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COMPARATIVE CHARACTERISTICS OF EDUCATIONAL PROGRAMS FOR BACHELOR-LEVEL ENVIRONMENTALISTS IN UKRAINIAN AND SLOVAKIAN UNIVERSITIES

Abstract. The relevance of the study stems from the need to integrate Ukrainian environmental education into the European space and to identify an optimal combination of applied and fundamental approaches for training specialists capable of effectively addressing modern global and regional environmental challenges. The purpose of the article is to conduct a comparative analysis of selected aspects of bachelor-level environmental education in Ukraine and Slovakia (using the case study of Petro Mohyla Black Sea National University and the University of Prešov) to identify the specifics of applied and fundamental approaches in their educational programs. The study is based on comparative, statistical, and quantitative analyses. It has been determined that the educational program for the training of bachelors of ecology at Petro Mohyla Black Sea National University has a more applied character, emphasizing anthropogenic impact, optimization of nature management, the use of geographic information systems, cartography, and the formation of practical skills for work in the public and private sectors. In contrast, the Environmental and Natural Sciences program of the University of Prešov is more fundamental. This program has a strong biological and practical component, including extensive field and laboratory work. A comparative analysis of the volume of courses in ECTS credits confirms that Petro Mohyla Black Sea National University provides a larger volume of credits (43) to humanitarian training, while University of Prešov has a much larger volume (54) of natural and fundamental sciences. Both programs cover key environmental courses and emphasize the practical application of knowledge. However, Petro Mohyla Black Sea National University integrates more interdisciplinary approaches, while the University of Prešov focuses on integrating environmental knowledge with legal and communication aspects. Both models are valuable. And the ideal environmental education may lie in combining the strengths of both approaches.

Keywords: environmental education, bachelor training, educational programs, comparative analysis, sustainable development.

Introduction. The integration of Ukraine into the European Higher Educational Area (EHEA) necessitates a thorough evaluation of existing academic frameworks, particularly in fields critical to global sustainability like environmental science. Current trends emphasize the synchronization of national curricula with European standards to foster mutual recognition and enhance professional mobility. While Ukraine maintains a high density of higher education institutions per capita − even accounting for recent demographic shifts and population outflow − the focus is shifting from quantity to the qualitative alignment of teaching methods and research outputs. In the context of global educational integration, the ranking and prestige of higher education institutions play a crucial role in determining the quality of specialist training, as evidenced by the latest international academic assessments [10].

In this context, comparing the Ukrainian model with the Slovakian experience offers valuable insights. Slovakia, a stable member of the EHEA, demonstrates a decentralized approach with a strong emphasis on international cooperation and fundamental scientific research. Environmental education, in particular, serves as a vital benchmark for this comparison. In Ukraine, programs often prioritize applied skills, focusing on anthropogenic impact and environmental management to meet immediate labor market demands. Conversely, Slovakian institutions frequently maintain a deep-rooted focus on biological systems and biodiversity, providing a robust foundation for scientific inquiry. By examining the structural and conceptual differences between these two systems, we can identify pathways for creating a more holistic and interdisciplinary educational model that addresses the complex environmental challenges of the 21st century.

Analysis of recent research and publications, previously unresolved part of the general problem. The integration of Ukraine's higher education system into the European space has been a focal point for many scholars. Specifically, the quality imperatives and the evaluation of educational standards are thoroughly analyzed in the collective work edited by T.Dobko [3]. The impact of the Bologna Process on the Ukrainian academic landscape and the necessary terminological

shifts are detailed by A.Holovchuk and colleagues [4].

Regarding professional training in the environmental sector, V.Boholiubov, V.Petruk, and N.Rydei provide a solid theoretical and methodological foundation for forming competencies in the context of sustainable development [1; 9; 13]. Specialized aspects of training, such as chemical preparation for environmental engineers and the implementation of «green chemistry» principles, are explored by Ye.Kofanova, and M.Slivka, R.Mariychuk, respectively [5; 6; 14]. Comparative studies of environmental education in foreign countries, which serve as a basis for current research, were initiated in the works of O.Mitryasova and S.Rudyshyn [7; 12].

However, most of these studies focus either on general pedagogical frameworks or specific chemical courses. There remains a significant gap in recent cross-country comparisons (specifically between Ukraine and Slovakia) that analyze how applied and fundamental models of environmental education adapt to the post-pandemic and war-affected labor market.

Slovakia, with a population of about 5.4 million, has about 20 universities, i.e., about 1 university per 270,000 people. While Ukraine, with a population of about 41 million, has about 200 universities, which is about 1 university per 205,000 people. Thus, Ukraine has slightly more universities per capita than Slovakia.

According to the Office of the United Nations High Commissioner for Refugees, as of January 2023, about 8 million people had left Ukraine. However, it is important to note that this figure is dynamic and constantly changing [11].

Current demographic shifts due to the war have altered the educational landscape. With approximately 33 million people and 200 universities, Ukraine maintains a ratio of one institution per 165,000 citizens. In comparison, Slovakia has one university per 270,000 people. While these figures suggest a higher density of universities in Ukraine, the quantity does not directly correlate with quality. Factors such as research output, international cooperation, and the increasing migration of Ukrainian students to Slovakian universities remain more critical indicators of educational integration.

The comparative analysis of higher education systems in Ukraine and Slovakia reveals several functional differences that impact environmental programs:

– While both countries offer state-funded education, Slovakia provides full tuition waivers for international students (including Ukrainians) in programs taught in Slovak, which significantly influences student mobility.

– Slovakian universities often demonstrate a higher degree of decentralization in curriculum development, allowing for more rapid integration of regional environmental needs compared to the more standardized Ukrainian model.

– Being part of the EHEA, both countries follow the Bologna Process; however, Slovakian programs are more deeply integrated into EU-funded research networks and Erasmus+ initiatives, providing broader field-work opportunities for students.

Before 2022, Ukraine's higher education system served approximately 1.5 million students. Due to the full-scale invasion and subsequent migration, this number has declined, while the student population in Slovakia (approx. 130,000–150,000) has seen an influx of Ukrainian nationals. Consequently, the structural gap between the two systems has narrowed in terms of student mobility and international integration. Slovakia has evolved from a neighbor into a key educational hub for Ukrainian students, which fosters a more unified educational landscape between the two countries despite the difference in the absolute number of institutions.

In Ukraine, ecologists are trained at many universities, as environmental majors are quite common. In particular, such majors are represented at Taras Shevchenko National University of Kyiv, Ivan Franko National University of Lviv, V.N.Karazin Kharkiv National University, and other large universities throughout the country. In Slovakia, ecologists are also trained at several universities, including Comenius University in Bratislava, Pavol Josef Šafárik University in Košice, and others. However, in general, the number of universities offering environmental majors in Ukraine is greater than in Slovakia, reflecting the larger size of the country and the greater number of higher education institutions.

The purpose of the study is to conduct a comparative analysis of selected aspects of bachelor-level environmental education in Ukraine and Slovakia (using the case study of Petro Mohyla Black Sea National University and the University of Prešov) to identify the specifics of applied and fundamental approaches in their educational programs.

While in Ukraine, Petro Mohyla Black Sea National University (PMBSNU) and Slovakia, the University of Prešov (PU) differ in their structural organization and student populations, they represent two distinct yet complementary models of environmental education. The comparison of these diverse programs is conducted to identify how different academic accents − specifically the applied focus in Ukraine and the fundamental biological focus in Slovakia − contribute to the development of core professional competencies. This analysis allows for the identification of best practices from both systems: the practical flexibility of the Ukrainian curriculum and the deep theoretical grounding of the Slovakian model, which is essential for the harmonization of educational standards within the EHEA.

PMBSNU and PU represent different academic traditions. PMBSNU, as a younger institution, utilizes an interdisciplinary approach in its environmental curriculum, while PU leverages its extensive experience in natural sciences to provide a fundamental biological foundation for its students. These differing educational priorities reflect the broader national strategies for environmental specialist training in both countries.

Research methods applied. The research primarily employed a comparative analysis approach to evaluate the educational programs in ecology at PMBSNU and PU. This involved examining their similarities and differences in curriculum, teaching methods, and academic focus. The methodological framework of the study is supported by established approaches to teaching in higher education, which emphasize the effectiveness of various instructional strategies for student development [2].

Data from tables comparing the volume of courses in humanities, mathematical, natural sciences, and specific scientific fields (biological, chemical, soil, and physics) were analyzed to highlight variations in program structure and emphasis. The study also considered the duration of study, the total number of courses, and the final knowledge control methods at both universities.

The study is based on comparative, statistical, and quantitative analyses. These methods were specifically used to evaluate the ECTS credit distribution across humanities, mathematical, and natural science cycles, highlighting the structural differences between the programs. Furthermore, graphical modeling was employed to visualize the intensity of the study load, allowing for a clear comparison of course volumes and professional training credits per year at both universities.

Results and Discussion. The concepts of training

ecologists at PMBSNU and PU have both common features and differences, reflecting their regional specificities and academic approaches.

At PMBSNU, located in the ecologically sensitive region of the Black Sea coast, the emphasis is on the practical application of ecological knowledge, with a focus on monitoring and management of coastal ecosystems, as well as on studying the impact of industry on the environment.

PU, located in a region with diverse mountain and forest ecosystems, focuses on basic research in ecology, with a special emphasis on biodiversity, nature conservation, and sustainable development, as well as on collaboration with international organizations to study global environmental problems, reflecting their different geographical locations and corresponding environmental challenges.

The application of comparative analysis of the concepts of educational programs in ecology at PMBSNU and PU provides the following similarities:

– both programs are aimed at training specialists capable of working in the field of environmental protection, environmental monitoring, and natural resource management;

– both programs include the study of fundamental environmental courses, such as botany, zoology, geography, ecology, and nature conservation;

– both universities emphasize the practical application of knowledge, including field and laboratory research.

The application of comparative analysis of the concepts of educational programs in ecology at PMBSNU and PU provides the following differences:

– The program «Ecology, Environmental Protection, and Sustainable Nature Management» at PMBSNU is more applied in nature, with an emphasis on the study of anthropogenic impact on the environment and optimization of nature management; It is aimed at developing in students the skills necessary for work in government institutions, private companies, and water management organizations; given the location of PMBSNU, the program is partially focused on environmental problems of coastal zones.

– The program «Ecological and Environmental Sciences» at PU is more fundamental in nature, with an emphasis on the study of ecological systems and processes. It is aimed at training specialists capable of conducting scientific research in the field of ecology and nature conservation. It is more focused on the study of biodiversity.

Thus, both universities offer high-quality educational programs in ecology, but with different emphases. PMBSNU trains specialists for practical work in the field of environmental protection, while PU places more emphasis on scientific research.

The data in Table 1 compares the volume of academic courses at universities, which are presented in ECTS credits, a standardized system for assessing the study load in the EHEA.

Table 1

Comparative analysis of educational ecology program [8; 15]

Parameter	**Petro Mohyla Black Sea National University, Ukraine**	**University of Prešov, Slovakia**
Name of the educational program	E2 Ecology, «Ecology, Environmental Protection, and Balanced Nature Management»	Ecological and Environmental Sciences (1610R00)
Term Duration of study	3 years 10 months	3 years
Total number of courses, including practice	52	49
Number of courses per semester	7– 9	5–11
Teaching methods	Combined	Combined
Final control of knowledge	Bachelor's thesis defence (7.5)	Exam in Ecology (6) Bachelor's thesis defence (10)

Source: developed by the authors

According to the data in Table 1, the educational programs in ecology at PMBSNU and PU have both similar and different characteristics. Both programs offer a bachelor's degree, but the duration of study at PMBSNU is 10 months longer than at PU, which may indicate a different approach to the organization of the educational process or a different number of ECTS credits required to obtain a degree.

The total number of academic courses, including internships, also differs: 52 at PMBSNU versus 49 at PU, which may indicate a different breadth of coverage of educational material or a different structure of curricula. The number of courses per semester ranges from 7 to 9 at PMBSNU and from 5 to 11 at PU, which may reflect a different intensity of the study load or a different approach to the distribution of courses during the academic year.

Both universities use combined teaching methods, which involve a combination of lectures, practicals, and laboratory classes. The final certification systems also reflect different academic priorities. At PMBSNU, the final control is focused on the defence of a bachelor's thesis, which is assigned 7.5 ECTS credits. This suggests a concentrated effort on independent research work. In contrast, PU employs a combined approach: a comprehensive state exam in Ecology (6 ECTS) and a separate defence of the bachelor's thesis (10 ECTS). The larger total volume of credits for the final stage at PU (16 ECTS vs 7.5 ECTS) indicates a more rigorous examination of both theoretical knowledge and research proficiency during the graduation phase.

The courses of the humanities cycle at the PMBSNU account for 10 courses, 43 credits. At PU, except for 1 course (English), 8 credits are completely postponed for the courses of the humanities block.

Both universities have a relatively small volume of mathematical courses, but PMBSNU offers a little more.

PU has a much larger volume of natural sciences, both in terms of the number of courses and credits, which indicates greater attention to this field.

Thus, PMBSNU offers a wider range of humanities, while PU has a larger range of natural sciences. Both universities have a relatively small number of mathematical courses. The difference in the range of courses may reflect the different academic priorities and specializations of the universities (Table 2).

Table 2

Comparative analysis of educational program concepts

University	the number/volume of courses in humanitarian training	the number/volume of courses in mathematical sciences	the number/volume of courses in natural basic sciences
PMBSNU	10 / 43 credits*	2 / 9 credits	4 / 27 credits
PU	1 (English) / 8 credits	1 / 4 credits	10 / 54 credits

*English (9) + second language (9)
Source: developed by the authors [8; 15]

Table 3 presents a comparative overview of the volume of scientific courses across the universities, specifically focusing on biological, chemical, soil science, and physics courses. The data is structured to show the ratio of the number of courses to the total credits allocated to each field within the respective universities. The data reveals distinct patterns in credit allocation, highlighting the diverse approaches to scientific education and research.

Table 3

Comparative analysis of the educational programs in natural sciences concepts

University	the number/volume of biological courses	the number/volume of chemical courses	the number/volume of courses in soil sciences	the number/volume of courses in physics sciences
PMBSNU	1 / 7 credits	1/ 11 credits	1 / 4 credits	1 / 5 credits
PU	16 / 79 credits	3/ 14 credits	2 / 8 credits	–

Source: developed by the authors [8; 15]

PMBSNU demonstrates a balanced distribution of credits across the four scientific courses. The ratio of courses to credits is relatively low, indicating a focused approach within each field. For example, biological courses account for 1 out of 7 credits, chemical courses for 1 out of 11 credits, soil sciences for 1 out of 4 credits, and physical sciences for 1 out of 5 credits. The university shows an even distribution of science programs.

PU, in contrast, demonstrates a significantly higher volume of biological courses, with 16 out of 79 credits dedicated to this field. The volume of chemical courses is also notable, with 3 out of 14 credits. The volume of soil sciences is 2 out of 8 credits. The physical sciences programs are not represented in the provided data. The university has a large focus on biological sciences.

Beyond the quantitative distribution of ECTS credits, the study analyzed the acquisition of general and professional competencies in both programs.

General competencies in the Ukrainian program (PMBSNU) focus on social responsibility, legal literacy, and the ability to work in a multidisciplinary environment, reflecting its stronger humanities component. In contrast, the Slovakian program (PU) emphasizes digital literacy in natural sciences and autonomous research skills.

Regarding professional (specialized) competencies, the PMBSNU curriculum is designed to produce specialists capable of environmental impact assessment, ecological management, and technical monitoring (applied approach). Conversely, PU focuses on deep taxonomic competence, biodiversity assessment, and laboratory analytical skills (fundamental approach). While PMBSNU students excel in solving complex socio-ecological problems, PU graduates demonstrate higher proficiency in field research and biological diagnostics.

The data highlights a clear difference in the emphasis placed on various scientific courses between the two universities. PMBSNU maintains a relatively even distribution, suggesting a broader scientific curriculum. PU, on the other hand, appears to prioritize biological sciences, with a considerably larger volume of credits allocated to this field. It is important to notice that the absence of data doesn`t mean the absence of programs.

These variations in credit distribution may reflect differences in the universities' research focus, faculty expertise, or program offerings. Further research into the specific courses and research activities within each course would provide a more comprehensive understanding of these differences.

The «Ecological and Environmental Sciences» program at PU offers a comprehensive three-year education covering a wide range of environmental courses. The program combines theoretical knowledge with practical skills, preparing students for a career in the field of ecology or for further studies. The program consists of 35 courses, which are distributed over three years of study. The total number of ECTS credits that students have is 115 (Fig. 1).

Courses cover basic environmental principles and concepts. Courses develop practical skills in students necessary for conducting environmental research and address environmental protection and sustainable development issues. Courses explore legal and political aspects of environmental protection. Environmental communication is taught through courses that teach students to communicate effectively with the public about environmental issues. New trends in ecology are presented through courses that introduce students to the latest advances in the field of ecology. Thus, the ecology program at PU offers a balanced education that combines theoretical knowledge with practical skills. The courses in the program cover a wide range of environmental issues, preparing students for a variety of career paths. The program is constantly updated to reflect the latest advances in the field of ecology. This analysis shows that the ecology program at PU is comprehensive and well-structured, providing students with a solid foundation for further studies and careers in the field of ecology.

The comprehensive nature of the Ecology program at PU is ensured by specific educational components. Basic environmental principles are covered through core modules such as «General Ecology» and «Landscape Ecology», which form theoretical foundations. Practical skills and research competencies are developed via «Methods in Ecological Research» and «Hydrobiology», where students master field sampling and bioindication.

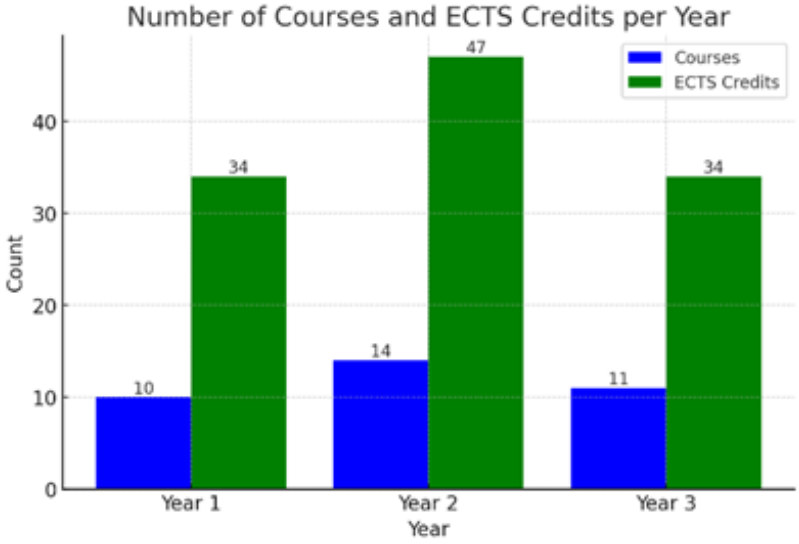

Fig.1. Number of courses and credits of professional training for bachelors in environmental science at PU [8; 15].

Legal and political aspects are addressed in the «Environmental Law and Policy» course, providing students with the professional competence to navigate EU environmental regulations. Environmental communication is integrated into the «Seminar for Bachelor Thesis», where students develop the ability to present scientific data to diverse audiences. The conclusion that the program is well-structured is based on the linear progression from fundamental biological subjects (Botany, Zoology) in the first years to specialized applied modules (Conservation Biology, Environmental Monitoring) in the final year, ensuring a holistic transition from theory to professional practice.

The curriculum for ecology students at PMBSNU presents a comprehensive approach to environmental science education. The program encompasses a wide range of courses, from fundamental sciences like «Geochemistry of the Environment» and «Soil Science and Land Conservation» to specialized fields such as «Environmental Monitoring» and «Radioecology and Radiation Safety». This diversity ensures that students gain a holistic understanding of ecological principles and their practical applications. Several courses, including «Ecological Mapping with GIS Basics» and «Fundamentals of Topography and Cartography», focus on developing essential technical skills. This practical orientation prepares students for real-world environmental management and research. Courses like «Biometrics and Mathematical Methods in Ecology» and «Modelling and Forecasting Environmental Conditions» highlight the importance of quantitative analysis in ecological studies. This interdisciplinary approach equips students with the tools to address complex environmental challenges. Subjects such as «Environmental Safety and Risk Assessment» and «Social Ecology» reflect the program's commitment to addressing current environmental concerns. This focus ensures that graduates are well-versed in the latest environmental policies and practices.

The curriculum strikes a balance between theoretical knowledge and practical skills, ensuring that students are well-prepared for both academic and professional pursuits. The inclusion of courses on environmental monitoring, risk assessment, and GIS demonstrates the program's alignment with contemporary environmental standards and technologies. The interdisciplinary nature of the program encourages students to develop critical thinking and problem-solving skills, which are essential for addressing complex environmental issues.

The wide range of courses offered and the skills gained permit the students to become prepared for a wide range of job opportunities, from working in laboratories to working in the field or working in government positions.

Figure 2 demonstrates several courses and credits of professional training for bachelors in environmental science at PMBSNU. The professional training for ecology students at PMBSNU is characterized by its breadth, depth, and relevance to contemporary environmental challenges. The program's emphasis on practical skills, interdisciplinary knowledge, and modern environmental standards ensures that graduates are well-prepared for successful careers in environmental science and management.

So, comparing the professional training of ecologists at the two universities, the following can be noted:

– Both universities include courses in their programs that reflect modern environmental challenges. At PMBSNU, these challenges are addressed through the lenses of «Environmental Safety» and «Global Environmental Problems», which focus on risk assessment and international protocols. At the PU, these aspects are integrated into specific educational components such as «Protection of the Environment», «Environmental Monitoring», and «Biodiversity Conservation». Furthermore, modern challenges like climate change and resource management are examined within the «Landscape Ecology» and «Ecosystemology» modules. These courses provide the necessary theoretical and practical tools for students to analyze and mitigate current environmental threats, ensuring the relevance of their professional training.

– PMBSNU's program is distinguished by a wide range of courses, covering both fundamental (geochemistry, soil science, meteorology) and applied aspects of ecology (environmental monitoring, environmental safety, GIS). There is an emphasis on interdisciplinarity (biometrics, modelling). The program in PU also covers a wide range of environmental courses, but there is a greater emphasis on the biological component, practical skills (field practices, laboratory techniques). Also, great attention is paid to communication skills (popularization

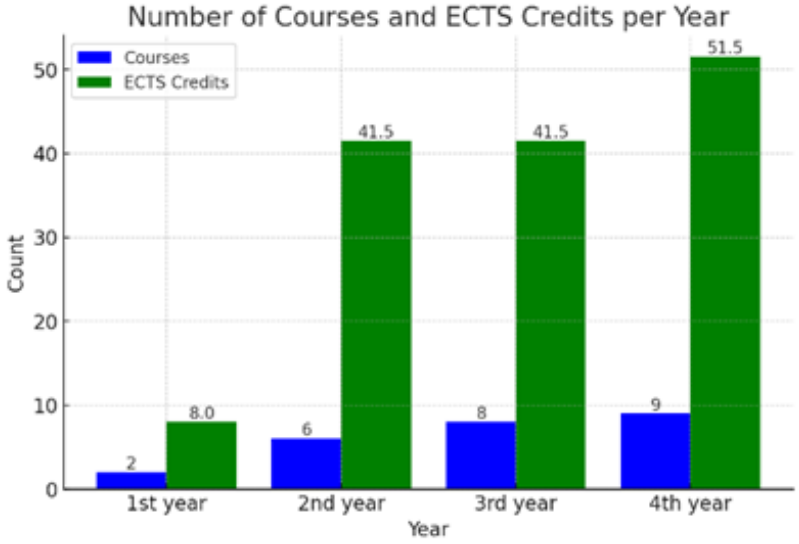

Fig.2. Number of courses and credits of professional training for bachelors in environmental science at PMBSNU [8; 15].

of ecology).

– PMBSNU's program pays significant attention to the development of practical skills, especially in the field of GIS and cartography. Some courses prepare for practical work in the field of monitoring and risk assessment. The practical and laboratory training at PU is characterized by an integrated approach to natural sciences. Laboratory work primarily focuses on biological microscopy, chemical analysis of water and soil samples, and taxonomic identification of flora and fauna specimens. Field practices are organized as intensive cycles (5–10 days) in various Slovakian national parks, where students perform ecological mapping and biodiversity assessment. This hands-on experience directly prepares graduates for the labor market, specifically for roles in environmental monitoring agencies and nature conservation organizations, where field-work proficiency is a mandatory requirement.

– PMBSNU's program actively integrates interdisciplinary approaches, in particular through courses in biometrics and modelling. Interdisciplinarity is also present at PU, but to a lesser extent, with an emphasis on the integration of environmental knowledge with legal and communicative aspects.

Thus, both universities offer high-quality professional training for ecologists, but with different emphases. PMBSNU provides a broader theoretical base and emphasizes interdisciplinarity. PU has a strong biological and practical orientation and prepares students for specific professional tasks. Both programs meet modern requirements for environmental education. It is important to note that the choice of university depends on the individual needs and career goals of the student.

Both programs are aimed at training specialists capable of working in the field of environmental protection, environmental monitoring, and natural resource management. University programs include the study of basic environmental courses such as botany, zoology, geography, ecology, and nature conservation. Both universities emphasize the practical application of knowledge, including field and laboratory research. The programs actively integrate interdisciplinary approaches, in particular through courses in biometrics and modelling.

Conclusions and prospects for further research. The program «Ecology, Environmental Protection, and Balanced Nature Management» of PMBSNU has its emphasis on the study of anthropogenic impact on the environment and optimization of nature management. The program aims to develop students` skills necessary to work in government agencies, private companies, and water management organizations. Given the location of Mykolaiv, the program is partially focused on environmental problems of coastal zones. Much attention is paid to the development of practical skills, especially in the field of GIS and cartography. Some courses prepare for practical work in the field of monitoring and risk assessment.

The «Ecological and Environmental Sciences» program of PU is more fundamental in nature. The focus is on the study of ecological systems and processes. The program is aimed at training specialists capable of conducting scientific research in the field of ecology and nature protection. The program focuses more on the biological component, practical skills (field practices, laboratory techniques), and communication skills (promotion of ecology). The program has a strong biological and practical focus, with a large number of field practices and laboratory work. It prepares the students for work in the labor market. Interdisciplinarity is also present, but to a lesser extent, with an emphasis on the integration of environmental knowledge with legal and communicative aspects.

Determining the most relevant training option depends on the specific requirements of the time and the labor market. Both approaches have their own advantages and may be relevant in different contexts.

In today's world, where the problems of anthropogenic impact on the environment and the need to optimize environmental management are acute. The training of specialists capable of developing and implementing practical solutions in public institutions and private companies is extremely important. The emphasis on GIS and cartography is also a significant advantage in the digital age and the need for spatial analysis of environmental data. Orientation to environmental problems of coastal zones is especially relevant for the Mykolaiv region and other coastal areas.

The comparative analysis of the educational programs reveals that a deep understanding of ecological systems and processes, which constitutes the fundamental component of the PU (Slovakia) curriculum, serves

as a critical basis for solving complex environmental problems and conducting qualitative scientific research. At the same time, the strong practical orientation and professional focus observed in the PMBSNU (Ukraine) program, including specialized laboratory skills and environmental management competencies, significantly enhance graduates' competitiveness in the labor market. These findings suggest that the integration of fundamental biological knowledge with applied monitoring skills is essential for preparing specialists capable of addressing both regional and global environmental challenges, which aligns with the primary goal of this study.

Given today's global environmental challenges, such as climate change, biodiversity loss, and environmental pollution, both types of preparation are essential. However, considering the urgent need to solve specific environmental problems at a practical level, an applied approach with an emphasis on technology (for example, GIS), management, and minimization of anthropogenic impact, as in the program of PMBSNU. The university may be considered somewhat more relevant at the moment to meet the immediate needs of the labor market and society in Ukraine. However, the importance of fundamental training for the development of science and a deep understanding of environmental processes offered by PU should not be underestimated. The ideal option may be to combine the strengths of both approaches in future educational programs.

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ПОРІВНЯЛЬНА ХАРАКТЕРИСТИКА ОСВІТНІХ ПРОГРАМ ПІДГОТОВКИ БАКАЛАВРІВ-ЕКОЛОГІВ В УНІВЕРСИТЕТАХ УКРАЇНИ ТА СЛОВАЧЧИНИ

Анотація. Актуальність дослідження зумовлена необхідністю інтеграції української екологічної освіти в європейський простір та пошуком оптимального поєднання прикладних і фундаментальних підходів для підготовки фахівців, здатних ефективно долати сучасні глобальні та регіональні екологічні виклики. Метою статті є проведення порівняльного аналізу окремих аспектів підготовки бакалаврів-екологів в Україні та Словаччині (на прикладі Чорноморського національного університету імені Петра Могили та Пряшівського університету) для виявлення особливостей прикладного та фундаментального підходів у їхніх освітніх програмах. Дослідження ґрунтується на застосуванні порівняльного аналізу, статистичному та кількісному аналізі. Визначено, що освітня програма підготовки бакалаврів-екологів ЧНУ має більш прикладний характер, наголошуючи на антропогенному впливі, оптимізації природокористування, використанні геоінформаційних систем, картографії та формуванні практичних навичок для роботи в державних і приватних секторах. На відміну від цього, програма Пряшівського університету «Екологічні та природничі науки» є більш фундаментальною. Ця програма має сильний біологічний та практичний компонент, що включає обширну польову та лабораторну роботу. Порівняльний аналіз обсягу дисциплін у кредитах ЄКТС підтверджує, що ЧНУ надає більший обсяг кредитів (43) гуманітарній підготовці, тоді як ПУ має значно більший обсяг (54) природничо-фундаментальних наук. Обидві програми охоплюють ключові екологічні дисципліни і підкреслюють практичне застосування знань. Проте, ЧНУ інтегрує більше міждисциплінарних підходів, тоді як ПУ зосереджується на інтеграції екологічних знань з правовими та комунікативними аспектами. Обидві моделі є цінними. а ідеальна екологічна освіта може полягати в поєднанні сильних сторін обох підходів.

Ключові слова: екологічна освіта, підготовка бакалаврів, освітні програми, порівняльний аналіз, сталий розвиток.