

GLÓWNE KIERUNKI SZKOLENIA SPECJALISTÓW W ZAKRESIE GOSPODARKI GRUNTOWEJ I KADASTRU ZA GRANICĄ I NA TERENIE UKRAINY

Ludmila Datsenko

*Doktor habilitowany nauk geograficznych, profesor,
kierownik działu geodezji i kartografii na wydziale geografii
Kijowski Uniwersytet Narodowy im. Tarasa Szewczenka (Kijów, Ukraina)
e-mail: ua-dln@ukr.net,
<https://orcid.org/0000-0001-9079-8041>*

Tatiana Dudun

*Doktor nauk geograficznych,
docent działu geodezji i kartografii na wydziale geografii
Kijowski Uniwersytet Narodowy im. Tarasa Szewczenka (Kijów, Ukraina)
e-mail: t.dudun@ukr.net,
<https://orcid.org/0000-0002-9960-9793>*

Svetlana Titova

*Doktor nauk geograficznych,
docent działu geodezji i kartografii na wydziale geografii
Kijowski Uniwersytet Narodowy im. Tarasa Szewczenka (Kijów, Ukraina)
e-mail: svtitova@ukr.net
<https://orcid.org/0000-0002-9250-805X>*

Streszczenie. Artykuł analizuje zagraniczne i krajowe doświadczenia w szkoleniu przyszłych specjalistów w zakresie geodezji i gospodarki gruntami. Celem badania jest -poprawa nowego programu edukacyjnego w zakresie szkoleń „Gospodarka gruntami i katastrami” wydziału geodezji i kartografii wydziału geografii, Kijowski Uniwersytet Narodowy im. Tarasa Szewczenka, która uwzględni wymogi nowoczesności w tym zakresie i dostosowania Ukrainy do Unii Europejskiej. Nowością badania jest zintegrowane podejście do opracowania nowego programu edukacyjnego, którego zadaniem jest szkolenie specjalistów w dziedzinie spraw katastralnych i zagospodarowania terenu, działania ewaluacyjne, utrzymanie stanu katastru, który opiera się na wykorzystaniu sprzętu geodezyjnego, nawigacyjnego, lotniczego, kompleksów i systemów fotogrametrycznych i kartograficznych, specjalistycznego oprogramowania geoinformacyjnego, geodezyjnego i fotogrametrycznego do rozwiązywania problemów stosowanych w geodezji, gospodarowaniu gruntami i katastrze.

Słowa kluczowe: edukacja, program edukacyjny, gospodarka gruntami i kataster, zrównoważone gospodarowanie gruntami, kompetencje zawodowe.

MAIN DIRECTIONS OF TRAINING OF PROFESSIONALS IN THE FIELD OF LAND AND CADASTRE ABROAD AND ON THE TERRITORIES OF UKRAINE

Lyudmila Datsenko

*Doctor of Geogr., Professor,
Head Department of Geodesy and Cartography Geography Faculty
Taras Shevchenko national university of Kyiv (Kyiv, Ukraine)
e-mail: ua-dln@ukr.net,
<https://orcid.org/0000-0001-9079-8041>*

Tatiana Dudun

*Candidate of geographical sciences, docent
Department of Geodesy and Cartography Geography Faculty
Taras Shevchenko national university of Kyiv (Kyiv, Ukraine)
e-mail: t.dudun@ukr.net,
<https://orcid.org/0000-0002-9960-9793>*

Svitlana Titova

*Candidate of geographical sciences, docent
Department of Geodesy and Cartography Geography Faculty
Taras Shevchenko national university of Kyiv (Kyiv, Ukraine)
e-mail: svtitova@ukr.net
<https://orcid.org/0000-0002-9250-805X>*

Abstract. The article explores the foreign and domestic experience of preparing future specialists in geodesy and land management. The purpose of the study is to improve the new educational program for the training of specialists in Land Management and Cadastre of the Department of Geodesy and Cartography of Taras Shevchenko National University of Geography, which takes into account the requirements of modernity of this field and adaptation of Ukraine to the European Union. The novelty of the research is a comprehensive approach in the development of a new educational program, with the task to train specialists in the field of cadastre and land management, evaluation, maintenance of the state land cadastre, based on the use of geodetic, navigation, aeronautical equipment, photogrammetric and cartographic systems, specialized geoinformation, surveying and photogrammetric software for solving applied problems in geodesy land management and cadastre.

Keywords: education, educational program, land administration and cadastre, sustainable land management, professional competences.

ОСНОВНІ НАПРЯМИ ПІДГОТОВКИ ФАХІВЦІВ У СФЕРІ ЗЕМЛЕУСТРОЮ ТА КАДАСТРУ ЗА КОРДОНОМ ТА НА ТЕРЕНАХ УКРАЇНИ

Людмила Даценко

*Доктор географічних наук, професор,
Завідувачка кафедри геодезії та картографії географічного факультету
Київський національний університет імені Тараса Шевченка (Київ, Україна)
e-mail: ua-dln@ukr.net,
ORCID.org/0000-0001-9079-8041*

Тетяна Дудун

*Кандидат географічних наук, доцент
Кафедра геодезії та картографії географічного факультету
Київський національний університет імені Тараса Шевченка (Київ, Україна)
e-mail: t.dudun@ukr.net,
ORCID.org/0000-0002-9960-9793*

Світлана Тітова

*Кандидат географічних наук, доцент
Кафедра геодезії та картографії географічного факультету
Київський національний університет імені Тараса Шевченка (Київ, Україна)
e-mail: svtitova@ukr.net
ORCID.org/0000-0002-9250-805X*

Анотація. У статті досліджено іноземний та вітчизняний досвід підготовки майбутніх фахівців геодезії та землеустрою. Мета дослідження - удосконалення нової освітньої програми напрямку підготовки фахівців «Землеустрій та кадастр» кафедри геодезії та картографії географічного факультету КНУ імені Тараса Шевченка, яка враховує вимоги сучасності цієї сфери та адаптації України до Європейського Союзу. Новизну дослідження складає комплексний підхід у розробці нової освітньої програма, завданням якої є підготовка фахівців у сфері кадастрової справи та сфері управління земельними ресурсами, оціночної діяльності, ведення державного земельного кадастру, яке базується на використанні геодезичного, навігаційного, аерознімального обладнання, фотограмметричних та картографічних комплексів та систем, спеціалізованого геоінформаційного, геодезичного і фотограмметричного програмного забезпечення для розв'язання прикладних задач в геодезії, землеустрої та кадастру.

Ключові слова: освіта, освітня програма, землеустрій та кадастр, сталий землеустрій, фахові компетенції.

Relevance of the research topic. State of the study of the subject, the main works. Today, the improvement of land relations, the successful development of topographic and geodetic and cadastre-registration activities, the implementation of land management and land evaluation requires the systematic improvement of forms, methods, quality of training, which create the basis of proper staffing in the sphere of land formation, knowledge and skills, professional competences and more. The leading role in this belongs to institutions of higher education that provide training for specialists in the specialty "Geodesy and Land Management", in particular the Department of Geodesy and Cartography, the Faculty of Geography of Taras

Shevchenko National University of Kiev, where the training of specialists is conducted to meet the needs of central and local authorities, local governments, enterprises, institutions and organizations covered by the laws of Ukraine in the field of land management, cadastre, land valuation and protection. Sustainable land use, adaptation of existing legislation to the requirements of the European Union is becoming a relevant and important direction of Ukraine today, which cannot be resolved without quality human resources in the field of land management and cadastre, evaluation and protection of land, which is emphasized at the international level as well: «Agenda for the 21st Century», approved by the United Nations Conference on Environment and Development (*Rio de Janeiro, 14.06.1992*), in the section "A Comprehensive Approach to Planning and Management of Land Resources" among other things stipulates that governments should promote the development of human resources required for planning and management of land and land resources in a sustainable manner. This should be done, inter alia, by emphasizing interdisciplinary and integrated approaches in technical, vocational and university training programs, as well as providing training in all relevant sectors in order to develop a comprehensive and rational approach to land use. According to Article 66 of the Law of Ukraine "On Land Management" of 22.05.2003 № 858-IV, only citizens who have special higher education of the appropriate level and professional orientation may engage in professional activity in the field of land management (*Ukrayiny Law "Pro zemleustriy", 2003, statyya 282*).

Nowadays in scientific researches the theoretical concepts of functioning of the national higher education (N. Zhuravskaya, P. Luzan, N. Tverezovskaya, O. Titova, Yu. Frolov), peculiarities of personnel training for land resources management (D. Babmindra, S. Voitenko, D. Dobryak, O. Dorosh, O. Lazereva), the problems of preparation of future specialists in geodesy and land management were investigated (*T. Evsyukov, O. Kanash, A. Martin, L. Novakovsky, A. Tretyak*). In particular, in the studies of (*A.M. Tretyak A.M., Tretyak V.M., Pendzey L.P., 2016 S. 128-135*), A. Martyna (*Martyn A., 2018, s.30-36; Martyn A., 2009, s. 32-36*) Martyn A. the concept and nature of land management and land management have both technical and socio-economic, legal and environmental aspects. An interesting is the analysis of industry workers and their professional training, namely: almost 90% of employees who work in the system have higher education, however, only about 70% of them have higher education from III-IV accreditation level institutions, and only about 50% - in land management. Managers and specialists with land management and relevant to land management education make up only 64% of the total number of employees with bachelor education. In addition, the current question, according to A. Martin (*Martyn A. https://dt.ua/macrolevel/kadastroviy-golod-335256_.html*), is the ambitious tasks of the current government to deregulate land, equalize land taxes, introduce fuses against land raiding and the introduction of a modern spatial data infrastructure, and one of the most important tasks along the way is to complete an electronic State Land Cadastre, and further: a) to fill in information on the land title register; b) full synchronization (and, better, unification) of the land cadastre and registers of property rights. According to scientists, the problem of professional education in land management should also take into account the additional training of land management education for the united territorial communities and the introduction of new specialties (specializations) of natural and management direction.

At the same time, the question remains against the backdrop of not adopting higher education standards in the field: what should be the content of education in order for our graduates to be successful, in-demand and highly paid professionals? In our opinion, 80% of the training should be dedicated to what will be tomorrow, not because it was yesterday, although this would deprive most teachers of their "comfort zone", the educational program should be ruthlessly cleansed of obsolete and unnecessary material that does not have practical application.

All of the above allowed us to shape the purpose of our research - to improve the new educational program for the training of specialists in Land Management and Cadastre, based on the experience of universities abroad and Ukraine, taking into account the requirements of modernity in this area and the adaptation of Ukraine to the European Union.

Research methods were based on the analytical method, systematic and integrated approaches, teaching methods using modern technologies. The main tasks we set ourselves are what we can give our students - the ability to think critically, not to trust dogmas, to be intellectually mobile; while studying, the student must "touch" on all the most advanced technologies that will determine the future of the industry in the medium term in order to be ready for their practical application; practical training should be designed so that the student can work independently in the field without "learning".

Outline of the main research material. The development of society has at all times been linked to the regularization of land use, which remains the mainstay of humanity and a source of social wealth. The need to set boundaries has bothered landowners since ancient times. This function is performed by land managers. When the first representatives of this profession came up, it is unknown, of course, but the profession of landowner is still in demand. In our country, it has always been respected because it is dedicated to the precious treasure of Ukraine, a land that has always been of particular importance.

The Decree of the Cabinet of Ministers of Ukraine of December 30, 2015 No. 1187 approved new Licensing Conditions for Educational Activities (*Postanova Kabinetu Ministriv Ukrainy No. 1187, 2015*) regarding further conducting of educational and scientific work in educational institutions. Decree of the Ministry of Education and Science of 11.11.2015 No. 1151 "On the Features of Introduction of the List of Knowledge and Specialties Areas" (*Nakaz Ministrii osvity i nauky, 2015*), according to which the Higher Education Applicants are trained, approved by the Resolution of the Cabinet of Ministers of Ukraine #266 of April 29, 2015 (*Postanova Kabinetu Ministriv Ukrainy № 266, 2015*), defined instead of the specialties "Land Management and Cadastre" and "Land and Real Estate Valuation" - specialty "Surveying and Land Management", which is related to the field of knowledge "Architecture and Construction", which belongs to technical sciences (*10 naybil'sh zatrebuvanykh profesiy v Ukraini v nayblyzhchomu maybutn'omu. hp://ipress.ua/ljlive/10_naybil'sh_zatre-buvanyh_profesiy_v_ukraini_v_nayblyzhchomu_maybutn'omu_7916.html*).

At the same time, the Law of Ukraine "On Land Management" stipulates that land management is a set of socio-economic and environmental measures aimed at regulating land relations and rational organization of the territory of administrative-territorial units, economic entities carried out under the influence of social and industrial relations and the development of productive forces (*Law of Ukraine "About Land*

Management”, 2003, article 282). The same law (Article 1) stipulates that the activity in the field of land management is scientific, technical, production and administrative activity of public authorities, bodies of local self-government, legal and natural persons, which is carried out in the field of land management. Land managers have worked and work in the structural subdivisions of the State Geocadastr of Ukraine, state authorities and local self-government, ministries (where there are departments of land resources); in public and private design and appraisal enterprises, real estate firms, agroholdings, agricultural industry. enterprises; territorial communities, scientific institutions, legal institutions, public organizations, etc. The land manager today possesses not only his professional knowledge but also legal and natural science. For the profession it is necessary to have mathematical abilities, engineering approach, spatial imagination, ability to understand the law. The profession is extremely interesting and creative, which requires the ability to make informed decisions, communicate with people, requires care, clarity and responsibility, that is, to become a successful specialist in this field, you need to be persistent, confident, active, have a well-developed intuition and logical development. Today, land managers use modern equipment in their work: electronic tools; new technologies of geoinformation systems. Significant problems arise when making managerial decisions because of the imperfection of the regulatory framework - when three land managers have three different views on the same issue. At the same time, it is extremely important for professionals to come to a common decision and have the skills to work in a team of specialists.

According to the classification of occupations, the professional activity of the landowner belongs to the professions of the type "man-nature". To date, a land surveyor engineer must have a higher education in the field of architecture and construction training in the specialty "Surveying and Land Management", with educational qualification level: junior specialist, bachelor or master.

Consider the foreign experience of training specialists in land management and cadastre.

In Germany, basic research and classical education in land management are concentrated in universities, and professional in specialized higher education schools in land management (Fachhochschule). Among the higher education institutions should be noted the Munich Technical University (Faculty of Civil Engineering and Geodesy, OP Master). The structure of the curricula was adjusted by a special commission, which took into account the general trends of the profession in the field of cadastre, surveying and land management. The curricula contain the main elements for nine departments of land management and cadastre at German universities. In the first part of the curriculum (4 semesters) study the following technical disciplines: mathematics, including geometry; geodesy, including the basics of probability theory; basics of law and economy. The second (main) part of the curriculum contains the following disciplines: geodesy and engineering geodesy; photogrammetry and remote sensing of the Earth; probability theory and mathematical statistics; cartography; geoinformation systems; mathematical, physical and satellite surveying; urban and regional planning; land cadastre, land information systems, land redistribution; civil construction.

In Switzerland, the Federal Higher Technical Schools in Zurich and Lausanne teach land surveyors with higher education. During the first 4 semesters of study passes on the basic mathematical and physical disciplines: mathematics, geometry, physics, computer science, error theory, geodesy, photogrammetry, geodesy. The following 4

semesters of study concentrate on subjects in the specialty: land information systems, cadastre, land management, regional planning, law. In addition to standard specialist training programs, Swiss higher education institutions are developing such a new area in land management as geomatics. This focus is on the application of new information technologies in the fields of land management, GIS systems and GIS technologies (*Steinkellner Gert. Development in the Austrian Surveying Education. - Washington, 2002, p. 426*). The Swiss Land Examination Exam is a state exam and is taken by a commission appointed by the Federal Council. Considerable time in the educational process is given to industrial practice, without which students are not allowed to take the exam. Specialists who keep records of state land records, as well as those who evaluate land and real estate in Switzerland, do not receive specialized profile education. It is the responsibility of the education lawyers who are taught through instruction in the work of the land book service.

In Sweden and France, land management is linked to property relations, so the centers of education for land management are the economic and technical departments of universities (Royal Polytechnic in Stockholm, Sweden; Paris and Dijon in Nice, France). The environmental orientation of land management is being studied at the University of Agriculture (Uppsala, Sweden).

Of interest is the two-year international master's program in Land Use and Water Management at Wageningen University (**Netherlands**), which focuses on the scientific analysis of land use and water management issues. The integration of physical, technical, socio-economic and political aspects in different approaches is aimed at critical analysis, understanding and solving of problems of land and water management.

Specialists in land management are trained **in Poland** in the following specialties: geodesy and real estate management, economic geodesy and cadastre, land cadastre and real estate appraisal, cadastre and real estate management, agricultural geodesy and property valuation, land survey systems in the following universities: Warsaw Polytechnic University (Faculty of Law) of geodesy and cartography, Warsaw, <http://www.pw.edu.pl/>), Community Academy of Sciences in Lodz (Faculty of Geodesy and Cartography, OP economic geodesy and cadastre, OP Geodesy and syst EMI spatial information).

In the Czech Republic and Slovakia, land management personnel are trained at the faculties of polytechnic universities, departments of geodesy, land management and land reclamation in Prague, Brno and Bratislava. **In Bulgaria** - the Higher University of Architecture and Construction (Sofia), **in Hungary** - the Faculty of Geodesy and Land Management of the University of Forestry and Wood Industry (Székesfehérvár) and the Faculty of Construction of the Polytechnic University of Budapest.

In the Baltic countries, education on land management, taking into account local characteristics, began to develop actively from the 80's of XX century. thanks to the efforts of professors, doctors of sciences VG Timofeyev, MA Lotzmer (Latvian Agricultural University, Jelgava, land management 2 years, OP Master), OP Astashkina (Estonian University of Natural Sciences, m. Tartu), Z. Rimkusa, E. Zhukauskayke (Vitolv the Great Agricultural Academy, Kaunas, water management and land management of the MA Master).

In Belarus, training in land management since 1924 has been provided by the Belarussian State Agricultural Academy (Gorki) (Faculty of Land Management: Land Management, Cadastre, Geodesy and Geomatics, Master's, 1 year).

A portal was also created on the official FIG website for those wishing to enter educational institutions in the fields of land management, cadastre, surveying and geoinformatics. At the end of 2016, the portal contains information on 200 educational institutions offering approximately 400 land management courses in more than 60 countries in the world.

The development of modern land management systems in EU countries is considered as the main task of land management. This process is significantly influenced by the training of specialists in the field of rational use and protection of land.

The authorities recognize the importance of information on the spatial structure of land, the legal ownership of land and other aspects of land knowledge for economic development, as well as in the field of land administration and protection. Therefore, governmental structures and private companies are interested in developing this sector of land knowledge. The profession of land surveyor faces new demands, and at the same time, these specialists must provide services in the field of surveying, land management and land cadastre. Disciplines related to the management and use of spatial information are becoming central to the curricula of profile universities. Many higher education institutions are tasked with pursuing an interdisciplinary approach to traditional land and cadastre education. This combines traditional approaches to the study of subjects.

The main reasons for the need to change the learning process are the development of computer technology and hardware. Information technology development is a major driving force behind the change in approaches and principles in information collection and processing. For example, the development of GPS technology is changing traditional views and principles in geodetic disciplines, and high-quality satellite imagery is bringing new trends in mapping. Large database storage technologies and GIS technologies for the management and analysis of spatial information have a significant impact on traditional storage and processing. Public authorities in different countries are trying to integrate data collection, processing, presentation and analysis into one computer system. Economic transformations in many countries have a great influence on land development and land cadastre. Such transformations include actions carried out by the authorities of foreign countries related to the allotment of land for public needs, nature conservation, recreational purposes. These actions required the shift of technical aspects of land management and cadastre and introduced management components in them, which necessitated the creation and maintenance of the state spatial data infrastructure and taking into account these changes in educational activities.

Globalization processes make political, economic, cultural and social events more and more interconnected in different countries, and even if they occur in one country affect the economy and society in other countries of the world. Globalization is a prerequisite for the development of communication tools, the presentation of production, educational and scientific information in graphical form on sites on the Internet, including in the field of education. Globalization causes, on the one hand, the enlargement of the EU, which is reflected in the educational standards of the countries - members of the Union, and on the other - the expansion of the influence on the world educational processes.

In many countries, higher education institutions aim to teach students to perform all possible tasks in all areas of the profession of land surveyor, mainly because the field of application of this knowledge is constantly changing and expanding.

It is recognized that changes in the management of land resources due to the implementation of new land reforms, the further development of technical means, the development of society are inevitable. It has been proven that education must be flexible to the changes taking place in the economy, in society, in politics, both in its own country and in the European Union. Graduates must have the necessary skills and be able to adapt to the rapidly changing labor market, and higher education should be the first step in a continuous learning process.

This requires up-to-date adjustments of curricula and programs and their adaptation to the requirements of land management. Practically all universities teaching land management and cadastre study the activities of the International Federation of Surveyors (FIG), which allows them to keep abreast of the current changes in the industry. Some universities have even become independent academic members of FIG. These include: University of Melbourne (Faculty of Geomatics) in Australia; Botswana University (Faculty of Civil Engineering); University of Francisco Jose Caldas in Bogota, Colombia (Faculty of Engineering, Cadastre and Geodesy - Universidad Distrital Francisco Jose de Caldas de Bogota); Aalborg University, Denmark (Institute of Land Management and Planning); Sheffield Hallam University in the United Kingdom (School of Urban and Regional Studies).

In China, land management education is concentrated in the agrarian universities of Beijing, Wuhan, Nanjing; in Mongolia, the Agricultural University of Ulaanbaatar and the Agricultural Institute of Darhan, in Vietnam, the Hanoi SGI.

In the USA and Canada, there is no pure land management, in our understanding, education. Such training is focused on universities with soil and geography faculties and departments (nature conservation, GIS systems), economic and construction units (land use planning, landscape architecture, real estate economics and applied geodesy), as well as in agricultural (rural) land). Examples include master's programs: USA - Texas A&M University: Land and Property Development. Indiana University Bloomington, Indiana: Park and Land Management. Canada - University of British Columbia. Vancouver: Land and Water System.

The land cadastre abroad, which includes not only technical activities but also a certain land cadastre process related to the registration of land plots and other real estate objects and transactions with it, has historically accumulated most of the land management works. Therefore, foreign scientists, understanding the importance and independent goals of land management, due to the circumstances, are unlikely to be able to allocate land management in a separate industry, as it is done in our country. In many countries, part of the land management activities related to different terrain surveys, mapping, measurement production was concentrated in services that are in charge of land cadastre or surveying and mapping.

Higher education in land management and cadastre in Ukraine in classical universities is similar to foreign countries. Yes, education in the field of land management and cadastre is mainly tied to the faculties of specialties: geodesy, geomatics, agriculture and forestry, property relations economics, architecture and construction (for urban land management).

Since 2015, the system of training land surveying and geodetic engineering personnel has undergone significant changes, since with the approval of the Government a new list of knowledge and specialties, the only specialty 193 "Surveying and land management" was introduced within the field of knowledge 19 "Architecture and construction" (Yevsyukov T., 2018, p. 11–14.)

Nowadays, in Ukraine, the preparation of the recipients of specialty education 193 "Surveying and Land Management" of more than 30 state and private higher education institutions: agrarian universities, polytechnics; Universities of Civil Engineering and Architecture, Aviation University, Technical Universities, Transport Universities, Water and Environmental Sciences University, Economic University. Training of land managers is carried out according to step-by-step training, which allows to provide all educational and qualification levels.

In 2016, after analyzing the domestic and foreign experience of functioning of various educational programs, consultations with employers' organizations, interviewing graduates and masters students (by the results of industrial practice) at the Department of Geodesy and Cartography, Faculty of Geography, Kyiv National University named after Tarashechen a new master's degree program in Land Management and Cadastre has been prepared. This program represents continuous land management education as a process of forming a land manager's personality during the basic "multi-level" preparation and comprehensive development of his personality in the process after master's education. It should be noted that during the last decades in the world there is an extremely intensive development of new technologies of obtaining information about the spatial characteristics of objects on the Earth's surface, including means of remote sensing, satellite navigation, geoinformation modeling, informatization of cadastre and registration activity, land management. As a result, engineering knowledge, skills and abilities are quickly "outdated" and lose relevance. Therefore, continuous education of land managers is a necessary requirement of the present and is implemented on the principles of continuity and continuity. This system of personality development specialist in geodesy and land management guarantees the versatility of both professional and general development.

Modernity, systematicity, complexity of the educational program of the direction of preparation "Land management and cadastre" at Taras Shevchenko National University, in addition, it combines three areas of preparation for land management and cadastre: technical, environmental and management based on modern geoinformation systems, geospatial data and modern technologies.

Consultation and exchange of experience on the training of experts in the field of land management and cadastre is carried out during the work of the teachers of the department in the public association "Ukrainian Society of Geodesy and Cartography", the public organization "Association of Specialists of Land Management of Ukraine" and the Public Council of the State Geocadastre. The faculty members participated and completed a month-long training course, obtaining the relevant certificates of the international model at Vancouver Island University (Canada), within the framework of the international Ukrainian-Canadian educational project "Laying the foundation for spatial data infrastructure: providing a base in the Ukrainian government to support sustainable economic growth" (2014-2018) / Project # S-065681 and throughout 2014-2018 conducted distance courses as trainers.

Conclusion. Due to the study of the analysis of educational programs of foreign countries and Ukraine, it was determined that special attention is paid to the training of specialists in the field of planning and rational use of land resources on a sustainable basis. The modern educational program of the field of preparation "Land Management and Cadastre", which was developed at the Department of Geodesy and Cartography of Taras Shevchenko National University of Geography, meets the requirements of today, incorporating the best traditions of professional university education. The authors are also convinced that the current system of training in land management in Ukraine does not fully meet the requirements of a market economy, which leads to the problem of expanding the training of specialists within the specialties and specializations, in accordance with the strategy of economic and land reforms, the needs of state bodies of land resources. and local self-government bodies and should be based on modern technical means, application of new information technologies and geoinformation systems. Integrated planning and rational use of land resources in ensuring sustainable development is indisputable, impossible without adequate staffing, that is, the formation of the required number of professionals who have a set of knowledge, skills that can be used for harmonious, balanced, conflict-free development of land.

References:

1. 10 naybil'sh zatrebuvanykh profesiy v Ukrayini v nayblyzhchomu maybutn'omu. [Elektronnyy resurs]. – Rezhym dostupu: [hp://ipress.ua/ljlive/10_naybilsh_zatrebuvanyh_profesiy_v_ukraini_v_nayblyzh-chomu_maybutnomu_7916.html](http://ipress.ua/ljlive/10_naybilsh_zatrebuvanyh_profesiy_v_ukraini_v_nayblyzh-chomu_maybutnomu_7916.html)
2. Zakon Ukrayiny «Pro zemleustriy» vid 22.05.2003 № 858-IV // Vidomosti Verkhovnoyi Rady Ukrayiny vid 05.09.2003 – 2003 r., № 36, stattiya 282
3. Yevsyukov T. De navchatymut'sya maybutni heodezysty ta zemlevporyadnyky? Zemlevporyadnyy visnyk. 2018. № 8. S. 11–14.
4. Martyn A. (2018) Vyshcha osvita z heodeziyi ta zemleustroyu: chas zminyuvaty priorytety navchannya? Zemlevporyadnyy visnyk. 2018. №2. S.30-36.
5. Martyn A. (2009). Zmist vyshchoyi osvity v haluzi zemleustroyu: suchasnyy stan, problemy ta shlyakhy vyrishennya. A. Martyn, Y. Dorosh, Z. Flekey. Zemlevporyadnyy visnyk. 2009. № 5. S. 32-36.
6. Martyn A. https://dt.ua/macrolevel/kadastroviy-golod-335256_.html
7. Nakaz Ministerstva osvity i nauky vid 06.11.2015 roku № 1151 «Pro osoblyvosti zaprovadzhennya pereliku haluzey znan' i spetsial'nostey» [Elektronnyy resurs]. – Rezhym dostupu: [h p://zakon5.rada.gov. ua/laws/show/z1460-15](http://zakon5.rada.gov.ua/laws/show/z1460-15)
8. Postanova Kabinetu Ministriv Ukrayiny № 1187 vid 30.12.2015 roku «Pro zatverdzhennya litsenziynykh umov provadzhennya osvith'oyi diyal'nosti zakladiv osvity» [Elektronnyy resurs]. – Rezhym dostupu: [h p://zakon5.rada.gov. ua/laws/show/1187-2015-p](http://zakon5.rada.gov.ua/laws/show/1187-2015-p)
9. Postanova Kabinetu Ministriv Ukrayiny № 266 vid 29.04.2015 «Pro zatverdzhennya pereliku haluzey znan' i spetsial'nostey, za yakymy zdiysnyuyet'sya pidhotovka zdobuvachiv vyshchoyi osvity». [Elektronnyy resurs]. – Rezhym dostupu: [h p://www.kmu.gov.ua/control/ru/cardnpd?docid=248149695](http://www.kmu.gov.ua/control/ru/cardnpd?docid=248149695)
10. Tretyak A.M., Tretyak V.M., Pendzey L.P. (2016). Stan ta problemy pidhotovky, pidvyshchennya kvalifikatsiyi i perepidhotovky kadriv u sferi zemleustroyu. Zemleustriy, kadastr i monitorynh zemel'. № 1-2. 2016. S. 128-135.
11. Steinkellner Gert. (2002) Development in the Austrian Surveying Education. — Washington.: FIG XXII International Congress, USA, April 19-26 2002, p. 426..