU2_K05] Understands the need for independent search of information in scientific literature and popular science magazines.	The student demonstrates initiative in independently searching for up-to-date scientific information in the field of chemistry and related disciplines. The student is able to use scientific databases, journals, and popular science sources to deepen their knowledge. The student selects and evaluates the reliability of information sources in the context of a research or project problem. The student is aware of the ongoing need to update knowledge in line with scientific progress. The student uses independently acquired information to develop their own ideas, projects, and arguments.	[SK1] oral statement/conversation/ discussion

Subject contents

Introduction to Design Thinking, Empathy Problem Identification, User research methods and needs identification, Defining the Design Challenge Formulating project goals and challenges, Idea Generation (Ideation), Prototyping, Testing Solutions, Solution Presentation and Reflection

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
presentation	51.0%	50.0%
classwork	51.0%	50.0%

Recommended reading

Basic literature	scientific articles in English
Supplementary literature	-
eResources addresses	

Example issues/ example questions/ tasks being completed

-

Work placement

Not applicable

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