TRAINING OF SPECIALISTS ON PHOTOGRAMMETRY AND GIS IN THE UNIVERSITIES OF UKRAINE

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Commission WG VI/1

KEY WORDS: Education program, bachelor, engineer, master, photogrammetry, Geographic Information Systems.

ABSTRACT:

The Universities of Ukraine gained a great experience in training specialists on geodetic disciplines. Present - day period is determined with-the fact that Ukraine became an independent state (24, August 1991). Since that year the reorganization of state system of education has already started. The Ministry of Education established multistage training system for geodetic specialist. The - first level provided by the University is bachelor, then engineer and master. Nowdays the training of engineeres on photogrammetry is provided only in State University "L'vivska politechnika". The speciality "Geoinformation Systems and Technologies" (GIS) was introduced in 1993 on the initiative of professor A. Dorozhynskiy. Now this speciality is introduced into syllabus of State University "L'vivska politechnika",Donetsk State Technical University, some small groups of students study the course in University named after Shevchechenko (Kiyiv), Odessa and Kharkiv State Universities, Slavonic University in Kiyiv. The reports presents thorough description of the contents of the sullabus for training of GIS and photogrammetry specialists.

MANUSCRIPT:

The Universities of Ukraine gained a great experience in training specialists on geodetic disciplines. The history of this process coveres three stages: prewar (till 1939) postwar (1945-1991) and present-day (from 1991 till now).

During the prewar period Ukraine was cleft into two parts, one of which belonged to the former Soviet Union and the other to Poland. The divergences of political Systems causes greatly the differences of educational systems which is well known by the majority of specialists.

The most significant fact about the postwar period is that the Western and the Eastern parts of Ukraine were reunited in the Soviet republic. The Western Ukraine Universities started working according the shcemes of the Soviet system of education .

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The Universities dealing with bachalor training only gain the 3d level of eveluative rating. In case they deal with the engeneer and master training they gain the 4th (highest) level of eveluative rating.

In Ukraine the training of engineers in geodetic and cartography specialities is held in following universities: State University "L'vivska politechnika" (L'viv) , Kiyiv State Technical University of constructing and architecture(Kiyiv), National University named after T. Shevchechenko (Kiyiv), Ore-Mining University (Kryvyi Ryh), Ukrainian Technical University of Oil and Gas (Ivano-Frankivsk), Donetsk State Technical University (Donetsk).

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The majority of the universities mentioned above determine independently the subjects to be taught and the amount of hours. But still some coordonation of actions and some agreements are achieved owing to consultations, meetings organized either by universities or by Ministry of Education.

The basic direction for geodetic and cartography specialities is established. Namely "Geodesy, Cartography and Agricultural Installations". The whole term study covers 3.5 years, the student gains the qualification of bachelor. The Engineer training requires 1.5 year more after getting Bachelor Degree.To aquire the degree of master student is given 2 years more.

During the first year of studying the engineer and master training coincide completely. Diring the last half of the training year student is working over his diploma research, defendes it and gaines the engineer degree. Master training during the last year suggests profound studyind special disciplines, working over master research and defending it.

The Bachelor level for specialistes "Photogrammetry" and "GIS" covers 7830 academic hours.

The subject are as follovs :

— humanitarian, social and economic subjects (1350 academic hours);
— fundamental subjects (1674ac. h.);
— speciality-oriented subject (864ac. h.);
— professional subject selected for the specialization by the student himself (408ac. h.).

At the end of the training the student takes the state exam after which he is given diploma and conferred the

Bachalor Degree.

The first three blocks include programmes for both specialities. The programmes are very close according to their contens and amount of lectures. The circle of fundamental subjects includes: the Higler Maths (594h.), Physics (324h.), Chemistry (81h.),Theory of Mechanics (81h.), Pragramming and Computer engineering techniques (81h.), Radioelectronics (135h.), Geology and Geomorphology (81h.), and some others.

The professional subjects compiles the largest group. They are as follows: Topography (216h.), Topography drawing (108h.), Geodetic equipment (216h.), Mathematical processing of geodetic measurements (243h.), Geodesy (243h.), Base of Photogrammetry (162h.), Geodetic Astronomy (81h.), Base of engineering geodesy (162h.), Base of cartography (108h.), Base of Organization of the use of land and cadastre (108h.), Base of hingler geodesy (162h.), Base of space geodesy (81h.), Base of geoinformatic (108h), Base of minesurveyoring (81h.), Management of geodesy and cartography (108h.), Land law (81h.), Practice on topography (324h.).

The set of specially-oriented subjects (804h.) for different specialities vary as to amounts. The specialization on GIS requires following courses: Competer data — processing systems (108h.), Mapping (81h.), Theoretical base of GIS (81h.), Data base and data banks (108), Aerospace survey and Remote Sensing (108h.), Base of GIS projecting and exploitation (108h.) and some others.

The specialization on photogrammetry suggests such courses: aerophotography, aerophotosurvey, photogrammetry, interpretation of aerospace pictures, digital cartography, map compelation, reductiored and editing and some others.

Serious, wide experience proved that training of good specialist requires teaching not only theory but practice as well. That is why the Bachelor syllabus suggests practice during the 1st, 2nd and 3d year of studuing, but the sense of the practice for both speciallities coincides only on the 1st year of studying. During next years the practical works geodesy, photogrammetry, aerophotosurvey, interpreting of pictures are included in the syllabus.

Specialisation on GIS suggested practice on geodesy, cartography and geoinformation technologies.

The engineer training term coveres 3132 hours. It includes speciality-oriented subjects which are different for different specialities.

GIS suggest following subjects: Mathematic cartography, Operation systems, Expert systems, Science of theory and practice of patenting, Graph-tSheory, Computing geometry, Digital imageprocessing, Methodology of scientific research.

Students mastering speciality "Photogrammetry" are Methodology of scientific research taking following courses: Analytical and digital photogrammetry, Methodology of scientific research, Digital cartography, Geoinformational techologies, engineering photogrammetry, Science of theory and practice of patenting.

The syllabus for both specialities includes practical training, pre-diploma practice, diploma project, diploma defence in pesence of the State examination board.

Students applying for engineer degree mastes some subjects individually.

They could be as follows: GIS and Land cadastre, GIS for town management, GIS for ecology for GIS specialization. Photogrammetry speciality suggests: Photogrammetry in Agricultural Installations, Photogrammetry in engineering, Photogrammetry in Ecology.

The possible changes of the subjects are caused by requirements of the labour market.

The most promising students who got engineer degree are promoted to study for master degree. The training is organized according to individual plan under supervising of professor and lecturers. It includes profoud studying of some disciplines, practice in teaching or scientific researching, preparing and defence of master thesis. We supposed masters to work first of all as scientists at firms, scientific establishments as well as lectures at the universities. According to experience we can conclude that the majority of masters continue their scientific activity to get the Candidat of science Degree (Doctor of Science in Western Countries).

The developing of education reforms faces a lot of obstacles. First of all it is task of financial support which is necessary for new technical means and software. But great experience of our professors permits our students to get propes theoretical and practical training.

There is no doubt that international contacts on the exchange of experience influence positively the training process.

So the authors invite all interested representatives of universities and firms to cooperate.

We expect the XVIV International Congress will help it greatly.