

Subject card

Subject name and code	Advanced chemistry, PG_00080905						
Field of study	Chemical Business						
Date of commencement of studies	February 2026		Academic year of realisation of subject			2025/2026	
Education level	Master's studies		Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study	
Mode of study	full-time studies		Mode of delivery			at the university	
Year of study	1		Language of instruction			Polish	
Semester of study	1		ECTS credits			16.0	
Learning profile	academic		Assessment form			credit	
Conducting unit	Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Joanna Makowska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	180.0	0.0	0.0	180
	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	180		60.0		160.0	400
Subject objectives	Introducing students to the current research topics of each department Making familiar with the laboratory equipment of each department						
	Developing skills in using specialized equipment and/or software						
	Presentation of the potential Masters Thesis subjects, possible to realize in a given unit						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BCHMU2_W02] Knows and understands the axiological conditions regarding the use of modern measuring techniques and instruments as well as IT tools in chemistry, including economic aspects.	Student: knows the current research topics of the departments knows the equipment facilities used for their implementation knows the structure and principle of operation of the research equipment used during the course knows the subject of research work that can be carried out in a given department	[SW5] implementation of a problem task
	[BCHMU2_K01] Is willing to develop and disseminate appropriate best practices at and outside the workplace.	Student: works alone and/or in a group appropriately determines the priorities for the implementation of research work performs an appropriate self-assessment and takes appropriate actions to improve their qualifications	[SK6] demonstration of practical skills
	[BCHMU2_K04] Is willing to properly assess the acquired knowledge, respect and disseminate it in order to solve specific cognitive and practical issues.	- Student is critical in expressing opinions and is open to the opinions of co-discussants. - Student independently uses literature databases and critically selects source texts - By reading scientific texts, the student learns to analyze and synthesize information, extract key concepts and understand complex chemical issues.	[SK2] presentation/project/paper/report
	[BCHMU2_W01] Knows and understands complex physicochemical processes and is able to analyse their course in connection with other fields of science.	- Student has the ability to recognize and understand specialized terms in the field of chemistry related to research topics in a given department and is able to correctly analyze the observed physicochemical processes; - Student acquires skills in broader analysis of chemical data in connection with other fields of science	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report
	[BCHMU2_K02] Is willing to create and manage group work plans and to take responsibility for the work of the whole team, properly assess their work and individual team members.	- Student identifies the stages, operations and devices involved in production. The student uses his knowledge in practice. - Student is aware of the need to critically analyze his or her own work - The student appreciates the need to be able to work in a team in accordance with his or her role in it (group leader/group member)	[SK8] observation of student's independent or team work
	[BCHMU2_U01] Is able to, on the basis of her/his knowledge, propose a solution to problems in chemistry, taking into account the economic aspect by using advanced measurement techniques.	- Student is able to define a clear goal or task that he wants to achieve. - Student uses his knowledge in practice. He works on projects, experiments and is creative. - Student understands exactly how the technological process works. Identifies the stages, operations and equipment involved in production.	[SU5] implementation of a problem task

	Course outcome	Subject outcome	Method of verification
	[BCHMU2_U04] Is able to independently plan and perform specific research tasks in the field or in the laboratory, interpret their results working individually or in a team, assuming various roles and functions including managerial.	Student: performs planned experiments using specialized equipment and/ or software; makes observations acquires the ability to critically interpret the results obtained acquires the ability to creatively discuss problems and the results of the analyzes carried out	[SU5] implementation of a problem task
Subject contents	The program content is diverse and adapted to the scope of research work carried out in a given department		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	reports on laboratory exercises performed	100.0%	25.0%
	written test covering all issues presented	51.0%	75.0%
Recommended reading	Basic literature	A. Literature required to pass the course A.1. Literature used during classes : Books and scientific articles related to the research topics of individual Departments A.2. Literature for individual studies: Books and scientific articles related to the research topics of individual Departments	
	Supplementary literature	B. Extracurricular readings Books and scientific articles related to the research topics of individual Departments	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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