

1.	<b>Field of study</b>	<b>Geology</b>
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

<b>7. General information about the module</b>	
<b>Module name</b>	<b>Hydrogeology</b>
Module code	W2-GE-S1-409
Number of the ECTS credits	4
Language of instruction	Polish
Purpose and description of the content of education	W ramach realizacji modułu Hydrogeologia student zapoznaje się z problematyką wód podziemnych, ich występowaniem, własnościami fizyko-chemicznymi, podstawowymi parametrami hydrogeologicznymi, wzajemnymi relacjami pomiędzy wodami powierzchniowymi i podziemnymi, prawami rządzącymi ruchem wód podziemnych, podstawowymi sposobami kartograficznego przedstawiania występowania wód podziemnych oraz szacowania ich zasobów a także podstaw ich ochrony. Student poznaje także różne metody pomiaru natężenia przepływu, badania parametrów hydrogeologicznych i interpretacji wyników pomiarów hydrogeologicznych. Nabyte umiejętności pozwolą mu na wykonywanie podstawowych czynności hydrogeologa w geologii, górnictwie, zarządzaniu środowiskiem, administracji geologicznej, kartografii i budownictwie.
List of modules that must be completed before starting this module (if necessary)	[W2-GE-S1-408] Chemistry in Earth sciences [W2-GE-S1-405] zna instrumenty ochrony środowiska przed oddziaływaniem prac geologicznych i górniczych [W2-GE-S1-406] Dynamic Earth 2

<b>8. Learning outcomes of the module</b>			
Code	Description	Learning outcomes of the programme	Level of competencies (scale 1-5)
W2-GE-S1-409_1	zna i rozumie podstawowe pojęcia związane z hydrogeologią oraz obiegiem wody w przyrodzie	1GE_W1	1
W2-GE-S1-409_2	zna podstawowe własności hydrogeologiczne skał	1GE_W1	1
W2-GE-S1-409_3	zna prawa rządzące ruchem wód podziemnych	1GE_W1	1
W2-GE-S1-409_4	potrafi wykonać prostą mapę hydrogeologiczną i przekrój hydrogeologiczny	1GE_K1 1GE_K6 1GE_U1 1GE_U2	1 1 1 2
W2-GE-S1-409_5	posiada umiejętność podstawowej interpretacji wyników badań składu chemicznego wody	1GE_U1 1GE_U6	1 1

		1GE_U7 1GE_U8	1 1
W2-GE-S1-409_6	zna podstawy ujmowania wód podziemnych	1GE_U2 1GE_W1 1GE_W2	1 1 1
W2-GE-S1-409_7	zna różne metody pomiaru natężenia przepływu wody w ciekach powierzchniowych i potrafi je zastosować do obliczeń bilansu hydrogeologicznego	1GE_K1 1GE_U2 1GE_W1	1 1 1
W2-GE-S1-409_8	zna podstawowe zagadnienia związane z zasobami wód podziemnych i ich zagrożeniem antropogenicznym	1GE_W1 1GE_W3 1GE_W4	1 1 1

**9. Methods of conducting classes**

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture <i>a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided</i>
a03	Lecture methods / expository methods	Description <i>a description of objects, phenomena, processes or people; it involves specifying the structure and characteristic features of the object, phenomenon, or process being described; it is usually accompanied by a demonstration of the described object or by its models, drawings, tables, charts, etc.; a description may take the form of an explanation, classification, justification or comparison</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>
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>
e08	Practical methods	Practice-as-research <i>also conducted as fieldwork; an activity aimed at confronting the acquired theory with practice through its practical application; students situate themselves in the reality they observe, study and transform through the prism of the theory; the method of practical classes is dominated by the application of knowledge to solving practical tasks</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-S1-409_L	laboratory classes	36	exam	W2-GE-S1-409_4, W2-GE-	c06, e01, e08

_1				S1-409_5, W2-GE-S1-409_6, W2-GE-S1-409_7	
W2-GE-S1-409_W _1	lecture	12	exam	W2-GE-S1-409_1, W2-GE- S1-409_2, W2-GE-S1-409_3, W2-GE-S1-409_6, W2-GE- S1-409_7, W2-GE-S1-409_8	a01, a03

**11. The student's work, apart from participation in classes, includes in particular:**

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation <i>reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes</i>	No
a03	Preparation for classes	Developing practical skills <i>activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)</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
c03	Preparation for verification of learning outcomes	Implementation of an individual or group assignment necessary for course/phase/examination completion <i>a set of activities aimed at performing an assigned task, to be executed out of class, as an obligatory phase/element of the verification of the learning outcomes assigned to the course</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>.