



Scope of Competences of Future Serbian Surveyors Educated under the New Master Study Program in Land Law and Economy

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Abstract This article deals with quality control and main outcomes of the new MSc program at the Department of Geodesy and Geoinformatics (DGG) developed under the Tempus project at the Faculty of Civil Engineering (FCE), Belgrade University (BU). Master program covers the area of Land Law and Economy and it is the first program with this specific contents in Serbia. The main aim of this Project is to take into account actual needs of the Serbian surveyors today and to prepare a curriculum, more cooperative with modern European education practice in this area. In this Project we cooperate with the colleagues from Stockholm, Helsinki and Ljubljana Universities, with special heading role of Royal Institute of Technology (KTH, Stockholm). We are now near the end of the Project. The teachers from four domestic faculties with foreign colleagues are going to prepare teaching materials that is expected to be finished until the August 2009. It is a multidiscipline program with legal, economic and technical subjects back grounding with a Land Management Center which should be established during this Tempus Project, also. With the help of Land Management Center which is prepared and equipped with modern computers, knowledge innovation courses and process of permanent education of Serbian land surveyors will be organized in a new manner. In this intention we expect much help from European colleagues and every initiative will be of great importance to us. We also ask all colleagues to think about mutual cooperation with DGG in sharing experiences in all directions of education process and professional surveyor's development.

1. Land Market in Serbia and the Needs to Establish a Modern Education System

Private ownership of land and real property is a prerequisite for rapid economic development of any country. In a state, where it is unclear, who owns what and where, who has which kind of obligations and what mechanisms are available to enforce payment of the claims, the economy is constrained and sluggish. Thus assets cannot be used for obtaining added value through multiple property transactions because of their unfixed nature and uncertainty. In such a state, assets have similarities with dead capital. Therefore, every country in the world is trying to avoid such situations.

Serbia is now in transition from poor economy to a welfare state, in transition from unsecured to secure system of registration, from unreliable to an up to date property register, with clear, safe and guaranteed ownership rights. This road is long and treaded with obstacles, but has to be taken. The economic growth of the country cannot be imagined without reliable, secure and efficient source of information concerning real property. In other words with reliable information about an asset and well implemented legal framework, real estate is no longer just a physical object, it becomes a ground for future investment and production of new capital.

At present the government of Serbia is undertaking measures to meet the European standards and values in real property sector through implication of the concept of legal reliability and predictability, the transparency principle, the principles of accountability, efficiency and effectiveness. However, the corresponding legislation needs to be improved, the procedure for registration of land units and land rights should be simplified and accelerated. In particular, Serbia needs to make the cadastral system suitable and attractive for future economic investments. Real properties must be transformed into capital in order to help the economy to rise to a new level. In 2000 Serbia initiated the modernization of a property registration system that is still going on.

2. The Serbian Efforts to Establish Modern Education System of Surveyors

In 2002 the rules for private practice in Serbia were established and since then experiences of market surveyor's position were taken and analysed. To improve actual curriculum, DGG organized a questionnaire in which about 40% of private companies were included. We obtained a very clear picture of their position and opinions related to their work conditions and influences of

professional education on their job success. We saw that the surveyors have been asking changes and all of them were aware of need that permanent education (lifelong learning) should be normal. We use it as an argument for the improvement of the education process in Serbia.

In 2002 there were only 92 private companies in Serbia in which 500 surveyors were employed. Now, there are 740 surveying companies with 2000 workers. They work on free market and apply public tenders to get jobs. Most of them work in projects related to boundary formation, real estate transfer or topographic surveying for urban purposes. More than a half are engaged in cadastre.

Until 2006 in Serbia there was only one place in which students could take academic degree in surveying - FCE. Now, we have two places. It was one sign else that the old curricula at FCE must be changed, and last occasion for new suitable education program, the Tempus project offered. We knew that it was not possible to do that easily and we found reasonable that it should be prepared with the help of well experienced university respective staffs in land surveying.

At the beginning of the new challenge we were aware that to achieve the objectives and establish a good real property market in reality is impossible without new type of specialists who will possess legal, economic and surveying knowledge related to land and real property. In other words, such professionals shall be well familiar with the following key issues of real property sector such as:

- Policy issues, i.e. when efficient and effective policies with regard to development of land markets are to be developed and their implementation is monitored,
- Legal issues – national cadastre and land registration laws that must be precise and must harmonise with other related laws and comply with international and European regulations and standards,
- IT issues – technological developments is also of crucial importance, especially the balance between latest state of the art on international basis and the necessity of its implementation, and
- Financial issues – the development of a functioning land market involves huge financial means, from the state and / or from the private sector.

For development of a functioning land market all these key issues must be addressed by modern university training programme.

3. The Main Characteristics of the New Master Programme, its Aims, Outcomes and Study Rules

The process of integration of Serbia into the European Union, initiated in 2000, offered the opportunity for qualitative reform of higher education, as well as for restructuring of the current educational system in accordance to Bologna objectives. In 2001 the Serbian Ministry of Education and Sport declared establishment of a modern system of higher education as its main goal for the on-going reform of higher education. Following that goal, the new Higher Education Law was passed (2005), National Council for Higher Education was established (2005), and Accreditation and Quality Evaluation Commission was formed (2006).

The FCE as the oldest and the most important education institution in this area here, seeks a leading role in development of new educational programmes not only in geodesy and geoinformatics but also in land management and cadastre. Having taken into consideration the on-going educational reform at UB as well as the new Higher Education Law and changes in the society in general, it has been decided to develop a new master programme based on the current undergraduate programmes in geodesy and geoinformatics and fruitful cooperation with Royal Institute of Technology (KTH). The programme shall pay attention to legal and economic questions especially related to land consolidation and urban/suburban land development. The FCE has high expectations from this new master programme in terms of a growing interests among future national and international students (especially Balkan region), in terms of increased competence of Faculty teaching staff and therefore, of quality of education in general, and of strengthened cooperation between the UB and participating EU universities through finding mutual interested research topics. Moreover, we hope the Faculty will increase its level of technical support of the whole educational process. Apart of the European Higher Education Area objectives (competitiveness, adaptation to new labour market conditions, reinforcing European citizenship, reinforcing shared values) adoption with this new master program we honestly want to accept the specific Bologna objectives (readability and comparability of degrees, adoption of a two-cycle

system, establishment of a common system of credits, removal of obstacles to freedom of movement of students, quality assurance in higher education and promotion of European dimensions in higher education).

New master programme is a result of co-operation between three European universities – Royal Institute of Technology, Helsinki University of Technology and University of Ljubljana and two domestic institutions – Faculty of Civil Engineering and Republic Geodetic Authority. The Master's Programme - Land Law and Economy profile aims to qualify students in land development, economic development, law aspects, socio-political organization, and environmental sustainability in an international context by using an interdisciplinary approach to teaching. After successful completion of the program, students will receive the Master of Science (MSc) in Land Law and Economy academic degree - which will qualify them for professional work and scientific research. This academic degree will enable students to enter PhD programs, also.

The Master's Programme in Land Law and Economy - is a four semester program. The first semester introduces students to the area of law and gives them some basic information on property market, geographical information systems and project methodology. In the second semester students are trained in land cadastre, land consolidation, urban land management and receive knowledge in real property investment. In the third semester students continue their education choosing the courses which give them more managerial skills and exercise in group work doing projects in urban planning or real estate. At the end of the third semester students spend two weeks in adequately chosen geodesy office where they are faced with practical problems of the profession. The fourth semester is dedicated to the Master's Thesis.

Classes and practical work are structured into units. The units are composed of lectures, seminars and practical work. The method of teaching is suited to the contents of the course and modern technology is used in education. The lessons are organized in a modern classroom specially equipped for this program (Center for Land Management - CLM) and each student is provided a personal computer. The objective and contents of each unit are presented in MSc Handbook, as a guide. The detailed program for each unit and unit-requirements are outlined in the unit specifications which will be handed out to the

students at the beginning of each unit. In order to pass a class-unit, students must actively participate in class work, present a written or oral presentation and/or pass the final exam with being accredited at least sufficient passing mark.

The Master's programme also includes an integrated full-time internship period, related to Land Law, Economy and Land Management. The internship takes place between the third and fourth semesters. The Faculty is responsible to find internship placement. Students are also encouraged to arrange their internships by their own efforts in case of which they will be advised by their supervisor in accordance with their academic profile and interest. The aim of this activity is to give students the opportunity to apply their theoretical knowledge to the practical work in public and private institutions dealing with cadastre transactions, land valuation, land consolidation, urban and rural land management, etc. During the external practice, they are expected to start their project as a separate unit in this area and which is expected to be the base for master work. The minimum length of internship is two weeks.

During the last semester, students must write the Master's Thesis under supervision of a faculty professor. A total of 30 ECTS credits are assigned to the successfully completed Master's Thesis. The time between the official beginning of writing the Master's Thesis and its completion must not exceed 3 months and will require a full-time involvement. Students' choice of topic for their Master's Thesis should be done in close collaboration with their advisers. They are encouraged to write their Master's Thesis on a topic focusing on practical issues

In order to register for the official start of writing the Master's Thesis students need to fulfil the following requirements:

- Having successfully completed all unit requirements;
- Produce proof for two week internship period; and
- Meet the registration deadline which is 3 months before the last day of semester 4;

The latest possible date to hand in the completed Master's Thesis is the last day of semester 4. Master's Thesis could be written in Serbian or English.

Student's performance will be assessed throughout the Master's Programme. All work during the study is structured into units with their

No.	Courses/Semesters	7	8	9	10
		ECTS	ECTS	ECTS	ECTS
1	Real Property Law	7			
2	Environmental and Planning Law	6			
3	Property Market	5			
4	Geographic Information Systems	7			
5	Elective course 1	5			
6	Project Methodology		5		
7	Land Development and Consolidation - basic		5		
8	Real Property Investment Analysis		5		
9	Real Estate Cadastre 2		5		
10	Urban Land Development		5		
11	Elective course 2		5		
12	Land Development and Consolidation – continuous			5	
13	Real Property Valuation and Taxation			5	
14	Elective course 3			5	
15	Elective course 4			5	
16	Elective course 5			4	
17	Elective course 6			4	
18	Internship			2	
19	Master Thesis				30
	Total	30	30	30	30

Table 1: MSc curriculum – Land law and economy profile

	Course name	Elective course					
		1	2	3	4	5	6
	Project management	+		+			
2	WEB GIS	+		+			
3	Geodesy in space and urban planning	+		+			
4	Negotiation and communication		+				
5	Rural Land Development		+				
6	Infrastructure				+		
7	Natural Resources				+		
8	Environmental Protection					+	
9	Professional English					+	
10	Real Estate Project						+
11	Geodetic Project in Urban Planning						+

Table 2: Elective courses

respective credit points. The number of credit points assigned to each unit reflects the workload for the student in order to complete the unit in question. The weight of individual units corresponds with the European Credit Transfer System ECTS. The success of a student in mastering a subject shall be continually under scrutiny and shall be expressed in points. By complying with the pre-examination obligations and by passing exams a student may earn 100 points maximum. A study programme establishes the ratio of points earned through pre-examination obligations and those earned at the exam. The pre-examination obligations shall account for 30 points minimum and 70 points maximum. The success of a student at the exam shall be expressed from grade 5 (failed) up to grade 10 (excellent).

An exam shall be consolidated and taken orally, in writing and/or in a practical manner. It should be taken at the seat of a higher education institution and/or on the premises specified in the work permit. The Faculty may make arrangements for taking exams outside its seat if so required by the nature of the subject involved. A student shall take an exam immediately upon completion of the course in that subject. The examination periods shall be in January, April, June and September. If a student fails an exam, he/she shall have the right to take the exam two more times during the same academic year. Exceptionally, a student who has one exam remaining from the study programme of the year he/she has enrolled in, shall have the right to take that exam in the subsequent examination period prior to the beginning of the following academic year.

Successful completion of all requirements of the Program means that students have passed the Master's Exam. The person who finishes the graduate academic studies acquires the academic title – graduated, with the name of the second degree of graduate academic studies in a corresponding area – master. In addition they are given Diploma Supplement with listing of individual units and grades received throughout the Master's course as well as the topic of their Master's Thesis. The diploma and the Supplement Diploma shall also be issued in the English language.

4. Sustainability of the New Master Programme

- Talking about sustainability of the new master study programme – Land Law and Economy profile, we can account:
 - Financial sustainability will, first of all, be achieved through the financial support of the state. It means that new Master programme shall be accredited by the Ministry of Education. After successful accreditation and introduction of the programme into universities' curricula, it will be financed on regular basis as other study programs at UB. Since new Master programme will meet the modern requirements of the society, we assume the high interest among potential students to enter this programme.
 - Centre for Land Management as a new organization unit formed under the project will ensure sustainability by providing retraining courses for professionals from the Republic Geodetic Authority and other relevant governmental authorities in the future. The Centre for Land Management will continue its activities after the project ends. The training courses at the Centre, which are planned in the future will be run on commercial base and will ensure the financial sustainability of the Centre.
 - The new MSc program will be sustainable as new curriculum and courses are developed in accordance with the educational standards of Serbia, the requirements from professional practice and experiences of three European Universities.
 - Trained teaching staff will guarantee institutional sustainability of the project.
 - The involvement of Republic Geodetic Authority will ensure that the new Master programme is relevant to the labour market and covers land management problems in Serbia.
 - The involvement of the students graduated so far at KTH into teaching process at UB will assure further development of the new Master programme and application of modern teaching methodologies at FCE. The graduates will become a bridge between KTH and FCE and will facilitate international cooperation in education and R&D.
 - The leading position of FCE in Serbia and its experience in professional education is one more valuable asset.

5. Conclusion

The new master programme at Faculty of Civil Engineering prepared with the help of three European Universities guarantees that the content of the programme is familiar with European experiences in this area. We hope that this fact should be very important argument that we are at the good road. Taking into consideration all

aspects of very good cooperation with three European institutions during this Project, we accepted European harmonization education principles: 1) put quality assurance systems to be comparable, 2) take one step towards compatibility of the European two-cycle system, readability and recognition of degrees, recognition of the need to balance the objective of competitiveness with the improvement of the social dimension in European higher education, 3) accepted reaffirmation of the principle that higher education is a public good and a public responsibility, 4) go one step further into the need for development of lifelong learning in higher education, and 5) give emphasis on the priority of academic values and academic autonomy in Serbia.

Biographical Notes

Branko Bozic:

From 1982 to 2006 employed at the Military Geographic Institute in Belgrade. Work activities related to surveying lasted until going to the Faculty. Since 2000 assistant professor at the Department of geodesy at the Faculty of Civil Engineering in the area of surveying. From 2003 to 2005 head of the Institute for Geodesy at the same Faculty. From 2001 to 2005 head of Belgrade's Geodetic Society. Since 2006 as associate professor engaged in several subjects related to the adjustment and calculation. During the same period head of Belgrade's other technical discipline designers in Serbian Engineering chamber. Local coordinator in TEMPUS III project – MSc study programme in Land Law and Economy. Author of more than 30 articles and projects and editor of 3 university books.

Zagorka Gospavic:

Born in 1959. Graduated in 1983. as Dipl.-Ing. in Geodesy and obtaining doctorate degree in 2002., both from Belgrade University, until 1988. Teaching assistant at Belgrade University. Since 2003 Assistant Professor of Geodetic and Project Management. During the period 2003-2007 working as members of board directors of Republic Geodetic Authority in Serbia. Delegate on the Commission of Surveying Technical Academy and Delegate on the Commission of Surveying Technical Academy. There are 21 works published, 6 of those were published and presented in the international symposiums, while 15 were presented in local conferences internationally and nationally relevant and main editor of Serbian geodetic journal 'Geodetska sluzba'

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