

# PERSPECTIVE OF EDUCATION IN GEODESY IN KOSOVA

**Murat MEHA, Republic of Kosovo**

**Key words:** education, students, curricula, cadastre.

## SUMMARY

Education system is changing all the time, meaning that the traditional original system can not be stable especially now on globalisation era, with wide open market and with full contradictions as the real world. In front of geodetic professionals in Kosova there are many challenges, usually very complex, and impossible to describe in detail within this article. There is possibility to contribute to the advancement of the theory, practice and sharing experiences in learning and education. This short study has two meanings: one is to show how the education in geodesy has been developed in Kosova and secondly is what the expected results are. Education need to follow economic and social reforms which has considerable impact on future development. There is need to be more efficient and effective in service delivery, using proper technology and good interpretation of laws related to cadastre and generally in Land Administration. Research is done because of good perspective of geodesy in Kosova for different reasons, institutions started to has good approach for land administration, than, compare to previous years needs for surveyors is in increase.

# PËRSPEKTIVA E SHKOLLIMIT NË GJEODEZI NË KOSOVË

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**Fjalët kryesore:** shkollimi, studentet, kurrikulat, kadastri.

## PËRMBLEDHJE

Sistemi i arsimimit është gjithnjë në ngritje, qe nënkupton se sistemi tradicional i shkollimit nuk mund të jete stabil, e posaçërisht tani kure e kemi periudhën e globalizimit dhe me treg të hapur dhe me shume kontradikta si është edhe vete bota. Në balle të gjeodetëve janë shumë sfida me mjaft kompleksitet, qe është e pamundur të përshkruhen në detaje në këtë artikull.

Këtu është mundësia e kontributit në ngritjen teorike, praktike dhe fitimin e eksperiencës se nevojshme gjatë shkollimit. Ky studim i shkurtër i ka dy qëllime: i pari është për të paraqitur si është zhvilluar shkollimi në gjeodezi në të kaluarën në Kosovë dhe e dyta cilat janë rezultatet e pritshme. Shkollimi si zakonisht duhet ti përcjell reformat ekonomike dhe sociale të cilat kanë ndikim të konsiderueshëm në zhvillimet e mëtejme. Është e nevojshme qe të kemi një efektivitet me të lartë shenjen e shërbimeve, duke përdorur teknologji të përshtatshme, interpretim të mire të ligjeve lidhur me kadastrën dhe në përgjithësi me administrimin e tokave. Hulumtimi në këtë fushe është bere nga se perspektiva e gjeodezisë është e mire për arsye të ndryshme, institucionet kanë filluar të kenë qasje të mirë ndaj administrimit të tokave, pastaj krahasuar me vitet paraprake nevojat për gjeodetet janë në rritje.

# Perspective of Education in Geodesy in Kosova

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## 1. INTRODUCTION

Education in Geodesy, Cadastre and Geomatics develop possibility of a good guidance on presentation of ownership, human activities and historic, cultural and scientific development of the nation. Instead of education in geodetic and mapping fields based on historic aspects and geographical position of Kosovo in Europe, geodetic works and mapping presentation were also done by different international institutes. Just in 2003 a decision was taken by the relevant factors to establish a department of Geodesy within the Faculty of Construction and Architecture. It will be interesting to show the development course of geodesy and mapping in Kosova in centuries. In this case there are at least three periods of development of Geodesy and mapping in Kosova as shown below:

- *Period under Ottoman Empire to 1912 ;*
- *Period from 1912 to 1999;*
- *Period after 1999;*

There is possible to treat curricula only in third development period of geodesy and mapping in Kosova. Therefore, research is directed on new curricula on geodesy and geoinformatics.

### 1.1. Period under Ottoman Emperies to 1912

The Balkan area along with the Albanian territory have been under Ottoman Empire until 1912. Land register on taxation needs was done by experts of Ottoman Empire, called *defter*. Those registers comprised property and population data of the territory. *Defters were* in two forms, the first was a general form and the second one a detailed form. Findings in archives of Turkish Republic from year 1455, as *defter* of Fushe Kosova were found regarding land evidence in Kosova.

### 1.2. Period from 1912 to 1999

This period is characterised with different approaches and activities on education and development of geodesy and mapping in Kosova.

Main geodetic works as networks and mapping presentations of Kosova were mainly by European centres that were engaged at that time as: Firenze's Military Geographical Institute (FMGI), Vienna's Military Geographic Institute (VMGI), Russia's Military Geographic

Institute and Military Geographic Institute of Belgrade (VGI) (Macarol 1977, Meha, 2000. etc).

From the year 1928 until 1968 basic geodetic network has been developed and there were finished topographic surveys for the whole territory of Kosovo. Kosovo geodetic framework during that period has been a part of the geodetic network of Yugoslavia (SFR of YU). In this network triangulation points have been developed from the 1<sup>st</sup> to 4<sup>th</sup> order, and traverse network. Levelling network was also within geodetic basic framework that was also classified in orders. These works were presented in *Gauss-Kruger* projection according zones of meridian starting from *Greenwich meridian*. Kosovo is included in the meridian zone of 21<sup>0</sup>. In 1970s Kosova has been presented in topographical maps in the scale 1:25000, and also in cadastral maps in the biggest scales as 1:500, 1:1000, 1:2000 and 1:2500.

This period was characterised with different unconvincing registration of property which created confusion within registers and owners as indicated below.

“This was the period of Balkan Wars and World War the First. In this period of time the Serbian & Montenegrin government did ethnic cleansing of Kosovo, by forcing Albanian to migrate to Turkey, and they settled colonies from the territories of Montenegro and Serbia instead. According to various data during the period 1918 – 1941 Kosovo was settled by 33.000 colony families, in an area of 175.000 ha of the fertile land” (Tullumi, 2002). There were various approaches of continued policies until the recent war in Kosova in 1999, Bogdanovic, 1989, Law 1945&1948.

After the year 1950 few geodesy students got started their education in different Yugoslav Universities as at the University of Belgrade, Zagreb, Sarajevo and Ljubljana. Since 1972 the first generation of graduated geodesy technicians from the secondary geodetic school in Gjakova/Kosova has been produced.

During the discriminating period of Serbian Government in Kosovo (1991-1999), about 90% of Albanian geodetic experts were removed from public institutions, than other geodetic instruments and cadastral documentations was destroyed in a large scale.

### 1.3. Period after 1999

In the beginning of this period there was a very complex situation with lack of cadastral records, geodetic instruments and lack of know-how from local experts. The first task of this period has been the collection and evidence of existing cadastral documentation in Kosovo, continuously established from the register on immovable property rights and built professional geodetic capacity for normal work in public sector.

In general, important results have been achieved between 2000-2007 years fulfilling above mentioned requirements through Cadastral Projects that were developed continuously in Kosovo Cadastral Agency as follows:

- Reconsolidation of Cadastre in Kosovo (collection and analysis of existing cadastral documentation due to war consequences, building and capacity increase, equipments, trainings etc),
- Realisation of “Kosovo Cadastre Support Program I ” 2001 – 2003, that was implemented by Switzerland, Sweden and Norway donations .
- Establishment of legal infrastructure for cadastre,
- Vectorization of cadastral maps,
- Establishment of new geodetic system KOSOVAREF01,
- Immovable Property Right Register (IPRR),
- Air photography survey for whole territory of Kosovo during 2004 year,
- Beginning of Cadastre Reconstruction with Pilot Projects and later with Projects.
- Preparations and commencement of implementation of “Kosovo Cadastre Support Program II” 2005-2007, to be carried out by Government of Switzerland, Sweden, Norway and World Bank donations.

These projects have a big impact on education of geodetic professionals being on the same track with colleagues in other countries.

## 2. DEVELOPMENT OF UNIVERSITY OF PRISHTINA

The University of Prishtina (UP) was established by the Law in 1970. University of Prishtina is public, because nowadays there are other ten (10) private universities. The University of Prishtina, is in line with Bologna Declaration (June 1999) and has had an opportunity to have recruited international staff from the EU countries and has started to implement the reform based on the principles of Bologna, Beqiri E. 2003. The new Law on Higher Education at the University of Prishtina is based on the Bologna Declaration and it is in the same line as few European Universities.

The University of Prishtina has adopted Bologna 3-5-8 (or 3+2+3) study system that are comparable degrees Bachelor-Master-PhD.

- Bachelor or basic studies last six (6) semesters or 3 to 3.5 years, 180-210 ECTS credits. Until now only this level of Geodesy studies has been established.
- Master as professional study lasts four (4) semesters or 1.5 to 2 years 90-120 ECTS credits and there can continue only students with high marks.
- Scientific Professional Studies Doctorate six (6) semesters or 3-4 years 120 ECTS credits precondition 300 ECTS from previous studies.
  - o Curricula comprise **mandatory** subjects and **elective** subjects.
  - o **Mandatory subjects** provide students with the basic knowledge in the field.
  - o **Elective subjects** aim to offer students in-depth and specialized knowledge.
  - o The standard duration of studying a subject is a semester, for more see on [www.uni-pr.edu](http://www.uni-pr.edu)

## 3. STRUCTURE OF GEODETIC ENGINEERS AND THEIR PERSPECTIVE

Education in geodesy in Kosova has short history less than four decades respectively first educations in geodesy have been started in 1969 as secondary school in Gjakova. Than in

1980 has been opened Geodesy in Technical school of Prishtina. After the recent war (1999) in Kosova there is a rapid increase need for surveyors and in 2003 first Department of Geodesy has been established in the Faculty of Construction and Architecture within University of Prishtina. Since than, students show high interest to study geodesy. On table 1. is shown structure of experts of Geodesy in Kosova.

<b>Secondary school in</b>	<b>No of schoolboys</b>
Gjakova	370
Prishtina	860
Gjilani	120
Mitrovica	80
<b>Total</b>	<b>1500</b>

<b>Department of Geodesy</b>	<b>Students</b>
2003/04	30
2004/05	30
2005/04	30
2006/07	30
2007/08	45
	<b>165</b>

The Department of Geodesy of Faculty provides diploma for bachelor graduated students on department of Geodesy. The bachelor of geodesy or specialists on geodesy has good perspective for two reasons: for the time been market is bigger than their number and second economy of Kosova is in development that has big requirements for geodetic surveyors and bachelors. They have access to be employed in different public and private sectors which deals with the problems as following:

- geodetic networks,
- land administration,
- cadastre,
- expropriation,
- land consolidation,
- irrigation,
- agriculture,
- geology,
- mining,
- metallurgy,
- environment,
- territory adjustment,
- spatial planning,
- development planning offices,
- as specialists in central and local governmental bodies etc.

Student has to pass all exams and diploma to achieve bachelor graduated. The level of responsibilities of bachelor of geodesy will be lower than graduated engineer of geodesy from previous study of geodesy. Graduate engineers of geodesy in Kosova always were required because of missing them, so they have never had any difficulties in getting employed,

#### **4. TEACHING PLAN DIDACTIC RESOURCES AND EVALUATION OF STUDENTS**

The teaching plan organized on the basis of mandatory/elective course subjects, completes gradually, from the first to the six semesters.

The knowledge on the disciplines included in the teaching plan and their absorption by the students are based on the textbooks and basic literature incorporated in the program of every subject; in the lectures, theoretic seminars, drills and exercises, practical assignments, teaching-visiting studies of professional institutions and pedagogical practices; laboratory, internet explorers (website), library of the faculty etc.

Students carry out their teaching obligations through course tasks, tests, practical-laboratory assignments, course papers and annual references. At the end of the complete cycle, the students have to take oral, written or mixed examinations on certain subjects.

The students are made known with the different forms of their knowledge-control from the very beginning of the cycle of each subject.

##### **4.1. ECTS Credit System**

The ECTS credit system has numerical values of 25 lecturers, allocated to the course units to describe the student workload. The credits thus reflect the quantity of work each course requires in relation to the total quantity of work necessary to complete a full year of academic study at the institution. ECTS takes into account the total amount of study, and not just time spent in classes. Within the ECTS, 60 credits represent an academic year, 30 credits one semester and 20 a term. The credits can only be awarded if all the necessary work has been completed (including seminars, assignments, tests, examinations etc.). Evaluation of students will be through examinations which are organized in written, orally or both, on the end of the semester, when he/she is fulfilling all predicted conditions of subject. Definition of knowledge of students should be as on table 1. below.

Table 1.

Definition of knowledge of student	Evaluation of students
<b>Excellent:</b> outstanding performance with no errors or only minor errors.	10
<b>Very Good:</b> above the average standard but with some errors.	9
<b>Good:</b> generally sound work with a number of notable errors.	8
<b>Satisfactory:</b> Student's knowledge is fair but with significant shortcomings.	7
<b>Sufficient:</b> student meets the minimum criteria of performance to gain positive note-to pass exam.	6
<b>Fail:</b> no sufficient knowledge of student on work required.	-

Good and excellent students have got finance (scholarship) from the University of Prishtina. This stimulation has to raise the quality of studying and gives the chance for good students to study.

## 5. CURRICULAS IN THE DEPARTMENT OF GEODESY

Looking on chapter 1 of this article it is so clear that generally cadastre and land administration in Kosova is not in a good shape. Important direction for the future education in geodesy and land administration in Kosova needs to follow UN/ECE WPLA, 1996. Therefore as approximate definition should be "Land administration is the process of determining, recording and disseminating information about ownership, value and use of land, when implementing Land Management Policies".

Future education in geodesy and cadastre especially in next two study steps (Master and PhD) is an activity with both aspects: scientific aspects and professional aspects. In our circumstances Geodesy and Cadastre are in combination with IT creating offer to good approaches for the next generation of the digital data of the land information system. The land Information System in Kosova is based on Cadastral Information system combined by textual and graphical part through GIS. The same system is in place and usable from cadastral institutions. From the point of view of assessment in a geodetic survey course, however, it is still better to concentrate on building students' understanding of the core of geodesy.

Facing with different challenges on cadastral offices with cadastral records, on the field with a new situation and with different technology we are in difficult position which way to promote learning and education in geodesy and cadastre. Above factors we will add struggle between old and new ages that is very much divided especially regarding using new technology. It seems to be easy to change technology than mentality (human brain). This was very

interesting in period 2000-2004. This century is with many challenges as Prof. Enemark 2006 describes “Engineering in the 21<sup>st</sup> century faces several challenges: firstly, it is oriented towards global markets and products; secondly, the underlying knowledge quickly becomes obsolete; thirdly, it must operate within an increasingly stressed natural and social environment”

We had not owned curricula's from previous studies in this field, but Department of Geodesy in the Faculty have mostly been influenced by the university curricula from region than Central and Western Europe where the position of surveyors in their society is similar like in Albania, Macedonia, Croatia, Austria, Germany, Switzerland etc. This is on the way of reforms and affirmations of Department of Geodesy to Geodesy and Geoinformatics taking into account the most recent trends of education

First graduated Bachelor in Department of Geodesy was in the beginning of July 2007.

## 6. CONCLUSIONS

Analyzing current situation of education in Geodesy in Kosova, and future of Geodesy and Geoinformatics development possibilities, prioritization of curricula's will be on following steps:

- using proper professional technology;
- fulfill requirements specially of cadastre and land administration of country's economy;
- get technical knowledge and good interpretation of laws into the profession.
- get experiences from abroad known institutes and Universities in teaching and learning;

Than practice as a part of curricula can be done at public institutions, at municipal level and at private sector or companies. There is need to have more efficient and effective geodetic engineers of geodesy in service delivery, using proper technology and good interpretation of laws related to cadastre and generally in Land Administration. The important objective of the cooperation and coordination with other universities is to exchange good professional practices between similar departments and to follow the best way of an efficient land administration. This should support country on efficient real property market, economic growth, democratic and sustainable development.

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## BIOGRAPHICAL NOTES

**Murat Meha** has been teaching at the University of Prishtina - Kosovo since 1988. He has also taught for ten years at Tetova University (FYR of Macedonia). He worked for five years as Manager of SEO Ferronikeli, for three years as a CEO of the Kosovo Cadastre Agency. Now he is in projects funded by EAR, USAID, KTA ,etc.

His teaching and research conectrates on surveying, cadastre, land administration, land management, and related educational and capacity building activities. He is currently the member of the Kosovo Surveyor Association.

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