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10TH ANNIVERSARY OF THE VIACHESLAV CHORNOVIL INSTITUTE
OF SUSTAINABLE DEVELOPMENT

Oleksandr Moroz¹ , Olha Kuz²  , Mariia Ruda² 

¹ Department of Tourism,

² Department of Ecological Safety and Nature Protection Activity,
Lviv Polytechnic National University,
12, S. Bandery Str., Lviv, 79013, Ukraine
olha.n.kuz@lpnu.ua

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Abstract. The Vyacheslav Chornovil Institute of Sustainable Development, like every newly created unit (in 2021 the ICT celebrated its 10th anniversary), is in the process of development and growth: new specialties have been licensed, laboratories have been established, international cooperation is developing and the number of students is growing. The peculiarity of the institute is that it is multidisciplinary. The Vyacheslav Chornovil Institute of Sustainable Development trains specialists in five different fields of knowledge (natural sciences, production and technology, service, management and administration, civil security) in five specialties: "Ecology", "Environmental Protection Technologies environment", "Tourism", "Entrepreneurship, trade and exchange activities", "Civil Security". In addition, Vyacheslav Chornovil Institute of Sustainable Development provides general education for students of all specialties in ecology, labor protection, life safety and civil protection.

Keywords: Sustainable Development, Ecology, Environmental Protection Technology, Ecological Safety, Environmental problems.

Vyacheslav Chornovil Educational and Scientific Institute for Sustainable Development (ISD) is the youngest of the institutes of the Lviv Polytechnic National University. The institute received its name in June 2017.

The educational institution first opened its doors in 1947 as the Lviv Electromechanical Technical School. In 1963 it was renamed and now known throughout Ukraine and the USSR as the Lviv Technical School of Radio Electronics. In 1994, the Western

Ukrainian Collegium College was established on the basis of the College of Radio Electronics. Due to the development of human and scientific and technical potential, the school became an institute in 2003 – first the Western Ukrainian Institute of Information Technology and Management at the Donetsk State Academy of Management, then – Lviv State Institute of Advanced Technology and Management. The name of the Hero of Ukraine Vyacheslav Maksymovych Chornovil was assigned to the institute by the order of the Cabinet of Ministers of Ukraine in 2005. This prominent Ukrainian statesman had a page of his life related to our school: he was a dissident persecuted by the Soviet authorities and could not get a job, thus for some time he worked as a stoker in a technical collage. Based on the order of the Cabinet of Ministers of Ukraine of November 17, 2010, on January 24, 2011 the institute became a structural unit of the Lviv Polytechnic National University. The Institute of Psychology and Law and the Institute of New Technologies and Management named after V. Chornovil were established after V. Chornovil ISD joined the Lviv Polytechnic National University. On October 17, 2011, the V. Chornovil Institute for Ecology, Environmental Protection and Tourism was based on the second institute.

The reorganization also prompted the creation of the new departments of the institute. For instance, in May 2015, the Department of Civil Safety was established. Also, in 2017, the Department of General

Ecology and Ecological Information Systems was combined with the Department of Ecological Safety and Nature Protection Activity.

Today the institute has five departments: the Department of Ecological Safety and Nature Protection Activity (ESNP), the Department of Ecology and Sustainable Environmental Management (ESEM), the Department of Entrepreneurship and Environmental Examination of Goods (EEEG), the Department of Tourism (DT), and the Department of Civil Safety (CS). The provision of quality educational services is provided by the teaching staff of the institute, which has 77 research and teaching personnel, including 15 doctors of sciences and 57 associate professors. 95 % of research and teaching staff have degrees and academic titles. The high level of professionalism of teachers is shown by numerous awards of the President of Ukraine, the Ministry of Education and Science of Ukraine and other ministries and departments, as well as awards of Lviv Polytechnic.

The institute provides training in the different specialties.

Bachelor degree in 076 "Business, Trade and Exchange Activities", 101 "Ecology", 183 "Environmental Protection Technology", 242 "Tourism", 263 "Civil Safety". Master degree in Business, Trade and Exchange Activities; Ecology (educational and scientific program); Ecology and Environmental Protection; Environmental Control and Audit; Environmental Protection Technology (educational and scientific program); applied ecology and sustainable use of nature resources; tourism; Industrial and Occupational Safety. Doctoral degree in 076 "Business, Trade and Exchange Activities", 101 "Ecology", 183 "Environmental Protection Technology".

The institute pays great attention to scientific work and advanced training of personnel. Teachers of the institute take an active part in international scientific and technical conferences. It often results in the publications of their research in international and local professional journals, including international scientometric databases. Following the results of 2020, our institute took first place in the ratings of all institutes on scientific, educational, methodical and international work.

The Institute actively cooperates with foreign partners, in particular, the Lublin Polytechnic (Poland), the Pomeranian Academy in Slupsk (Poland), the Higher School of Occupational Safety and Health in Katowice (Poland), and the University of Pennsylvania (USA).

Our students take an active part in the international and national competitions of students' research papers, and dissertations. Over the past 6 years they have received 86 rewards.

Students and teachers of the institute take an active part not only in scientific events, but also successfully participate in other festivals and races. The team of our institute has repeatedly won the festivals "Autumn of Polytechnic", "Spring of Polytechnic", international contest "Taras Shevchenko unites peoples", competitions in sports tourism "Carpathian Rainbow", Ukrainian tourist song festival "Babyne lito", and sport contests among teachers.

The Department of Ecological Safety and Nature Protection Activity trains students of the bachelor and master degree in the specialty 183 "Environmental Protection Technology". During their studies, students of this specialty acquire competencies in the development of environmental protection technologies, environmental monitoring systems, environmental risk assessments and the creation of optimal forms of environmental safety management through the use of modern technologies. The demand for specialists in the labor market is due to the need that technological projects must be environmentally friendly, which is determined by the state expertise in the section of the project "Environmental Impact Assessment". Students are taught in specialized laboratories with modern equipment and computers. Students have internships at industrial enterprises, research institutions, national parks, and more. After completing the bachelor degree, students have the opportunity to continue their studies in the master program "Environmental Protection Technology".

The department carries out research in the field of the following environmental protection technologies: "Adsorption-ion exchange processes of neutralization of heavy metal ions in soil and wastewater by natural minerals" (SNP-2). The head of the topic is prof. Petrushka Igor Mykhailovych. "Development of information support for monitoring the environmental safety of Roztocze protected areas" (SNP-3). The head of the topic is prof. Mokryy Volodymyr Ivanovych. "Methods and means of improving the environmental safety of man-made objects of the regions" (SNP-4). The head of the topic is prof. Pohrebennyk Volodymyr Dmytrovych. "Modeling and forecasting of a complex landscape complex on the basis of a compartmental approach to assessing the quality of the ecosystem and rationing the characteristics of the studied compartments (SNP-5)". The head of the topic is prof. Petrushka Igor Mykhailovych.

In 2020 the Department of Ecology and Sustainable Environmental Management successfully accredited the scientific and educational program of the Doctor of Philosophy in the specialty 101 "Ecology" (guarantor Ph.D., Prof. Sabadash V. V.) defended the

dissertation of the Doctor of Philosophy Katysheva V., Shkivirko O., Soloviy H.

There are also new scientific directions of the department which include: municipal wastewater treatment, disposal of sewage sludge, biological methods of treatment of contaminated media, optimal conditions for biological reclamation and remediation, and optimization of biogas production.

In 2020, the Department of ESEM took 2nd place in the university ranking of departments of the Lviv Polytechnic National University.

The staff of the department are the initiators and basic executors in the organization of multiple events.

For first group of events are the International Congresses "Sustainable Development: Environmental Protection. Energy Saving. Balanced Nature Management". The VI conference took place online on September 23–25, 2020. The congress was attended by 408 participants, including: foreign – 20, from Ukraine – 388, including non-residents – 287. The second group of events are the International Scientific and Technical Conference "Water Supply and Wastewater disposal, Designing, Construction, Operation, Monitoring". The III conference took place on October 23–25, 2019. It was attended by 288 full-time participants, including: foreign – 130, from Ukraine – 158, including non-residents – 74. The third group of events are the International Youth Congresses "Sustainable Development: Environmental Protection. Energy Saving. Balanced Nature Management". The VI conference took place online on February 9–10, 2021. The congress was attended by 578 participants, including: foreign – 34, from Ukraine – 544, including non-residents – 290.

The Department of ESEM is a basic part of the Institute for the publication of the English-language journal "Environmental Problems" (founded in 2016, Editor-in-Chief, Prof. Myroslav Malovanyy, Deputy Editor-in-Chief, Prof. Igor Petrushka, Executive Secretary Ph.D., Assistant Professor Kateryna Petrushka). The journal is included in the list of scientific professional publications of Ukraine (category "B"). The founders of the journal are Lviv Polytechnic National University, Odessa State Ecological University, Mykhailo Ostrohradsky Kremenchug National University, Ivano-Frankivsk National Technical University of Oil and Gas, Vinnytsia National Technical University, Kyiv National Technical University, Kyiv National University of Construction and Architecture.

To date, the staff of the department is working on the implementation of 3 Erasmus + grants, a grant from the National Research Fund of Ukraine, a contract for research work under the state order for 2021, a bilateral Ukrainian-Austrian grant. All this gives grounds for the Department of ESEM to look to the future with

optimism, to plan new achievements in the field of science and educational activities.

Scientific directions of the Department of Entrepreneurship and Environmental Examination of Goods: transfer, diffusion and commercialization of innovations in the field of environmental protection and reproduction of natural resources (0115U000451) – 2015–2019; development of forms of trade entrepreneurship and tools for examination of safety and quality of goods (0115U000452) – 2015–2019; modeling of competitive entrepreneurship in the system of provisions of the concept of sustainable development (0120U100398) – 2020–2024.

In 2019, the Department of Entrepreneurship and Environmental Examination of Goods established a scientific research laboratory (SRL-124) for examining quality and safety of goods (order № 117-1-10 from 18.03.2019). The laboratory was formed for the purpose of organizing scientific research, providing scientific and consulting services, conducting innovative activities, and manufacturing products for various enterprises, institutions and firms. Currently, work is underway to form agreements with business entities on the creation of scientific and technical products. Knyaz S. V. was appointed the scientific director of SRL-124. Since 2019, within the framework of SRL-124, work has been carried out under the economic contract № 68 – "Development of a model of information and analytical support for the adoption and implementation of engineering and technological decisions".

Every year, under the guidance of teachers of the department, student research papers and qualifying papers are prepared, which have won prizes at national Ukrainian competitions. Due to the publishing activity of students and their scientific interaction with the teaching staff of the department annually students of the department receive awards from the President of Ukraine, Lviv Regional State Administration, Lviv Regional Council.

The Department of Tourism established and equipped a laboratory of restaurant service, a laboratory of hotel business, and a research laboratory of SRL 125-125 "Innovations in Tourism" and an office of tourism.

The Department of Tourism performed economic contract research topics: analysis of the resources of the village. Belykyy Bychkiv for the needs of organizing recreational and tourist activities. Customer Velykobychkivska village council (Velykyi Bychkiv township, Zakarpattia region). Topic leader – Bozhuk T. I. (2019); Development of an ecological tourism product to increase the competitiveness of a tourism enterprise. Customer DANA K. Limited Liability Company (Lviv). The head of the topic is Dutsyak I. Z. (2020).

For the past ten years the Graduating Department of Tourism has been engaged in research work on several scientific issues, which are embodied in the following registered topics: № 0112U006592 "Determining the principles of assessment and use of recreational and tourist potential" (01.05.2012-23.11.2016), Scientific adviser – Doctor of Economics, Professor Terebukh A. A. № 0117U007565 "Methodological tools for the development of tourist infrastructure and the formation of conditions for the priority of domestic tourism", (01.12.2017-01.12.2022) (supervisor) – Doctor of Economics, Professor Terebukh A. A.

Note that the results of departmental and contractual research work are implemented in practice and the educational process.

Every year students of the Department of Tourism undergo training: in the first year "Excursion" and in the second "Local History". Third year students study the peculiarities of work of tourist enterprises in the industrial practice "Tourism", while fourth year students undergo industrial practice "Undergraduate".

The excursions routes on local lore practices run through tourist attractive places of Western and Central regions of Ukraine. In different years, students traveled to Transcarpathia, Podillya, Bukovyna, Prykarpattia, Polissya and Volyn.

During the internships, students get acquainted with the tourist attractions, natural and historical monuments of the native land, learn professional skills from guides and try their hand at conducting and organizing tourist trips and excursions.

The internship gives students an understanding of the basic principles and methods of organizing local history research of tourist resources, facilities, centers, regions, contributes to the acquisition of skills in tour development, touring, touring techniques in accordance with the subject and content, and compliance with systematic interaction of elements and components.

The Department of Civil Safety is a general education institution. Teachers conduct classes in the disciplines of "Safety of human life", "Fundamentals of labor protection", "Civil defense", and "Occupational safety". The first enrollment of students for this specialization was in 2017. The educational program for bachelors successfully passed the accreditation of the National Agency for Quality Assurance in Higher Education in 2021.

During their studies, students can independently form an individual trajectory of training. This will allow students to gain additional professional competencies in occupational safety in the service and IT industry. In particular, occupational safety in trade and catering, occupational safety in the IT industry and telecommunications, occupational safety in transport

and logistics, safety in the hotel and restaurant business and tourism, safety personnel of educational and health care institutions, and labor protection in the sphere of life support of the population. Also, they can study labor protection in the industrial sphere. Namely, labor protection in the field of construction and building materials industry, safety of production processes in the field of mechanical engineering, labor safety in light industry, safety management system of chemical production and fuel and energy complex, labor safety in the production of food and food products, and industrial automation and automation of technological processes.

Since 2020, the department conducted training of masters in the specialty "Civil Safety", program "Industrial Safety and Health". Masters in "Industrial Safety and Health" will have the skills of preventive and emergency planning, management of occupational safety measures, organization and implementation of modern systems of man-made and occupational risk management in enterprises and organizations of any field. According to the obtained educational qualification, a master is able to perform qualified work in the following professions: "Occupational Safety Engineer", "Preventive Work Engineer", "Technogenic and Environmental Safety Engineer", "Expert on Working Conditions", and "Research Fellow (Engineering)". Obtaining a master's degree in "Industrial Safety and Health" in combination with education received by bachelors in other specialties will significantly expand opportunities for further employment.

In 2018, the department hosted the XVI International Scientific and Methodological Conference "Safety of human life and activity: education, science, practice", which was attended by 65 representatives of 29 free economic zones of all regions of Ukraine and Poland. The conference is accredited as the 123rd conference of the European Association for Security. Scientific reports, speeches and discussions at the conference provided an opportunity for productive exchanges of experiences between leading scientists of Ukraine and Europe. Young scientists and practitioners in the field of life safety strengthened its ties between higher education institutions for future scientific cooperation and exchange of research results. A collection of abstracts was published as a result of the conference.

In 2017, a specialized class of pre-medical care was created for anyone interested in the topic. Furthermore, the department purchased a computerized robotics simulator to practice cardiopulmonary resuscitation skills.

Since 2018, the Viacheslav Chornovil Institute of Sustainable Development initiated the International

Scientific Symposium “Sustainable Development: State and Prospects”, which is held every two years on the basis of the training and recreation camp “Polytechnic-2” in the Carpathian Mountains. According to the results of the symposiums, the collective monograph “Sustainable development: state and prospects” (Borkowski et al., 2020) and collections of symposium materials were published (Sustainable Development..., 2020).

On October 22–23, 2021 the International Scientific and Practical Conference “Problems of Sustainable Development” was held on the camp “Polytechnic – 4” in the Zozuli village. It was dedicated to the 10th anniversary of the Institute. The conference was attended by representatives of higher education institutions from different regions of

Ukraine (Lviv, Kyiv, Rivne, Starobilsk, Chernivtsi, Bila Tserkva), as well as foreign guests from Poland. During the grand the chairman of the organizing committee, director of the V. Chornovil Institute of Sustainable Development prof. Oleksandr Moroz noted that this meeting was an opportunity to discuss what we have achieved over the years, determine the vector of further development of the institute, make plans for the future, discuss current issues of theoretical and applied aspects of sustainable development, the use of environmentally friendly technologies, development of ecological tourism, analysis of ecological and economic factors of business development, and ecological expertise of goods to ensure civil safety.



At the plenary session the following reports were presented: O. Moroz “History and prospects of development of the Institute of Viacheslav Chornovil Institute of Sustainable Development” (Moroz, 2021), M. Malovanyy “History and prospects of the Department of Ecology and Sustainable Environmental Management” (Malovanyy, 2021), I. Petrushka “History and prospects of the Department of Ecological Safety and Nature Protection Activity” (Petrushka, 2021),

S. Knyaz “History and prospects of development of the department Entrepreneurship and Environmental Examination of Goods” (Knyaz, 2021), A. Terebukh “History and prospects of the department of tourism” (Terebukh, 2021), and O. Nagurskyy “History and prospects of the department of Civil Safety” (Nahurskyy, 2021). A total of 87 reports were heard and discussed. All the reports of the plenary and sectional meetings were published in the collection of materials of

the International scientific-practical conference “Problems of sustainable development” (Problems of sustainable development..., 2021).

The history of the institute and departments, scientific and educational achievements, honorary titles and awards of employees of the institute, international projects and initiatives, general events, student government, leisure, and plans for the future are collected and published in the book “Vyacheslav Chornovil Institute for Sustainable Development. 10 years: historical and bibliographic sketch” (Moroz et al., 2021).

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