MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

TERNOPIL VOLODYMYR HNATIUK NATIONAL PEDAGOGICAL UNIVERSITY

EDUCATIONAL AND PROFESSIONAL PROGRAM

THE FIRST (BACHELOR) LEVEL OF HIGHER EDUCATION

IN SPECIALTY 101 ECOLOGY

THE FIELD OF KNOWLEDGE 10 Natural sciences

QUALIFICATION: Bachelor of Ecology, specialist in environmental protection and sustainable use of nature

1. **Profile of educational program in specialty 101 "Ecology" (specializing in "environmental protection and sustainable use of nature")**

1 - General information	
Full name of higher educational institution and structural unit	Ternopil Volodymyr Hnatiuk National Pedagogical University
The degree of higher education and the name of the qualification in the language of the original	bachelor of ecology, specialist in environmental protection and sustainable use of nature
The official name of the educational program	Educational and professional program of preparation of applicants for higher education of the first (Bachelor) level in specialty 101 "Ecology"
Type of diploma and the content of the educational program	The bachelor's degree, unitary, 240 credits ECTS, the term of study - 4 years
Availability of accreditation	According to the decision of the Accreditation Commission dated January 27, 2015, Protocol No. 114 (Order of the Ministry of Education and Science of Ukraine dated February 6, 2015 No. 133) in the field of knowledge (specialty) 10 Natural sciences 101 Ecology is recognized as accredited by the level of bachelor (based on the order of the Ministry of Education and Science of Ukraine of 19.12 .2016 No. 1565) Certificate of Accreditation, series NI No. 2096701, issued by the Ministry of Education and Science of Ukraine dated December 4, 2017
Cycle/Level	NQF of Ukraine - level 6, EQ - EHEA - first cycle, EQF LLL - level 6
Prerequisites	Full secondary education, EL of Junior Specialist
Teaching language	Ukrainian

The duration of the educational program	by July 1, 2025
Internet address of the permanent description of the educational program	

2 - The purpose of the educational program

The main purpose of modern education in the specialty 101 Ecology is the training of highly skilled professional ecologists, who are capable of solving specialized problems and practical problems in the field of ecology, environmental protection and nature management, which involves the application of theories and methods of sciences related to the environment, environmental protection and nature use, which are characterized by interdisciplinary nature, for the implementation of environmental, inspection, executive, advisory and communicative production functions, decision-making, conducting research activities in the field of ecology.

3 - Characteristics of the educational program

Subject area (branch of knowledge, specialty, specialization)	10 Natural Sciences, 101 Ecology, Specialization: environmental protection and sustainable use of nature.
Orientation of the educational program	The educational and professional bachelor's program is applied; it provides dynamic, integrative and interactive training, and offers a comprehensive approach to solving current environmental problems at the local, regional and national levels. The educational program is aimed at gaining by students the professional knowledge, abilities, skills and other competencies for the successful implementation of professional activities.
The main focus of the educational program and specialization	General education in the field of environmental science. The emphasis is on acquiring skills and knowledge on ecology, environmental protection and sustainable use of nature, which involves specific employment and the possibility of further education and career development: master's professional and

	scientific programs. Key words: ecology, environmental protection, sustainable use of nature
Peculiarities of the program	The program provides the acquisition of theoretical knowledge, abilities, skills and other competencies acquired by higher education students, sufficient for solving complex scientific problems in the field of ecological science, as well as acquisition of competencies of the research direction. The program provides an opportunity to obtain a dual diploma within the framework of existing agreements on cooperation between the University and leading foreign educational institutions (a cooperation agreement (on semester academic exchange) and the Jan Długosz Academy in Czestochowa (Poland)).
4 - Eligibility of graduates for employment and further training	
Eligibility for employment	Graduates of the program are able to perform professional work according to SC 003: 2010: 2211.2 Ecologist; 2211.2 Expert on ecology; 2149.2 Environmental engineer; 2213.2 Environmental Protection Engineer; Animal protection engineer; 3449 State Inspector; 3212 Inspector for Nature Conservation; 3340 Laboratory assistant (education);

	1494 Manager (administrator) of ecological systems; 1412 Manager (administrator) of nature use; 2213.1 Researcher-consultant (agronomy, zoo engineering, forestry, nature reserve); 2148.2 Specialist in geosystem monitoring of the environment; 2442.2 Specialist in environmental management.
Further training	Ongoing studying at the second (master's) level according to the master's educational and professional programs. FQ-EHEA - cycle 2, EQF-LLL - level 7, NQF - level 7
5 - Teaching and evaluation	
Teaching and studying	Student-centered studying, self-studying, problem-oriented studying, practice using general, special and scientific principles, combination of lectures, practical lessons, solving situational tasks, trainings, project implementation, research work, e-studying in the MOODLE system.
Evaluation	Cumulative rating system, which involves student evaluation for all types of instructor-led and non-instructor-led educational activities, which are aimed at mastering the educational load from the educational program: current, module and final control; qualifying bachelor`s paper.
6 - Program competencies	
Integral competency	Ability to solve complex specialized tasks and solve practical problems in the field of environmental activity or during the process of study, which involves the application of certain theories and methods, modern achievements in ecology.

General competencies	**GC1** The ability to abstract thinking, analysis and synthesis based on logical arguments and verified facts. **GC2** Ability to form a worldview, understanding of the principles of social development; to determine the peculiarities of the contemporary sociopolitical development of Ukrainian society and its perspectives during the implementation of industrial and social activities. **GC3** Ability to communicate in a foreign language, ability to read and comprehend the professionally oriented and general scientific foreign-language literature, to use it in social and professional spheres, professional literacy, ability to communicate in a foreign language verbally and in writing. **GC4** Ability to communicate in the mother tongue in written and verbal form, to present own and collective results of professional and research activity. **GC5** Ability to critical comprehension of the basic theories, methods and principles of natural sciences. **GC6** Ability to use modern information technologies for solving practical and scientific tasks on ecology and environmental protection. **GC7** Knowledge of principles, methods and organizational procedures of scientific activity, general scientific (traditional, modern), concrete scientific (interdisciplinary, special) methods of research; understanding of causal relationships of development of society, and the ability to use them in professional and social activity. **GC8** Ability to apply knowledge in practical situations. **GC9** Ability to systematic creative thinking, persistence in achieving the goals of professional and research activity, conducting investigations at the appropriate level; **GC10** Ability to adapt and act in a new situation. **GC11** Skills to carry out safe activity. Ability to organize work in the enterprise in accordance with the requirements of safety of life and labor protection. **GC12** Ability to use a professional level in public activity and possess an active public position. **GC13** Ability to organize and define goals and tasks of own and collective activity, to ensure their effective and safe execution, to assess the quality of performed works. **GC14** Knowledge and understanding of the subject area and professional activity. **GC15** Ability to preserve and increase the moral, cultural, scientific values and

	achievements of society on the basis of understanding of the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society, and in the development of society, machinery and technology, to use different types and forms of motor activity for active rest and healthy lifestyle. **GC16** Skills of interpersonal interaction and the ability to work in a team.
Professional competencies	**PC1** The ability to organize and carry out laboratory and field research of objects or components of the environment in an adequate and safe manner. **PC2** The ability to use principles of preservation of biotic and landscape diversity, to develop measures aimed at its preservation and formation of ecological network. **PC3** Knowledge about the factors of the impact of environmentally dangerous phenomena and processes on the health of a person, the ability to use them to determine the social consequences of changes which are caused by people in the state of the environment. **PC4** The ability to use modern system of standards and norms for estimating and regulating anthropogenic loading on the environment. **PC5** The ability to assess the consequences and prospects of urbanization and the principles of the functioning of urban systems to ensure balanced development of urban areas. **PC6** The ability to assess the current state of landscapes. **PC7** The ability to predict the state of the environment, create models of environmental objects and processes using mathematical, cartographic methods and geoinformation technologies. **PC8** The ability to determine the level of environmental danger of the region to substantiate managerial decisions; knowledge of world and national standards and regulations on environmental management. **PC9** Understanding of the principles of manufacturing processes that have a negative impact on the environment and the ability to offer measures to reduce this impact. **PC10** The ability to analyze objects and processes of both natural origin and anthropogenic origin in terms of fundamental principles and knowledge of natural sciences, as well as on the basis of appropriate methods. **PC11** The ability to conduct environmental monitoring, and to assess the current

	state of the environment (including the use of information and communication technologies). **PC12** The Ability to apply in the professional activity the basic provisions of international and national environmental legislation, including identifying of environmental offenses; as well as to use international and domestic experience in solving regional and transboundary environmental problems. **PC13** The ability to assess the influence of economic activity on the environment and formulate relevant professionally based conclusions. **PC14** The ability to choose methods and means for solving practical problems in the field of ecology, nature management and environmental protection, including using modern information technologies. **PC15** The ability to deliver information, problems and ideas on ecology and nature management to specialists and non-specialists; to communicate with representatives of other professional groups of different levels. **PC16** Knowledge and understanding of theoretical bases of ecology, as well as the ability to offer measures to solve practical problems in the field of ecology, nature management and environmental protection; **PC17** The ability to apply economic mechanisms for the use, protection and reproduction of natural resources. **PC18** The ability to assess the environmental risks of various types of economic activity. **PC19** The ability to use geoecological, geological, geomorphological and other materials and maps while performing complex ecological and geological estimations of natural objects, generalizations and forecasts. **PC20** The ability to use methods of analysis and assessment of the state of the air, surface and underground water, soils, biota; to analyze the influence of economic activity on the components of the environment and to develop measures in order to reduce this impact. **PC21** The ability to participate in the development of a management system and management of waste production and consumption. **PC22** The ability to participate in the management of environmental actions and environmental projects.

7 - Program outcomes of studying	
	POS1 Knowledge and understanding of the basic concepts, paradigms, the theory of ecological science; ability to allocate modern methods and methods of scientific research, to set and solve perspective scientific research and applied tasks; combine the skills of self- and team work in order to obtain the result. **POS2** Knowledge of historical preconditions, main factors, tendencies, consequences, urbanization prospects and principles of functioning of city systems. **POS3** Knowledge of components and principles of ecological management, functions, tasks of environmental management; methodological, normative and legal and methodical principles of ecological examinations. **POS4** Knowledge of methods for determining sources and ways of entering the environment of harmful substances; the ability to assess their impact on human health and the quality of the environment. **POS5** Be able to use the principles of the bequest of the territories; to conduct scientific research in protected ecosystems, to organize eco-educational, educational, recreational activities and public control; to choose the optimal strategy for conducting public hearings on problems and formation of the territories of the NFP and the ecological network; **POS6** Knowledge of the modern system of standards and norms in ecological activity, the basis of valuation of anthropogenic load on natural resources. **POS7** To develop and implement mechanisms of territorial eco-management, planning, monitoring of regional development, to make plans and programs. **POS8** The ability to search information from different sources; to apply software, GI technologies; to present the results of integrated research in the field of ecology and environmental protection, using cartographic modeling methods; to present ideas, problems, solutions and own experience in the field of ecology to the professional audience and to the public. **POS9** The ability to determine ecological, economic and social efficiency of environmental protection measures, economic losses because of environmental pollution and the amount of their compensation. **POS10** The ability to use mathematical knowledge in statistical processing of environmental monitoring data and modeling and forecasting of phenomena and

	processes, which are occurring in it. **POS11** The ability to navigate in the current legislation, to apply the norms of environmental legislation in professional activity; knowledge of main national and international legislative norms in the field of ecology, nature management and environmental protection. **POS12** The ability to use knowledge and practical skills in chemistry and biogeochemistry for the study of the state of the environment and the possible transformation of pollutants in the natural environment. **POS13** The ability to use the knowledge about Earth (meteorology and climatology, hydrology, soil science, geology with the basics of geomorphology) for the study of phenomena and processes occurring in the natural environment. **POS14** The ability to solve a wide range of environmental problems and problems by understanding their fundamental principles and using both theoretical and experimental methods, modern research technologies. **POS15** The ability to use knowledge of Physics for environmental research; the ability to analyze physical phenomena of both natural origin and technological origin from the point of view of fundamental physical principles and knowledge. **POS16** To know the basics of professional culture; to be able to communicate in Ukrainian and foreign languages in everyday life and for professional needs. **POS17** The ability to solve the issues of balanced coexistence of man and nature on the basis of general ecological knowledge; the ability to implement environmentally safe activities. **POS18** The ability to analyze the causes and consequences of evolutionary changes concerning organisms, populations, ecosystems and the biosphere; to assess the dynamics of species diversity of organisms in biocoenoses; to identify the factors that determine the formation of landscape and biological diversity. **POS19** To be able to carry out a comprehensive ecological study of the territory, to provide an ecological and economic assessment of the development of regions, to disclose the specifics of regional nature management with a purpose to find ways in order to optimize it. **POS20** To be able to carry out laboratory research, to collect and process primary material, to participate in field research; to be able to use modern methods and means of environmental monitoring of the state of various components of the environment.

	POS21 To use knowledge and skills in recreational ecology and ecological tourism in order to resolve conflicts between satisfaction of recreational demand and rational use of tourist resources. **POS22** To know the principles of development of society, peculiarities of the world historical and philosophical process, to be able to apply theoretical, applied and instrumental components of historical and political knowledge in public life and in industrial and service activity. **POS23** Knowledge of the structure of the national economy, the influence of its individual branches on the environment, methods of prevention of pollution of the environment which is caused by human activity; the ability to make informed decisions regarding the improvement of production technologies and the management of industrial and municipal waste. **POS24** To Be able to use knowledge and practical skills in landscape and environmental research. **POS25** To apply modern pedagogical technologies for the purpose of environmental education tasks taking into account psychological and age-long peculiarities of personal development; to raise professional level by continuing education and self-education; the ability to diagnose the own psychophysical states and feelings in order to ensure effective and safe activity; the observance of the principles of a healthy lifestyle.
8 - Resource support for the implementation of the program	
Personnel support	The educational process is provided by 1 Doctor of Sciences, professor, 7 candidates of sciences, Associate Professors and 1 instructor of the department of geoecology and methodology of teaching environmental disciplines. The program involves the scientific and pedagogical staff of the university with scientific degrees and / or academic degrees (including 7 doctors of sciences, professors, 16 associate professors, 4 instructors). With the purpose of obtaining the professional level all scientific and pedagogical workers undergo an internship every five years.
Material and technical support	Provision of training rooms, computer workplaces, multimedia equipment meets the needs. There is all necessary social and domestic infrastructure, the number of places in the Dormitory meets the requirements. There is equipment for practical

	and laboratory work, information search and processing of results; there are specialized computer classes with the necessary software and unlimited open access to the Internet.
Information and studying and methodological support	Official site of TVHNPU http://www.tnpu.edu.ua, unlimited access to the Internet, scientific library, reading rooms, distance learning system MOODLE, electronic library, educational and methodological complexes of disciplines, didactic materials for students` self-studying and individual work of disciplines, programs of practice.
9 - Academic mobility	
National Credit Mobility	Further training (internship) of scientific and pedagogical workers in domestic higher education institutions on the basis of bilateral agreements between Ternopil National Pedagogical University and Ukrainian universities.
International Credit Mobility	An agreement on the semester academic exchange between the Jan Długosz Academy in Czestochowa (Poland) and Ternopil National Pedagogical University named after Volodymyr Hnatiuk.
Studying of foreign applicants for higher education	____

2. List of components of the educational and professional program and their logical consistency

2.1. List of components of educational and professional program

Code	Components of the educational program (educational disciplines, course projects (work), practice, qualification work)	Credits	Assessment
1	2	3	4
OBJECTIVE COMPONENTS OF EDUCATIONAL PROGRAM			
OC1	History of Ukrainian statehood and national culture	5,0	Exam
OC2	Foreign language	7,0	Credit, Exam
OC3	Ukrainian language (for professional purpose)	3,0	Credit, Exam
OC4	Philosophy	3,0	Exam
OC5	Physical Education	8,0	Credit
OC6	Superior Mathematics	6,0	Credit
OC7	Modern information technologies	3,0	Credit
OC8	Geology with the basics of geomorphology	3,0	Credit
OC9	Biology	6,0	Exam
OC10	Meteorology and Climatology	3,0	Credit
OC11	Physics	4,0	Credit
OC12	Hydrology	3,0	Credit
OC13	General ecology (and neoecology)	6,0	Exam

OC14	Chemistry with the basics of biogeochemistry	5,0	Credit
OC15	Life safety, Labour protection and Civil protection	4,0	Credit
OC16	Pedology	3,0	Exam
OC17	Entry to the profession	3,0	Exam
OC18	Reserved case	4,0	Exam
OC19	Human ecology	3,0	Credit
OC20	Organization of management in ecological activities	3,0	Credit
OC21	Rationing anthropogenic capacity on the natural environment	4,0	Credit
OC22	Ecology of urban systems	4,0	Exam
OC23	Landscape ecology	3,0	Exam
OC24	Modeling and forecasting of the environment	4,0	Exam
OC25	Ecological safety	4,0	Exam
OC26	Technoecology	4,0	Exam
OC27	Economics of nature management	3,0	Exam
OC28	Environmental monitoring	5,0	Exam
OC29	Environmental protection legislation and environmental law	4,0	Credit
OC30	Ecological expertise	3,0	Exam

Total			**123**
	Selective components		
SC1	Political Studies	2,0	Credit
SC2	Law Studies	2,0	Credit
SC3	Foreign language (situational and social)	2,0	Credit
SC4	Sociology or Ethics and Aesthetics	2,0	Credit
SC5	General Earth science	3,0	Credit
SC6	Healthy lifestyle and school hygiene	1,5	Credit
SC7	Psychology, Pedagogy and preparation of young people for family life	5,0	Credit
SC8	Ecological mapping with the basics of topography	3,0	Exam
SC9	Mathematical methods in ecology	4,0	Exam
SC10	Ecological and geographical bases of nature use	3,0	Credit
SC11	Methods of analysis and control of the natural environment	3,0	Credit
SC12	Socioecology	3,0	Exam
SC13	Agroecology	4,0	Exam
SC14	Methodology of organizing off-hour environmental activities	3,0	Exam
SC15	Environmental risks and their assessment	3,0	Credit, Exam
SC16	Ecological geography	3,0	Exam
SC17	Ecologically clean production	4,0	Credit, Exam
SC18	Biogeography with the basics of geobotany	5,0	Credit

SC19	Standardization in ecology	4,0	Credit
SC20	Ecology of crisis situations	3,0	Credit, Exam
SC21	Landscape Studies	4,0	Exam
SC22	Environmental monitoring	3,0	Credit
SC23	Basics of sustainable development	3,0	Exam
SC24	Basics of the scientific research	3,0	Credit
SC25	Biological basics of nature protection and biotechnology	3,0	Credit
SC26	Environmental education and insurance	5,0	Credit
SC27	Recreational ecology and ecological tourism	4,0	Credit
SC28	Ecotoxicology and radioecology	2,0	Exam
SC29	Ecological business	4,0	Credit
	Total	**93,5**	
SC31	Term papers	2,0	Credit, Exam
SC32	Preparation of qualifying bachelor's paper	6,0	Exam
Practical Training, OC			
OC33	PT in the field of natural sciences	6	Credit
OC34	PT in natural preserved objects	5,5	Credit
OC35	Landscape and ecological practice	6,0	Credit
OC36	Ecological practice in manufacturing	6,0	Credit

Total	23,5
General	240

3. Form of certification of higher education applicants

The attestation of applicants of the educational program “Ecology” of specialty 101 Ecology is carried out in the form of defense of qualification paper and a complex examination and ends with the issuance of a standard document of awarding a bachelor's degree with a qualification: Bachelor of Ecology, specializing in environmental protection and sustainable use of nature.

The attestation is carried out to the public.