

## DEPARTMENT OF PHOTOGRAMMETRY AND GEOINFORMATICS CELEBRATES 50 YEARS ANNIVERSARY

On June 12 of 1963 by the Order of the Ministry of Higher and Secondary Specialized Education of the Ukrainian SSR at the Lviv Polytechnic Institute the department of aerophotogeodesy was established. These days we are celebrating the anniversary date, summing up spent way, analyzing the achievements and failures, thinking about further perspective actions.

During over half a century a few generations of teachers has been changed, the first graduates had become respectable ladies and gentlemen, and growing up university youth everyday conquers new heights of photogrammetric and geoinformatic science.

Note: During its existence, the Department has graduated 1516 professionals, including the specialty “Aerophotogeodesy” (“Photogrammetry”) – 1382, specialty “Geographic information systems and technologies” – 134 people. 88 graduates had got diploma with distinction.

The main objective of the department in all years was the formation of specialist of high professional and business qualities, who is able to creatively use academic knowledge in their practice. And we succeeded, because among our graduates there are the many leaders of topographic and geodetic production (O. Yuskevych, P. Burban, M. Hemiy, B. Onysko, B. Lapka, O. Alyabiev and many others), full-time officers (general V. Tretyak, colonels A. Sereda, Ye. Rymarenko, B. Kovalchuk and others), professor, doctor of sciences (B. Novakovskyy, O. Dorozhynskyy, V. Melnyk, R. Rudyy, Kh. Burshtynska, V. Hlotov, M. Bryn). Our graduates – academic lecturers, engineers, masters are working in different countries, increasing glory of Lviv Polytechnic.

A characteristic feature of teachers of all generations on the department was the motto: “Teach youth and learn yourselves”. Because equipment and technologies of topographic-surveying production were being changed, tasks that are put before the experts by state and society were varied, and all these had to be analyzed, to influence in time into the learning process.

Specialty “Aerophotogeodesy” was established at Lviv Polytechnic in 1956. Later it was renamed and is now called “Photogrammetry and remote sensing.” Until recently, our department was the only one in Ukraine, which led training specialists and masters in this direction.

In 2002 the department was renamed on the Department of “Photogrammetry and Geoinformatics” (Order of the University № 113-07 of June 21, 2002).

In 1989 professor O. Dorozhynskyy initiated the opening of a new specialty in the Ukrainian SSR “Geographic Information Systems and Technologies” (GIS), which was driven by global trends in the world sciences. A few years later, breaking countless bureaucratic obstacles the specialty had been established, and our department at that time was the one who implement the training of such specialists. The then Rector of the Polytechnic professor Yuriy Rudavskiy strongly supported that innovative step. The first graduation was held in Lviv Polytechnic in 1997, and 15 graduates received the diplomas. Now profession “GIS” became very popular in Ukraine, and the training of specialists engaged in about ten universities. But we were the first. It required a lot of work – the formation of professional models, create training plans and curricula’s, preparing course lectures, laboratory, course and diploma thesis. A special role was played thanks self-denying work of M. Protsyk, N. Moskal, O. Tumska, I. Kolb, Yu. Shkurchenko. The result of these works was the State Standard of educational training in speciality “GIS”. Then the department worked with the State Standard in “Photogrammetry”, created by the efforts of M. Protsyk, Kh. Burshtynska, V. Hlotov, O. Ivanchuk, L. Babiy, N. Hrytskiv and others.

Over 50 years of photogrammetry technology have been drastically changed. The method of differentiated mapping (stereometr and phototransformator), stereophotogrammetric universal devices became the history even in the 70's – 80's the then head of department professor V. Finkovskyy and the whole department staff were so proud of them. Then it was the best and most prestigious laboratory in Lviv Polytechnic Institute. Devices of analytical photogrammetry (stereocomparators, stecometers, dicometers,

anagraphs) also give the way for a new generation. Since the mid 60's the department connected for many years its activities with computers. The application of computer complexes "Nairi", "Razdan", "Minsk - 22.32", "M-222", the first PC in photogrammetry now seems just incredible. Despite low amounts of memory and low speed we were success to create a network of spatial phototriangulation, digital elevation and terrain models, look for ways to automate geological mapping. Now we have the epoch of digital photogrammetric stations, digital survey from land, air and space, scanner systems, global positioning systems (GPS). All these changes are reflected in the curriculum that are constantly upgraded and updated.

Here are just some of the new courses: "Analytical and digital photogrammetry", "Digital mapping", "Theory of GIS", "Computer Graphics and Image Processing", "Databases and geospatial data," "Design and operation of GIS."

In 1992 the Lviv Polytechnic opened Military Institute (now the Academy of land forces named by P. Sahaydachnyy). Department immediately joined the military training of surveyors and became a graduation for students because they received diplomas in specialty "Photogrammetry". The annual graduation amounted to 15-17 students. This lasted until 2005. Unfortunately, the pedagogical potential of our department is not now in use by the military board.

Another peculiarity of the department staff is a combination of scientific work with the educational process. Thanks to scientific researches qualification of teachers is increasing, and it always has an impact on student learning. These are new themes of master thesis when the student becomes an assistant of teacher and often collaborator of scientific research. In this article we do not present a list of all dissertations, master's and diploma as well as academic achievements of students in competitions, contests, conferences at various levels implemented at the department, as we issued a separate monograph on the history of the Department of Photogrammetry and Geoinformatics for 50 years anniversary.

Scientific activity has always been focused on applications of researches in production. Subject of research for many years was "Development and research of stereophotogrammetric methods for solving specific problems raised by the various branches of science and the national economy." In 1970-2012 there were defended 4 doctoral theses (O. Lysychansky, O. Dorozhynsky, Kh. Burshtynska, V.Hlotov) and 24 PhD theses. For the introduction of researches in practice there were received awards of ENEA USSR (1 gold, 5 silver, 12 bronze medals), the papers with thanks giving by ministries and departments of the USSR and Ukraine. In doing research work, as well as in the implementation of staff policy of the department we receive great support from the Rector of the Polytechnic professor Yu. Bobalo.

In the practical work realization the great merit belongs to the employees of two research laboratories established in the department who established economic contracts with enterprises of the Ministry of Geology, Ministry of nonferrous metallurgy, Main board of Geodesy and Cartography and many others. In Soviet times the annual contract work amounted to 300-500 thousand rubles.

It is known if the level of teaching and research work is high, then the international recognition results in international cooperation. In the days of the USSR, such activity was limited because of political motivation, but in independent Ukraine international activity of the department was a regular and very active. Department staff regularly take part in international congresses ISPRS (International Society for Photogrammetry and Remote Sensing), conferences ICC (International Mapping Society), symposia, workshops and other. There were signed agreements about cooperation with the Technical University in Zurich (Switzerland), Technical University of Vienna (Austria), Technical College of Gevle (Sweden), Warsaw Polytechnic (Poland), Research Institute of geodesy and topography (Czech Republic) and other international partners. Some teachers attended the long-term internships abroad. For example, Z.Kuzyk twice held internships in Vienna, L.Babiy graduated master program at the Royal Technical Institute in Stockholm, N.Hrytskiv trained in Prague about 2 years. In recent years, students in the framework of international exchange are participating in the practice at universities in Germany and Poland.

Significant impact on the educational process had contacts of professor O. Dorozhynsky with representatives of world famous company Leica in Switzerland (D. Tingley, P. Shriber, I. Vetzal). In 1997 a group of teachers and students visited the company within the study practices, and it gave a strong impetus to the development of international cooperation and practical perception of new technologies.

In 2007–2009, the department staff under the coordinating of professor O.Dorozhynsky participated in the international project “Cultural Landscape”, funded by the European program INTERREG/CADSES. The scientific level of our developments in sphere of application of photogrammetry and GIS for the development of regional economy was praised in European scientific environment.

In 2011–2013, the Institute of Geodesy operates an international project under the program TEMPUS, in which the young lecturers are actively involved. Thanks to participation in such projects technical base of the department added a modern computers and software, what is especially important for the maintenance of educational process.

In the last decade publishing activity of teachers are increasing. There have been published textbooks (O. Dorozhynskyy – 7, Kh. Burshtynska – 2), more than a hundred teaching materials for laboratory and course work, training and production practices.

Technical support learning process is changing. For lectures teachers are using computer presentations. In laboratories of digital photogrammetry, geographic information technology, automation of photogrammetric processes, terrestrial laser scanning each student granted a personal workstation. High tech, new technologies, access to the Internet – this is the reality of the educational process at the department today.

Looking back on the passed path we saluted our predecessors who nurtured our profession developed all areas of scientific, methodological and educational content. Not counting here all teachers by name, we note that full information on their activities and achievements is presented in a special monograph on the history of the department.

Guiding mind in the future, we are confident that our next generation of teachers and scientists will firmly keep professional flag of department. Let not forget the motto: “Teach youth and learn yourselves”.

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