MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

V. N. KARAZIN KHARKIV NATIONAL UNIVERSITY

CONFIRMED

Academic Council of

V. N. Karazin Kharkiv National University

“\_\_\_\_” \_\_\_\_\_\_\_\_\_\_\_\_\_ 20\_\_\_

protocol №\_\_\_

Entered into force from \_\_\_\_\_\_\_\_\_\_\_

by order of \_\_\_\_\_ 20\_\_ № \_\_\_\_\_\_\_\_\_\_\_\_

Vice-Rector for Research and Academic Affairs

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Name, SURNAME)

MICRO-SQUALIFICATION PROGRAM

***Biological methods for assessing the quality of environmental components***

NATIONAL QUALIFICATIONS FRAMEWORK LEVEL \_\_\_\_\_7\_\_\_\_\_\_\_\_\_\_\_\_\_

(5, 6, 7, 8 level)

QUALIFICATION TYPE \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_professional\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(educational or professional)

CATEGORY OF QUALIFICATION \_\_\_\_\_\_\_\_\_\_\_microqualification\_\_\_\_\_\_\_\_\_\_\_

(partial qualification or micro-qualification)

QUALIFICATION specialist in environmental quality assessment using biological methods

(title of qualification)

**Kharkiv 2026**

**Profile of the program**

|  |  |  |
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| **1. General information** | | |
| **Head of the program** | | Krainiukov O. M., Doctor of Geography, Professor, Professor of the Department of Ecology and Environmental Management |
| **Members of the program development working group** | | Krivitska I. A., Candidate of Biological Sciences, Associate Professor of the Department of Ecology and Environmental Management |
| **Full name of the higher education institution and structural unit where the program is implemented** | | V. N. Karazin Kharkiv National University, Institute of Environmental Sciences, Green Energy, and Sustainable Develoment, Department of Ecology and Environmental Management. |
| **National Qualifications Framework Level** | | 7 (NQF Ukraine), Second cycle (QF-EHEA),  7 (EQF-LLL) |
| **Official name of the program** | | Biological methods for assessing the quality of environmental components |
| **Type of document issued and scope of the program in ECTS credits and academic hours** | | Certificate  3 ECTS, 90 hours |
| **Language(s) of teaching /assessment** | | Ukraine, English / Ukraine |
| **2. Program goal** | | |
| *The purpose of the educational program is the theoretical and practical training of a specialist who possesses a set of declared competencies and is prepared to work in the field of economics (according to State Classifier 009:2010) with a generalized object of activity "Natural and anthropogenically modified components of the environment, the state of which is assessed using biological methods"* | | |
| **3. Characteristics of the programm** | | |
| **Orientation, features and objectives of the program** | | *The microcredit program "Biological Methods for Assessing the Quality of Environmental Components" has an applied-scientific orientation. It is aimed at training specialists who are able to apply modern biological, analytical, and digital methods to assess the state of the environment, identify sources of pollution, and develop recommendations for reducing anthropogenic load. The program provides for international participation in the development and teaching of the Erasmus+ project «DOMANI – Developing Micro-credentials Ecosystems in Ukraine and Mongolia for Competitive and Resilient Green Economies».* |
| **The main focus of the program** | | *The program combines scientific knowledge, digital innovation, and social responsibility, preparing a new generation of specialists who are able not only to measure but also to understand, predict, and improve the state of the environment.*  *Keywords: biotesting, bioindication, environmental quality, toxicological assessment, environmental safety, digitalization of environmental research, sustainable development, ecosystem approach.* |
| **4. Teaching and assessment** | | |
| **Teaching and learning** | | *main approaches: student-centered, activity-based, value-based; electronic, distance and self-learning;*  *– educational technologies: problem-based, interactive, information-communicative, project-based.* |
| **Assessment** | | *100-point evaluation system through the following types of control with accumulation of points received: current (oral and written survey), intermediate (defense of practical, independent works, seminar classes, tests), final certification in the form of a test.* |
| **5. Program competencies or job functions** | | |
| **General competencies** | *GC 01. Ability to conduct research at an appropriate level.*  *GC 02. Knowledge and understanding of the subject area and professional activity* | |
| **Professional competencies** | *PC1. Ability to critically reflect on the basic theories, methods and principles of natural sciences.*  *PC2. Ability to conduct environmental monitoring and assess the current state of the environment.*  *PC3. Ability to participate in the management of environmental protection activities and/or environmental projects.* | |
| **DOMANI - competencies** | *DC1. Objectively analyze situations, identify opportunities, and develop systemic strategies that create long-term sustainable value.*  *DC2. Develop scenarios, shape a vision of the desired future, and create innovative solutions for sustainable transformations.*  *DK3. Work productively in diverse teams, resolve conflicts constructively, and maintain focus on shared goals.*  *DK4. Assess the state of ecosystems in terms of biodiversity, plan and restore habitats, and manage protected areas to conserve species, environments, and ecosystem services.* | |
| **6. Program learning outcomes** | | |
| **Program learning outcomes** | *PLO 1. Understand the basic environmental laws, rules, and principles of environmental protection and nature management.*  *PLO 2. Understand the basic concepts, theoretical and practical problems in the field of natural sciences that are necessary for analysis and decision-making in the field of ecology, environmental protection, and optimal nature management.*  *PLO 3. Be able to predict the impact of technological processes and production on the environment.*  *PLO 4. Combine independent and teamwork skills to achieve results with an emphasis on professional integrity, honesty, and responsibility for decision-making.*  *PLO 5. Be able to choose the optimal methods and tools for conducting research, collecting and processing data.* | |
| **DOMANI - Program learning outcomes** | *DPLO 1. Objectively analyze situations, identify value creation opportunities, and formulate strategies that combine impact, feasibility, and ethics.*  *DPLO 2. Clearly articulate problems, identify key actors and relationships, and identify levers for systemic change.*  *DPLO 3. Design and implement pilot projects, collect and analyze monitoring data, track results against KPIs, and adjust plans based on results.*  *DPLO 4. Work effectively in a team, resolve conflicts constructively, and maintain alignment on shared goals.* | |
| **7. Resource provision for program implementation** | | |
| **Human resources** | Lecturers have a scientific degree and/or academic title, including Doctor of Geographical Sciences, Candidate of Biological Sciences. All lecturers are full-time employees of V. N. Karazin KhNU, who regularly take advanced training. | |
| **Material and technical support** | Equipment and supplies necessary for field research, technical training aids (multimedia projectors, laptops, printers; scanners, personal computers with software) for the formation of subject competencies in the learning process; use of bases for conducting educational and practical classes. | |
| **Information and educational and methodological support** | Official websites KKhNU (<https://karazin.ua/>), Institute of Post-Qualifying Education and Part-Time (Distance) Learning ([http://moodle.karazin.uа](http://moodle.karazin.xn--u-8sb/)), Institute of Environmental Sciences, Green Energy, and Sustainable Develoment (<http://ecology.karazin.ua>) contain information about the microcredit educational program. | |

**2. List of program components**

|  |  |  |  |
| --- | --- | --- | --- |
| Code of educational component | Component/Topic Name | Number of hours / ECTS | Control form |
| EК. 1 | Scientific and theoretical foundations of bioindication and biotesting | 0,5/15 | Test control |
| EК. 2 | Applied aspects of bioindication and biotesting | 0,5/30 | Test control |
| EК. 3 | Innovative developments in bioindication and promising methods of biotesting | 1/15 | Test control |
| PC. 1 | Practical component | 1/30 | Differential examination |
| C. 1 | Certification exam |  |  |
| **TOTAL PROGRAM VOLUME** | | **90/3** |  |

**3. Form of attestation according to the program**

Certification is carried out in the form of a certification exam in the form of a test, which includes questions of a theoretical and practical component.

**4. Program verification**

Head of the program \_\_\_\_\_\_\_\_\_\_\_\_\_ Oleksii KRAINIUKOV

(signature) (Name, SURNAME)

Considered at the department meeting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

from «\_\_\_» \_\_\_\_\_\_ 20\_\_ , protocol № \_\_\_

Acting Head of Department \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Andriy ACHASOV

(signature) (Name, SURNAME)

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