

1.	Field of study	Geology
2.	Faculty	Faculty of Natural Sciences
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	General information about the module	
Module name		Chemistry in Earth sciences
Module code		W2-GE-S1-408
Number of the ECTS credits		4
Language of instruction		Polish
Purpose and description of the content of education		Moduł Chemia w naukach o Ziemi ma umożliwić studentowi rozpoznanie związków pomiędzy procesami i zjawiskami przyrodniczymi zachodzącymi w geosferze a prawami chemicznymi, właściwościami związków i pierwiastków oraz procesami chemicznymi. Wprowadzane zagadnienia obejmują: Chemiczne pojęcia podstawowe, prawa i definicje. Wiązania chemiczne. Klasyfikacja związków chemicznych. Roztwory i teoria dysocjacji elektrolitycznej. Odczyn i przewodnictwo właściwe wody i pH. Charakterystyka pierwiastków na tle położenia w układzie okresowym. W efekcie ukończenia modułu student powinien umieć zdefiniować podstawowe prawa chemiczne, rozumieć związki pomiędzy chemią a naukami o Ziemi, rozumieć procesy zachodzące w atmosferze oraz hydrosferze i ich zmiany zachodzące pod wpływem działalności człowieka. interpretować procesy przyrodnicze w świetle wiedzy chemicznej, a także samodzielnie prowadzić wybrane obliczenia chemiczne mające zastosowanie w naukach o Ziemi. Moduł daje studentowi umiejętność pracy laboratoryjnej.
List of modules that must be completed before starting this module (if necessary)		[W2-GE-S1-008] Analytical methods in geology

8.	Learning outcomes of the module			
Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)	
W2-GE-S1-408_1	zna podstawowe pojęcia z zakresu chemii z zastosowaniu do nauk o Ziemi	1GE_W1	2	
		1GE_W5	2	
W2-GE-S1-408_2	zna uwarunkowania środowiskowe działalności gospodarczej człowieka w zakresie nauk o Ziemi	1GE_W2	2	
		1GE_W5	3	
W2-GE-S1-408_3	potrafi wykorzystywać posiadaną wiedzę do formułowania i rozwiązywania prostych i typowych, chemicznych problemów	1GE_U1	2	
		1GE_U2	2	
		1GE_U3	1	
		1GE_U7	1	
		1GE_U8	2	
		1GE_W5	3	

W2-GE-S1-408_4	potrafi przeprowadzić wybrane eksperymenty chemiczne	1GE_U2 1GE_U3 1GE_U7	3 1 1
W2-GE-S1-408_5	potrafi wypowiedzieć się w sposób komunikatywny i zrozumiały, w mowie i na piśmie na temat poznanych zagadnień chemii w naukach o Ziemi, również w wymaganych prawem formach: notatnika laboratoryjnego, raportu, projektu, dokumentacji i innych.	1GE_U3	1
W2-GE-S1-408_6	potrafi brać udział w debacie – przedstawiać jasno i oceniać obiektywnie różne opinie i stanowiska, szukając argumentów naukowych oraz dyskutować o nich.	1GE_U4	2
W2-GE-S1-408_7	potrafi śledzić osiągnięcia nauk o Ziemi i środowisku, w tym najnowsze postępy technologiczne oraz konfrontować je z innymi dziedzinami nauki. Zdaje sobie sprawę z konieczności ciągłego pogłębiania wiedzy.	1GE_U8	2
W2-GE-S1-408_8	jest świadomy rzetelności zdobytej wiedzy i konieczności konfrontowania z nią obiegowych opinii pochodzących z różnych źródeł.	1GE_K1	2
W2-GE-S1-408_9	jest świadomy ograniczonego zakresu zdobytej wiedzy i konieczności poszukiwania nowych informacji z wykorzystaniem rzetelnych i pewnych źródeł	1GE_K2	2

9. Methods of conducting classes		
Code	Category	Name (description)
a05	Lecture methods / expository methods	Explanation/clarification <i>explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course</i>
b07	Problem-solving methods	Activating methods: a case study <i>a comprehensive description of a phenomenon connected with the selected discipline; reflecting the reality, presenting the 'what', 'where' and 'how' of the phenomenon, i.e., all of its key aspects to be discussed in class; used as a reproduction, presentation, discussion or diagnosis of factors that shape the phenomenon or interact with it; an in-depth qualitative analysis and evaluation of a selected phenomenon</i>
c06	Demonstration methods	Demonstration-imitation <i>a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours</i>
c07	Demonstration methods	Screen presentation <i>a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image</i>
e01	Practical methods	Laboratory exercise / experiment <i>[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment</i>
e05	Practical methods	Internship <i>including professional and individual training; gaining skills and experience in real-life conditions, e.g., in the environment, institution or workplace the student is preparing for by following a specific study programme; training in real working</i>

		<i>conditions</i>
f03	Methods of self-learning	Conceptual work <i>a (mainly intellectual) activity carried out independently (or in a selected group) resulting in the creation of a concept, idea or project; creating a plan based on a vision; developing a general outline of a project; producing a simplified sketch of the variant versions of a procedure/product/work</i>

10. Forms of teaching					
Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
W2-GE-S1-408_L_1	laboratory classes	24	exam	W2-GE-S1-408_3, W2-GE-S1-408_4, W2-GE-S1-408_5, W2-GE-S1-408_6	c06, e01, e05, f03
W2-GE-S1-408_W_1	lecture	24	exam	W2-GE-S1-408_1, W2-GE-S1-408_2, W2-GE-S1-408_3, W2-GE-S1-408_6, W2-GE-S1-408_7, W2-GE-S1-408_8, W2-GE-S1-408_9	a05, b07, c07

11. The student's work, apart from participation in classes, includes in particular:			
Code	Category	Name (description)	Is it part of the BUNA?
a02	Preparation for classes	Literature reading / analysis of source materials <i>reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class</i>	No
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content <i>reading through the syllabus and getting acquainted with its content</i>	No
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class <i>exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class</i>	No
e01	Activities complementary to the classes	Undertaking, on one's own initiative and individually, activities aimed at expanding the scope or depth of the teaching content, also beyond the walls of the University <i>a set of activities undertaken independently and on the student's own initiative, aimed at expanding the depth and scope of knowledge and skills, their revision and repetition, retention or verification, also activities carried outside the university, e.g., in a culture promoting or educational institution, a laboratory, in the open air, etc.; also self-education</i>	No

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: <https://usosweb.us.edu.pl>.