University of Gdańsk

Subject card

Subject name and code	EcoLab in industrial, PG_00170585		
Field of study	Chemical Business		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2026/2027
Education level	Bachelor'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	2.0
Learning profile	academic	Assessment form	credit
Conducting unit	Faculty of Chemistry -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Joanna Żebrowska	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	30.0	0.0	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	6.0	24.0	60

Subject objectives

The aim of the EcoLab course is to broaden the perspective of students of Chemical Business through direct contact with real work environments where chemistry meets entrepreneurship, technology and ecological responsibility. Through a series of study visits to selected industrial plants, local enterprises and institutions related to environmental protection, students will have the opportunity to experience the practical dimension of knowledge acquired during their studies and learn about potential career paths.
As part of the course, field trips are planned to places such as a craft bakery, a cosmetics company based on natural ingredients, a sewage treatment plant, a waste processing plant, a local brewery, R&D laboratories and other companies that integrate chemical knowledge with business and ecological practice in their activities. Each visit will be preceded by a theoretical introduction and concluded with an analysis of the experience gained in the form of a joint discussion or a short report. The subject aims to:
1. Familiarize students with the practical applications of chemistry in various sectors of the economy by presenting real applications of chemical knowledge in the business and environmental context.
2. Showing possible career paths in industry, services and innovation based on chemistry, showing the variety of career paths that graduates of Chemical Business can take from working in the manufacturing sector, through quality control and research on new products, to running their own business.
3. Understanding the role of chemistry in sustainable development, by observing how companies implement environmentally friendly practices, manage waste, optimize production processes or minimize resource consumption. Developing ecological awareness and corporate social responsibility
4. Developing soft skills, such as the ability to ask questions, work in a team, critically analyze and communicate with representatives of various industries. Building an entrepreneurial attitude and creative thinking in a business context.
5. Developing the ability to observe, analyze and reflect on the application of chemical knowledge in practice. Stimulating creativity and entrepreneurship - contact with real industry problems and challenges is to inspire the search for your own innovative solutions and ideas for a business based on chemistry.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BCHINŻ_K06] Is familiar with the general principles of creating and operating forms of individual entrepreneurship.	The student understands the importance of the chemist's role in shaping responsible and innovative business solutions	[SK1] oral statement/conversation/ discussion [SK8] observation of student's independent or team work
[BCHINŻ_W10] Applies safety and hygiene principles when working on a test and measurement stand or in the field.	The student understands the relationship between industrial activity and ecological and social aspects	[SW1] oral statement/ conversation/discussion
[BCHINŻ_U05] Evaluates the usefulness and functioning of existing engineering and technical solutions as well as research and measurement methods in the chemical industry.	The student is able to assess what measurement equipment should be used for the process and what method should be selected to properly analyze the industrial process.	[SU1] oral statement/conversation/ discussion
[BCHINŻ_K03] Independently sets or implements a set action plan specifying priorities for its implementation; critically assesses its progress.	The student is able to plan the schedule of the chemical industry process in accordance with the project implementation priorities. He is able to obtain information from the industry environment and interpret it in the context of chemical knowledge.	[SK1] oral statement/conversation/ discussion [SK8] observation of student's independent or team work
[BCHINŻ_W01] Describes the relationship between the economy and the functioning of the chemical industry.	The student knows examples of practical use of chemical knowledge in various industries	[SW1] oral statement/ conversation/discussion
[BCHINŻ_U06] Proposes and makes simple devices, operations or unit processes related to the implementation of the technological process used in the chemical industry, taking into account material and energy balances.	The student is able to plan and design a unit process used in the chemical industry, taking into account the process balance.	[SU5] implementation of a problem task [SU8] observation of student's independent or team work

Subject contents

1. Chemistry in business an overview of the industries in which a chemist operates.
2. A visit to a food processing plant/bakery fermentation and product quality.
3. A visit to a cosmetics company recipes, research, quality control.
4. A sewage treatment plant environmental chemistry in practice.
5. Waste management the role of chemistry in recycling.
6. A craft brewery biotechnology and fermentation processes.
7. Workshops and discussions analysis of visits, reflections, project work.
8. Presentation of the final project analysis of the company/industry in terms of the use of chemistry.

Prerequisites and co-requisites

1. Basic knowledge of general and applied chemistry.
2. Openness to teamwork and active participation in fieldwork.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
attendance at classes	30.0%	30.0%
visit report	20.0%	20.0%
final project	40.0%	40.0%
participation in discussion	10.0%	10.0%

Recommended reading

Basic literature

1. CHEMISTRY IN COSMETICS AND COSMETOLOGY, Agnieszka Sarbak, Barbara Jachymska-Sarbak, Zenon Sarbak, ISBN: 978-83-7846-021-3
2. Tomaszewski M. (ed.), Chemistry and sustainable development challenges and perspectives, University of Lodz Publishing House, 2021.
3. "Environmental management" - B. Poskrobko, PWE Publishing House, 2019; ISBN: 9788320824077

	Supplementary literature	Video materials from the YouTube platform: "How Beer is Made" - brewing from the technological side, "How a Wastewater Treatment Plant Works" - wastewater treatment processes, "Zero Waste Company Tour" - innovations in waste management Podcasts (Spotify / Apple Podcasts): Science Meets Business - about the application of natural sciences in business realities, GreenBiz 350 - about sustainable development, innovation and the environment Websites of companies visited as part of EcoLab - as current sources of information about their activities, ecological strategy and technologies (selection depends on the schedule).
	eResources addresses	
Example issues/ example questions/ tasks being completed	What chemical processes are key to the company you are visiting? How does the company control the quality of its products what analytical methods does it use? Does the company implement pro-ecological solutions? Which ones and with what effect? What chemical competences are required for different positions in the company? How does the company present and communicate the chemical composition of its products to customers? How could this companys process/product be improved in terms of chemistry and sustainability? Is there room for chemical innovation or startups in this company?	
Work placement	Not applicable	

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