



СИЛАБУС ДИСЦИПЛІНИ «HYDROLOGY»

Ступінь вищої освіти - Бакалавр

Спеціальність **101 Ecology**

Освітня програма « **101 Ecology** »

Рік навчання 2, семестр 4

Форма навчання денна (денна, заочна)

Кількість кредитів ЄКТС 4

Мова викладання English (українська, англійська, німецька)

Лектор курсу

Контактна інформація

лектора (e-mail)

Сторінка курсу в eLearn

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<https://elearn.nubip.edu.ua/course/view.php?id=400>

ОПИС ДИСЦИПЛІНИ

(до 1000 друкованих знаків)

Hydrology is a fundamental discipline, obligatory for teaching students received the specialties in the field of Ecology of Higher Educational Agrarian Universities of III-IV accreditation levels. This syllabus was developed on the base of Educational Program of Subject "Hydrology" for specialty (field) "Ecology".

In modern society Hydrology is powerful source of productive powers. In particular, intensification of scientific and technological progress in agricultural and food production requires is a rational use of hydrological science achievement, intensification of ecological monitoring of economic activity.

So, the main goal of presented discipline is the scientific study of the waters of the earth including water in the atmosphere, on the earth's surface and underground. Water has unique properties that make it essential for life on earth in the abiotic environment and within the Earth's ecosystems. In this course it will be explored the components of the hydrologic cycle including processes of precipitation, evaporation, transpiration, infiltration, ground-water flow, surface runoff and streamflow. It will be studied the main components of hydrosphere and the World Ocean; surface and groundwater hydrology and their compounds, acquiring the skills for execution.

The purpose of the discipline is to form a theoretical understanding, knowledge and some practical skills of future professionals-ecologists in the field of use, conservation and restoration of water resources and water bodies, understanding of the place and role of water in nature and society.

СТРУКТУРА КУРСУ

Тема	Години (лекції/лабораторні, практичні, семінарські)	Результати навчання	Завдання	Оцінювання
1 семестр				
Модуль 1				
Theme 1. Hydrology as a science. Water cycle.	2/4	Understand the theories and concepts in surface and subsurface hydrology, the physical, chemical and biological interactions	Perform in-class labs and provide data to complete lab reports. Tests of practical and theoretical skills.	Assessing content knowledge can be done by written questions where the student has to respond on.

		<p>between the hydrosphere, the lithosphere, the biosphere and the atmosphere. Particularly explain the water cycle. Evaluate and analyze components of hydrological cycle for the purpose of water resources assessment, natural hazard assessment and mitigation, and environmental planning and management.</p>	<p>Complete learning through the independent study and wider reading for developing knowledge (including elearn). Solving exercises.</p>	<p>Partly that can be done by multiple choice but competencies as constructing explanations and engaging in argument as well as key competencies as communication and hydrological competence need open questions or other ways of assessing.</p>
<p>Theme 2. Structure of the World Ocean. The properties of oceanic water. Dynamics of water masses.</p>	2/4	<p>Deeper understand what is a Water Mass. Give the temperature characteristic of the world's water masses. Give the salinity characteristic of the world's water masses. Apply the relationship between salinity and density. Construct and use the "Law of Constant Relative Proportions". Write the notations for the explaining salinity and temperature at various latitudes (Equatorial, Tropical, Subtropical, Moderate, Subpolar and Polar Waters).</p>	<p>Perform in-class labs and provide data to complete lab reports. Tests of practical and theoretical skills. Complete learning through the independent study and wider reading for developing knowledge (including elearn). Solving exercises.</p>	<p>Assessing content knowledge can be done by written questions where the student has to respond on. Partly that can be done by multiple choice but competencies as constructing explanations and engaging in argument as well as key competencies as communication and hydrological competence need open questions or other ways of assessing.</p>
<p>Theme 3. The Water Resources and Water Budget.</p>	2/4	<p>Understand that Water budget is a basic tool that can be used to evaluate the occurrence and movement of water through the</p>	<p>Perform in-class labs and provide data to complete lab reports. Tests of practical and theoretical</p>	<p>Assessing content knowledge can be done by written questions where the student has</p>

		<p>environment. Connect water budgets to their effects of factors, such as soils, vegetation, land use and so on. Recall that buildings, roads, and parking lots in urban areas tend to increase runoff and decrease infiltration. Explain why installation of drainage and irrigation systems alter infiltration, runoff, evaporation, and plant transpiration rates.</p>	<p>skills. Complete learning through the independent study and wider reading for developing knowledge (including elearn). Solving exercises.</p>	<p>to respond on. Partly that can be done by multiple choice but competencies as constructing explanations and engaging in argument as well as key competencies as communication and hydrological competence need open questions or other ways of assessing.</p>
<p>Theme 4. Surface Hydrology. General characteristics of streams and river flow. Composition of river water.</p>	2/4	<p>Understand the main hydrological pathways to rivers. Explain the form of river hydrographs and know how these vary under different environmental conditions. Use the hydrograph for the ecological settings and management. Show knowledge of different types of flood event and managing floods. Ability to describe and illustrate the controls on river channel size and shape. Discuss and explain water and sediment transport in rivers. Perform hydrograph analysis</p>	<p>Perform in-class labs and provide data to complete lab reports. Tests of practical and theoretical skills. Complete learning through the independent study and wider reading for developing knowledge (including elearn). Solving exercises.</p>	<p>Assessing content knowledge can be done by written questions where the student has to respond on. Partly that can be done by multiple choice but competencies as constructing explanations and engaging in argument as well as key competencies as communication and hydrological competence need open questions or other ways of assessing.</p>
<p>Theme 5. Wetland Hydrology.</p>	2/4	<p>Describe what are the components of a wetland water budget. Discuss and explain pollutant removal pathways and</p>	<p>Tests of practical and theoretical skills. Complete learning through the independent</p>	<p>Assessing content knowledge can be done by written questions where the student has</p>

		<p>removal kinetics. Explain the difference between different types of wetland. Discuss and being able to predict how the different types of constructed wetland systems affect their applicability and limitations. Explain how identify classes of wetlands as described by the Wetland Classification System (bogs, fens, swamps, marshes, shallow water) and determine the wetland forms within these classes.</p>	<p>study and wider reading for developing knowledge (including elearn). Solving exercises.</p>	<p>to respond on. Partly that can be done by multiple choice but competencies as constructing explanations and engaging in argument as well as key competencies as communication and hydrological competence need open questions or other ways of assessing.</p>
<p>Theme 6. Limnology of Lakes)</p>	2/2	<p>Define what a lake is. Explain basic terminology about standing waters. Illustrate the different types of lakes and reservoirs. Use knowledge on the structure and functioning of aquatic ecosystems, with the emphasis on standing water bodies, which are an important source of drinking water and other ecosystem services.</p>	<p>Perform in-class labs and provide data to complete lab reports. Tests of practical and theoretical skills. Complete learning through the independent study and wider reading for developing knowledge (including elearn). Solving exercises.</p>	<p>Assessing content knowledge can be done by written questions where the student has to respond on. Partly that can be done by multiple choice but competencies as constructing explanations and engaging in argument as well as key competencies as communication and hydrological competence need open questions or other ways of assessing.</p>
<p>Theme 7. Groundwater</p>	2/6	<p>Explain in detail how groundwater</p>	<p>Perform in-class labs and provide</p>	<p>Assessing content</p>

Hydrology		<p>systems function. Describe the interactions between groundwater systems, surface waters and land use. Explain feedback mechanisms between groundwater, land use and climate and how these are affected by changes occurring in one or several of the systems. Determine of groundwater classes and groups by their composition. Descript of the composition by the Kurlovs' formula.</p>	<p>data to complete lab reports. Tests of practical and theoretical skills. Complete learning through the independent study and wider reading for developing knowledge (including elearn). Solving exercises.</p>	<p>knowledge can be done by written questions where the student has to respond on. Partly that can be done by multiple choice but competencies as constructing explanations and engaging in argument as well as key competencies as communication and hydrological competence need open questions or other ways of assessing.</p>
Theme 8. Permafrost. Glaciers Hydrology	1/2	<p>Explain the bases of glacier hydrology. Link types of glaciers with the conditions of their formation. Understand the impact of climate change on natural processes in boreal, arctic and high mountain environments, with focus on glaciology (snow and glaciers), geocryology (ground ice and permafrost).</p>	<p>Perform in-class labs and provide data to complete lab reports. Tests of practical and theoretical skills. Complete learning through the independent study and wider reading for developing knowledge (including elearn). Solving exercises.</p>	<p>Assessing content knowledge can be done by written questions where the student has to respond on. Partly that can be done by multiple choice but competencies as constructing explanations and engaging in argument as well as key competencies as communication and hydrological competence need open questions or other ways of assessing.</p>
Всього за 1 семестр				70
Екзамен				30
Всього за курс				100

ПОЛІТИКА ОЦІНЮВАННЯ

Політика щодо дедлайнів та перескладання:	Роботи, які здаються із порушенням термінів без поважних причин, оцінюються на нижчу оцінку. Перескладання модулів відбувається із дозволу лектора за наявності поважних причин (наприклад, лікарняний).
Політика щодо академічної доброчесності:	Списування під час контрольних робіт та екзаменів заборонені (в т.ч. із використанням мобільних девайсів). Курсові роботи, реферати повинні мати коректні текстові посилання на використану літературу
Політика щодо відвідування:	Відвідування занять є обов'язковим. За об'єктивних причин (наприклад, хвороба, міжнародне стажування) навчання може відбуватись індивідуально (в он-лайн формі за погодженням із деканом факультету)

ШКАЛА ОЦІНЮВАННЯ СТУДЕНТІВ

Рейтинг здобувача вищої освіти, бали	Оцінка національна за результати складання екзаменів заліків	
	екзаменів	заліків
90-100	відмінно	зараховано
74-89	добре	
60-73	задовільно	
0-59	незадовільно	не зараховано