

MODERNIZING HIGH SCHOOL AND UNIVERSITY CURRICULA FOR SURVEYORS IN CROATIA

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Surveying profession in Croatia – facts

- Croatia has dual system of registration (cadastre and land registry in municipal courts)
- Professionals are surveying technicians, surveying clarks, cadastre clarks, “land registry clarks”, surveying engineers, graduated surveying engineers
- According to legal framework surveying profession in Croatia is regulated one (Croatian Chamber of licenced surveying engineers (900) and state licensing system for execution of surveying and cadastre works (560))
- We have High schools (7) for surveying technicians (245) and 2 faculties educating surveying engineers (125)

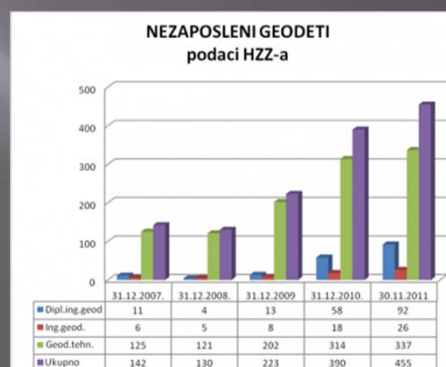
School/University	Students	Annually	Comment
Geodetic Technical School Zagreb	387	100	
Civil Engineering-Geodetic School Osijek	140	35	
Civil Engineering-Geodetic Technical School Split	120	30	
Civil Engineering Technical School Rijeka	105	25	
Technical School Pula	120	30	
High-School A.M.Reljković Slavonski Brod	54	25	Biannually
High-School Metković	30	-	Only one generation
Total:	956	245	
Faculty of Geodesy, University of Zagreb	825	95	
Faculty of Architecture, Civil Engineering and Surveying, University of Split	60	30	Study started in year 2010.
Total:	885	125	

Surveying education in Croatia

- All High schools are educating surveying technicians according the same curricula
- Since this year schoolars will be educated in accordance to new curricula for surveying and geoinformation technician
- In accordance to Bologna declaration since 2005/2006 new curricula has been introduced and undergraduate (bachelor) and graduate engineers (master) in surveying and geoinformatics are educated
- PhD study is also organized on Faculty of Geodesy in Zagreb
- Period 2000-2010 is characterized by growth of students inscribed on both levels (quality?)

Economic crisis = crisis in surveying bussines

- Reduction of jobs in construction bussines and real-estate market
- reflects strongly on all service oriented professions, also surveyors
- Results, beside reduction of investements in surveying also in cut of prices, unfair relations among surveyors, drop of quality, ...
- Raise of unemployment



Findings & consequences

- Low level of ability to resist global influence
- Low level of professional risks recognition
- Late crisis recognition – on the end of the food chain
- **Fireing professional staff in which knowledge lot of money has been invested in past years**
- **Low ability for job in neighbouring professions due to high specialization**
- In line with education system incentiv has been launched for deffinition of a new high-school profile: **cadastre and land technician !**

New profile: Cadastral and land technician

- The basic knowledge and skills to characterize and differentiate new **cadastre and land technician** from other professions are:
 - basic knowledge and understanding of surveying, cadastre, land registration and administrative law,
 - familiarity with basic land administration registers and their functioning,
 - familiarity with other related fields, physical planning, environmental protection, real property market, utilities, agriculture and forestry,
 - familiarity with and ability to use GIS technologies,
 - understanding of spatial information stored in GIS systems, and
 - familiarity with and ability to use GNSS technology and surveying techniques.
- Should result in a wider platform and perspective of recruitment + expansion of influence of surveyors.

Modernizing surveyors curricula on University

- The globalization and ICT revolution, have created a completely new framework for interaction between social communities and individuals, both in positive as well as in crisis situations, and imposed completely new requirements before all professions. From the geodetic point of view, the afore-mentioned changes are expressed in following items which have to be covered by University curricula:
 - Literacy must be extended to computer literacy,
 - The entire society must be linked by communications (at least wireless telephone and internet)
 - GNSS will become a wide platform for the comprehensive orientation and navigation as well as the basic technology for geodetic and all other precise measurement on the Earth,
 - Mobile and all other communications will contain as an integral service the GNSS equipment and GIS-supported services in the function of orientation and navigation as well as completely new areas,
 - All information, especially the official one, collected by the community will become publicly accessible,
 - Spatial information become the basis for managing and every system will be supported by the spatial datasets available in the GIS environment,
 - Spatial information, especially official, must be updated, reliable and accurate with a special emphasis on up-to-datedness which must sometimes be at the detriment of accuracy and reliability,
 - New methods for collecting the spatial information based on numerous sources, official and non-official (crowd sourcing etc.) will be even more developed which will result in a great need for understanding the origin and quality of the data i.e. the verification of various types of use.

Support to High schools and University by State in performing changes

- ▣ In a frame of the ILAS WB project activity is planned to support introduction of new High school profile and modernize University curricula aiming to satisfy need for well educated High school and University experts needed in the modern land administration and geo-enabled society of Croatia. The afore-mentioned project encompasses a number of activities such as:
 - support to defining, developing and adopting the new professional profile of the cadastre and land registration profile
 - support to updating and modernization of the curricula and programs of high education profiles of geodetic engineer and masters of geodetic engineering
 - equipping high schools and institutions of higher education with IT, geodetic and other equipment in order to implement the new curricula and programs.

Perspective

- ▣ It will take time until new curricula will be implemented and professionals educated.
- ▣ Most probably circumstances will also not be the same
- ▣ Frequently in Croatia question is raised: “How can we protect our profession?”
- ▣ It is, of course, wrong question and attitude! In economical and interprofession context, defence position means in fact stagnation!