

Application of the Bologna Process in Higher Geodetic Education in Slovakia

Alojz KOPÁČIK, Slovakia

Key words: study programs, harmonization, Bologna Process, post graduate education.

SUMMARY

New study programmes at universities in Bratislava, Košice and Žilina and their compatibility as the basis of the students mobility. Confrontation of new models used by Slovak universities of the point of view the Bologna conclusions. Quality valuation of the new study programmes. Overview of different EU projects supporting harmonisation of study models in Europe. International mobility of students as the base of mobility of surveyors and cartographers in the future – common European work market. Post graduate education – necessary phenomena of surveyors in the future. Post graduate surveying education at SUT Bratislava and their maintenance by the professional organisations.

ZUSAMMENFASSUNG

Der aktuelle Stand der Geodäsie und Kartographie Ausbildung an slowakischen Universitäten. Kompatibilität der Studienmodelle der Universitäten in Bratislava, Košice und Žilina als Basis der Studentenmobilitäten. Vergleich den slowakischen und ausländischen Studienmodellen. Die Harmonisierungstendenzen sind für die internationale Studentenmobilitäten im Bereich der Geodäsie und Kartographie orientiert. Die Teilnahme der slowakischen Universitäten auf diesen Programmen. Harmonisierung in dem Bereich der Diploma- und Lizenz Akzeptierung. Postgraduale Ausbildung - ein notwendiges Phänomen der Vermessungsingenieure in der Zukunft. Postgraduale Ausbildungsprogramme in Slowakei.

Application of the Bologna Process in Higher Geodetic Education in Slovakia

Alojz KOPÁČIK, Slovakia

1. CONTRIBUTION

The Bolonese challenge declare the creation of the common education space in Europe, with student and education staff mobility and clear system of education levels organised in series. It is shows, that these requirements can fulfil the system of education which is similar to the system of universities in England or in USA, they include the bachelor, master and PhD. study. The economic conditions (possibilities) of more European countries enable the application of the pyramid system with successive reduction the number of students at the higher level of study. The study at the higher level is conditioned by successful graduation at the below level in the same area of interest and successful entrance examination.

In European countries are increase the number of students at universities. We evidence more than 50% increase in many countries. These changes needs the re-structuralisation of university education in whole of brightness. The European university education must react the variability of student population which is coming to universities and commonly must fulfil the requirements of the praxis, to decrease the number of high educated professional staff. The praxis define exactness the education level of the future professional staff. It needs not only theoretically educated research personal, but personal able to creative way deepen the knowledge in their area. In the light of the requirement of the continual professional development (CPD) will be increase the significance of the postgraduate form of higher education (PhD. and another form of study).

2. HARMONISATION PROCESS IN SLOVAKIA

Geodesy and Cartography programs are in Slovakia at the Slovak University of Technology (STU) in Bratislava and at the Žilina University in Žilina (Fig.1). The first of named universities provide programs at all of education levels (bachelor, master and PhD.), the second had accreditation only for the bachelor program. In similar field of study's (mine surveying, geography, space-photogrammetry etc.) are provided study programs more than five universities, e.g. at the Komensky University in Bratislava, Technical University in Košice, Technical University in Zvolen.

Various study programs, mainly their heterogeneous contents unable the mobility of students, declared by Bolonese challenge. The first at all must be the harmonisation of curricula in Slovakia and consecutive in European region. In Slovakia was held the first meeting of the representatives of TU Košice, ŽU Žilina and STU Bratislava in November 2000, where was started the harmonisation at the basis of curricula contents of the STU Bratislava, which was accredited in April 2000.

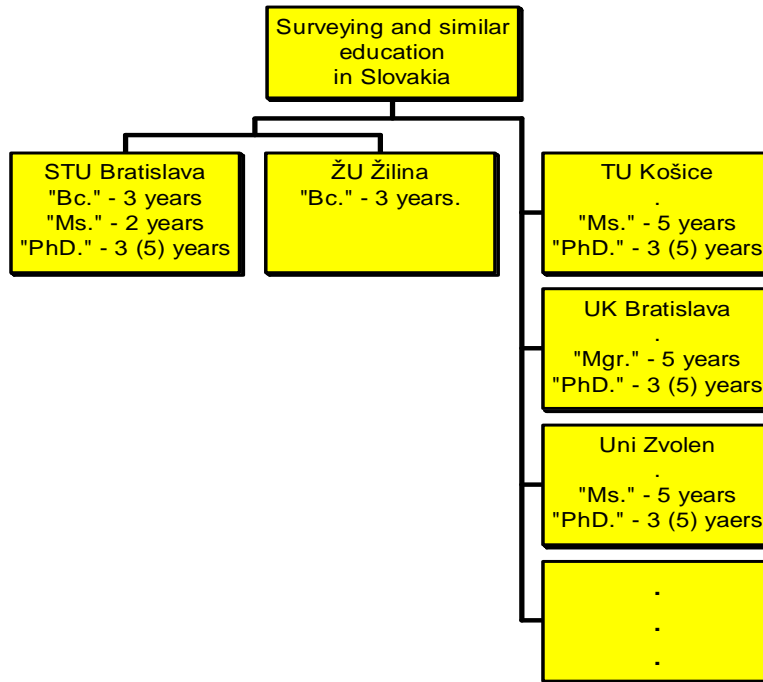


Fig.1: The actual situation in Slovakia

The Ministry of Education had defined the group of specializations in Slovakia. Next was established the working group (WG) of representatives, which should create the basic frame of study programs in Geodesy and Cartography. The WG had defined the list of obligatory and facultative objectives, their credits and minimum hour sizes.

The minimum quantity of obligatory objectives are defined at level 66% for Bc. study programs and 50% for the MSc. (Dipl.-Ing.) study programs. It was defined firs time the credits and hour sizes for the PhD. study programs, too. For accreditation had prepared study programs in Geodesy and Cartography three universities – SUT Bratislava, University of Žilina and the TU Košice (Fig. 2).

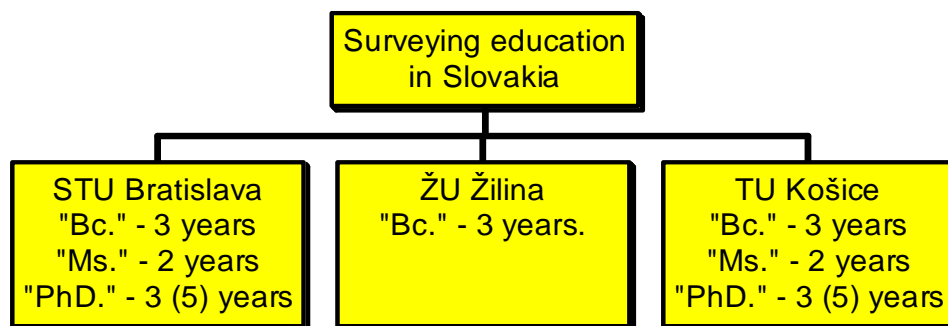


Fig.2: Study programs prepared for accreditation

In January 2004 were finished the accreditation of study programs at University of Žilina and at the SUT Bratislava (without the PhD program). The accreditation of programs at TU Košice is today in process. Outgoing from the prepared materials can be concluded, that

through the new programs the harmonized surroundings are build in the field of geodesy higher education in Slovakia.

3. HARMONISATION PROCESS IN EUROPE

At European level was started the harmonisation process in Geodesy and Cartography at the workshop in Delft – November 2000, which was organised by FIG Commission 2 and CLGE. At the workshop was presented the first results of the curricula contents analysis of European universities (CLGE/FIG, 2000).

Very important is the activity in the field of curricula contents harmonization that is in process in the frame of the international project of European Faculties of Civil Engineering – EUCEET. The aim of this project is supporting of international student and education staff mobility. The project was started in 1998 with participation of more than 15 faculties. The Faculty of Civil Engineering of the STU Bratislava was participated on the EUCEET project. Our faculty completed the project database by the curricula of tree Slovak civil engineering faculties, the faculties of Civil Engineering of the University of Žilina and TU Košice, too. As results of this project is the publication, which included the basic information about faculties and the curricula contents of all provided study programs. In frame of this project were completed individual publications about the participated faculties, which include all information's about the faculty, their curricula contents, education staff, libraries and laboratories. In this publication are included the information about accommodation and cultural live in the city and country (EUCEET, 1999).

In November 2002 started the EU Socrates Project European Education in Geodetic Engineering, Cartography and Surveying (EEGECS). The project is originally created by geodesy, cartography and surveying institutions, which main objective was to enhance collaboration and co-operation between higher education institutions, which offer these studies, trying to reach the objectives and recommendations of the Bologna and Prague Declaration (EEGECS, 2004). EEGECS has a partnership of 91 institutions from all different European countries. The project involved universities as well as public and private institutions such as associations, city halls, companies, etc.

The aims of this Thematic Network have been structured in six topics and Working Groups (WG's):

- Undergraduate education
- Research, PhD programs
- Continuous education, e-learning and European dimension of studies
- Enterprise-private sector
- Mobility, languages, culture, citizenship, social cohesion, etc.
- Quality assurance.

Base the project aims will be make comparative analysis of study programs, state-of-the-art of the ECTS implementation and Diploma Supplement adoption. The analysis of existing PhD program models were started and including of promotion of joint research programs in different countries. To analyze the needs of private sector the survey of the student

applications within Europe was started. It will be create the network of enterprises willing to accept students under practical training.

Each of these international projects prepares information's they will be discussed at universities and EU Commissions. Result of this bright discussion should be the optimal model of study program they should be accepted by universities as standard in university education.

4. QUALITY OF THE HIGHER EDUCATION

Valuation of quality of the higher education in different countries, at different universities is very complicated process. The quality of the higher education in Slovakia is controlled (guaranty) from the site of government by these processes:

- Accreditation of current and new curricula contents
- Evaluation of faculties with ministry commission with the period of tree years.

It is true, that both of those processes are more oriented to fulfill of the quantitative or formal criteria as qualitative criteria. The result of accreditation is the admission for the faculty to educate and give the title in relevant field of study. The faculty evaluation is the valuation process specially oriented to the categorization of evaluated subjects, to arrange the faculties for determination of the volume of financial support (budget) from the government.

The exact achievement of accreditation criteria require at first fulfill the personal requirements and at the second the material requirements. The quality criteria of the pedagogical process are so repressed (eliminated) by the evaluation process. Another way the faculty evaluation is more oriented to the quality (quality assurance). In this process are the faculty evaluated as complete and not the provided study programs at the faculty.

To this time fully absent the quality assurance of the pedagogical process from the point of view their results – the graduate students. They are missing at this time any information's in this process about acceptance the graduate students in praxis, on the international job market. The analysis this art make self the universities or faculties only, to receive arguments for advertising of new students. New information will be received here from companies, the chambers and alumni clubs of universities.

As outgoing point can be accepted for the quality assurance of the education at universities the criteria defined by the European Association for International Education (EAIE). The complete environment for university education higher quality include (Morgan et all, 1999):

- Design of study programs and curricula contents
- Education, self development and valuation
- Individual work with students (consultations)
- Motivation of students for effort increasing
- Materials sources for self development
- Quality valuation.

The university education higher quality is characteristic with conditions suitable for purchase of the new and permanent knowledge, with climate, which stimulate the students to create and understand the relations between old and new knowledge. Creating conditions they

enables creative work of students with aim to apply the new knowledge solving the problems, build model situations to encourage students to achieve their competence give knowledge another, together create environment their encourage students to achieve new and new knowledge.

Heterogeneous materials and basis for quality assurance of education process in separate countries unable the formulation of exact criteria and recommendations. The university environment enables the organization of workshops, provides discussion and periodically sessions of university management and academic staff. The university should provide continual development and self-development of education staff support the horizontal and vertical communication inside the university. The university environment supports student networks, creates connection between research and education, organizes seminars, conferences and workshops, student and education staff mobility. Supports communication between universities and their partners, users of research results and sponsors.

5. CONTINUAL PROFESSIONAL DEVELOPMENT

Connection to permanent technology development is remaining the requirements on professional education of surveyors and cartographers. For the continual professional development (CPD) process are significant the continually organised seminars, conferences and presentation of research results. It will be important to support the information change and communication between professional staff of companies and universities.

Commonly with political changes in 1990 are new professional organisations, chambers and associations formed in Slovakia which conjugate providers of regulated profession. By organisations are exactly defined the requirements for professional development of your members. For example the membership of Chamber of surveyors and cartographers (CSC) is conditioned with short course which is graduated by examination. The course contents are defined by the CSC and the course is provide by Department of Surveying at the STU Bratislava (Kopáček, 2003).

Besides the mantioned program for CSC are by the Surveying Departments of the SUT Bratislava offered 3 postgraduate programs:

- GPS applications in Geodesy – 40 hours, final certificate
- Modern technologies in engineering surveying – 60 hours + 20 hours training, final certificate
- Methodology and organization of the cadastre – 37 hours + 5 days training, final certificate.

These courses are offered for the graduated students at MSc degree programs in Geodesy and Cartograhya, only. The certificate given by the university is accepted by all surveying and civil enginnering enterprises in Slovakia.

6. CONCLUSION

The harmonized professional environment, that has undertake the providing of profession at higher level of quality, is one of the basic requirements of the integration the country to

international structure. The participation of our country in non-government organizations must in next years focused to the active attendance in commissions and realization of the resolutions from these sessions in our country, in area the quality assurance, too. Fulfill these aims should:

- Build in quality assurance in all education process and models
- Introduce (establish) these mechanism at universities
- Apply quality management systems developed in another countries for the development of our quality management systems to achieve high quality by surveying education
- Assure fully acceptance and obligatory of CPD system for all surveyors in country
- Support quality management systems in surveying companies and corporations.

The universities should participate on education of management and design of quality management systems. The university staff must be prepared to accelerate and support this process.

REFERENCES

- EEGECES – Report 1, 2004: Directorate General for Education and Culture. Printed by UPVT Valencia, Spain. www.top.upvt.es/eegecs
- EUCEET, 1999: Faculty of Civil Engineering STU Bratislava. Curricula Contents 2001. EUCEET Project Publication, Bratislava, 2001.
- Kopáček, A. (Eds.), 2003: Work and responsibility of licensed surveyors and cartographers. Slovakia, Bratislava, CSC Publication No.3 (Slovak).
- Morgan, P.- Hodgkinson, R.- Enemark, S., 1999: Quality Assurance in Surveying Education. FIG Publication No.19, Denmark, Copenhagen.
- CLGE/FIG, 2000: Proceedings of the joint CLGE/FIG seminar „Enhancing Professional Competence of Geodetic Surveyors in Europe“, Netherlands, Delft.

BIOGRAPHICAL NOTES

Univ.-Prof. habil. Alojz Kopáček, PhD. Study Geodesy and Cartography SUT Bratislava 1977-82. Doctor study at the Department of Surveying the SUT Bratislava in 1982-85. Senior lecturer at the Department of Surveying – lectures and seminars from Geodesy for CE, Geodesy for Water Managers and Construction Engineers, the Underground and Mine Surveying and Engineering Surveying, Measurement systems in engineering surveying and Surveying for Civil Engineering (the study program in English). From 1990 - 1992 lectures and seminars at the TU Vienna from Geodesy and Engineering surveying.

Chairman and member of State Exam and Diploma Commissions at TU Brno, University of Žilina and at the SUT Bratislava and the Slovak Chamber of Surveyors and Cartographers. Member of the European project EEGCES, WG1. Delegate national of the Com.2 (Education) of the FIG. Member of the board of Geodetski list (Croatia) and the WG's of FIG and IAG, which activity is oriented to implementation of laser technology in geodesy.

Research in the filed of application TLS and dynamic measurements in real-time, the integrated solutions by increasing the level of automated quantification in measurement.

Chairman of TC89 - Geodesy and cartography (Slovakia), author of 4 ISO standard translations to the Slovak system of standards (STN).

CONTACTS

Alojz Kopáčik
Department of Surveying SUT Bratislava
Radlinského 11
Bratislava
SLOVAKIA
Tel. +421 2 5927 4559
Fax + 421 2 5249 4334
Email: alozj.kopacik@stuba.sk
Web site: <http://www.svf.stuba.sk/kat/GDE/>