**Додаток 3**

до наказу від 23.03.2023 р. № 244

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|  | **COURSE SYLLABUS**  **«General Ecology»** |
| **Degree of higher education - Bachelor** |
| **Specialization 193 Geodesy and Land Management** |
| **Educational programme «Geodesy and land management»** |
| **Academic year 1, semester 2**  **Form of study full-time** |
| **Number of ECTS credits 4** |
| **Language of instruction English** |
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| **Lecturer of the course** | **docent Rakoid O.O., PhD on agrarian sciences** |
| **Contact information of the lecturer (e-mail)** | **orakoid@nubip.edu.ua** |
| **Course page on eLearn** | **https://elearn.nubip.edu.ua/course/view.php?id=2249** |

**COURSE DESCRIPTION**

*(up to 1000 printed characters)*

The discipline "Basics of Ecology" aims to deepen the knowledge of the environment; to form ecological thinking and outlook in future professionals, especially because of the increasing environmental threats and challenges in modern times; to form environmentally sound skills at performance upcoming professional duties. Main goal of the discipline is to expand the object and methods of ecological studies, to define the place of ecology in the systems of preparing Bachelor - specialist in land management.

Educational tasks are to acquaint students with the basic provisions of the ecology: structure, objects, tasks and value of ecology; importance of ecological knowledge for the development and sustainable functioning of society as a whole as well as for sustainable environmental management; introduction to problems of global environmental crisis especially land and soil degradation; methods of analysis and forecasting of the environmental conditions.

**Competencies of the educational programme:**

*Integrative competency (IC):*

The ability to solve complex specialized problems of geodesy and land management.

*General competencies (GC):*

GC01. Ability to learn and master modern knowledge.

GC02. Ability to apply knowledge in practical situations.

GC04. Ability to communicate in the national language both orally and in writing.

GC13. The ability to preserve, multiply moral, cultural, scientific values and achievements of society based on an understanding of history, patterns of development of the subject area, its place in the general system of knowledge about nature and society, as well as in the development of society, techniques and technologies, to use different types and forms of physical activity for recreation and a healthy lifestyle.

*Professional (special) competencies (PC):*

PС01. Ability to apply fundamental knowledge for the analysis of phenomena of natural and man-made origin in the performance of professional tasks in the field of geodesy and land management.

PС02. Ability to apply theories, principles, methods of physical and mathematical, natural, socio-economic, engineering sciences in performing tasks of geodesy and land management.

PС08. Ability to carry out professional activities in the field of geodesy and land management, taking into account the requirements of professional and civil safety, labour protection, social, environmental, ethical, economic aspects.

**Program learning outcomes (PLO) of the educational programme:**

PLO5. To apply conceptual knowledge of natural and socio-economic sciences in the performance of tasks of geodesy and land surveying.

**COURSE STRUCTURE**

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| **Topic** | **Hours**  (lecture/laboratory, practical, seminar) | **Learning outcomes** | **Tasks** | **Assessment** |
| **1 семестр** | | | | |
| **Модуль 1** | | | | |
| **Topic 1**  **Basic concepts and definitions of ecology as a science** | 2/- | Know the subject and objectives of modern ecology as a science;  Know the main achievements of the world and Ukrainian environmental science. | Submitting practical work  Completing independent work (including in eLearn) | **10** |
| **Links of ecology with other natural disciplines. Stages of formation of ecology as a science** | -/2 |
| **Topic 2**  **The concept of the biosphere. Components of the environment** | 2/- | Understand the main points of Vernadsky's theory about the biosphere;  Know the basic properties of the components of the environment;  Comprehend the operation of the basic ecological laws, principles, and rules | Submitting practical work  Completing independent work (including in eLearn) | **10** |
| **Basic laws of ecology. Laws-axioms of B. Commoner** | -/2 |
| **Topic 3**  **Ecological factors. Interaction between biological systems and the environment** | 2/- | Understand the impact of natural and anthropogenic environmental factors on biota sustainability;  Analyze the peculiarities of the effect of environmental factors on organisms | Submitting practical work  Completing independent work (including in eLearn) | **10** |
| **The impact of abiotic environmental factors on living organisms. Biotic factors and interactions in ecosystems** | -/2 |
| **Topic 4**  **Structure and principles of ecosystem functioning** | 2/- | Understand the principles of ecosystem functioning;  Know the basic ecological strategies of existence and survival of populations, general principles of adaptation of organisms;  Calculate the possible consequences of environmental pollution for living organisms | Submitting practical work  Completing independent work (including in eLearn)  Solving environmental cases.  Writing tests. | **10** |
| **The study of trophic relationships in an ecosystem. Practical application of the rule of the ecological pyramid and the law of bioaccumulation (concentration)** | -/2 |
| **Модуль 2** | | | | |
| **Topic 5**  **Ecosystem dynamics and resilience** | 2/- | Be able to take into account environmental aspects when analyzing and solving technical and economic problems, implementing development programs for enterprises and industries. | Submitting practical work  Completing independent work (including in eLearn) | **10** |
| **Consequences of the impact of human activity on natural systems at the global level** | -/2 |
| **Topic 6**  **Environmental issues of the current state of system “Nature−**  **Society”** | 2/- | Know the main global environmental problems and environmental problems of Ukraine;  Understand the role of man and society in creating and solving environmental problems. | Submitting practical work  Completing independent work (including in eLearn)  Writing an essay | **10** |
| **Problems of ensuring environmental sustainability in Ukraine by the example of the "small motherland"** | -/2 |
| **Topic 7.**  **Human impacts on the planet.**  **Achieving environmental sustainability** | 3/- | Learn the principles of sustainable (ecologically balanced) development of society and the principles of the strategy for preserving the environment and life on Earth;  Learn the principles of sustainable (ecologically balanced) development of society and the principles of the strategy for preserving the environment and life on Earth;  Be able to find and highlight important environmental aspects in technical and economic information;  Apply the principles of protection and environmentally sound use of land resources in professional activities. | Submitting practical work  Completing independent work (including in eLearn) | **10** |
| **Problems of sustainable environmental management. Principles of sustainable production and consumption. Calculation of the individual ecological footprint** | -/3 |
| **Total for 1 semester** | | | | **70** |
| **Credit** |  |  |  | **30** |
| **Total for course** | | | | **100** |

**ASSESSMENT POLICY**

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| ***Policy regarding deadlines and resits:*** | Assignments submitted after the deadline without valid reasons will be graded lower. Resitting of modules will be allowed with the permission from the lecturer and in the presence of valid reasons (e.g. medical reasons). |
| ***Academic honesty policy:*** | Cheating during tests and exams is strictly prohibited (including the use of mobile devices). Coursework and research papers must contain correct citations for all sources used. |
| ***Attendance policy:*** | Class attendance is mandatory. In case of objective reasons (such as illness or international internships), individual learning may be allowed (in online format by the approval of the dean of the faculty). |

**SCALE OF ASSESSMENT OF STUDENT KNOWLEDGE**

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| **Student rating, points** | **National grade based on exam results** | |
| **exams** | **credits** |
| 90-100 | excellent | passed |
| 74-89 | good |
| 60-73 | satisfactory |
| 0-59 | unsatisfactory | not passed |

**RECOMMENDED SOURCES OF INFORMATION**

1. Environmental databanks of the Information Analytical Center of the Ministry of the Environment and Natural Resources: www.ecobank. org.ua

2. Information and analytical data base “Environmental passport of the regions of Ukraine”: http://ukrecopass.org.ua/

3. Bulletin “State of Ground Waters of Ukraine”: http://www.geoinf.kiev.ua/

4. Bulletin “Annual Bulletin on the State of Rivers of Ukraine”: http://www.cgo.kiev.ua/

5. Climatic cadastral register of Ukraine: http://www.cgo.kiev.ua/

6. Environment and Ecology: http://environment-ecology.com/

7. The United Nations Convention to Combat Desertification/ Knowledge Hub. https://knowledge.unccd.int/

8. Офіційний сайт Міністерства захисту довкілля та природних ресурсів України: http://www.menr.gov.ua

9. WWF Footprint Calculator https://footprint.wwf.org.uk/#/

10. ЕкоЗагроза (офіційний вебресурс і мобільний додаток Міндовкілля, завдяки якому можна дізнатись достовірну інформацію про стан повітря, води, ґрунту та інші дані) https://ecozagroza.gov.ua/