



FIG Working Week 2009

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FIG Working Week
Surveyors Key Role in Accelerated Development
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PROFESSIONAL EDUCATION OF SURVEYORS IN SERBIA

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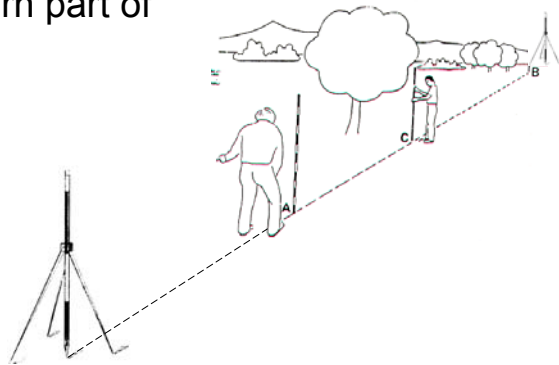
PROFESSIONAL EDUCATION OF SURVEYORS IN SERBIA

- **SHORT HISTORY OF SERBIAN GEODESY**
- **SYSTEM OF SURVEYOR'S EDUCATION IN SERBIA**
 - **Secondary level schools**
 - **Higher education**
- **CONCLUSION**



SHORT HISTORY OF SERBIAN GEODESY

- At the end of XVIII century Geodetic service of Austro-Hungarian Empire started the survey at the northern part of Serbia



EDUCATION SYSTEM OF SURVEYORS IN SERBIA

- 1924. The Geodetic Technical School (first in Belgrade).



www.geodetskaskola.edu.yu

SYSTEM OF SURVEYOR'S EDUCATION IN SERBIA

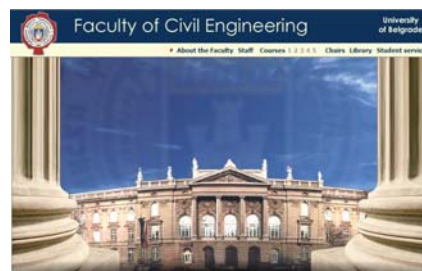
- 1996. The Higher Civil Engineering-Geodetic School (1960. The Senior Geodetic School +1976. The Senior Civil Engineering School)



<http://www.vggs.rs>

EDUCATION SYSTEM OF SURVEYORS IN SERBIA

- 1846. The Engineering School, today **The Faculty of Civil Engineering at Belgrade University** is the oldest and the highest educational and scientific institution for civil engineering and geodesy in Serbia



<http://www.grf.bg.ac.rs>



Secondary level schools

- Secondary professional education in Serbia is regulated by The Law on secondary education
- The Law on secondary education offers general and professional education that guarantee getting knowledge for doing jobs at the market
- The main goal of professional education at this level is to get knowledge, to develop the skills and prepare for the next levels of education

Secondary level schools

- **The Geodetic Technical School** lasts 4 years
- Gained diplomas with the name: Geodesic technician-Surveyor

	The School	The number of scholars enrolled
1	Beograd	140
2	Nis	30
3	Vladimirci	30
4	Pancevo	30
5	Novi Sad	20
	Sum	250

Secondary level schools

- The structure of curricula at The Geodetic Technical School



general
subjects

professional
subjects

	The year	1	2	3	4
	The subject	The number of hours per course			
1	Mother language	3	3	3	3
2	Foreign language	2	2	2	2
3	Physical training	2	2	2	2
4	Mathematics	4	4	4	4
5	Informatics	2	-	-	-
6	Physical geography	2	-	-	-
7	The Physics	2	2	2	2 (elective)
8	Descriptive geometry	2	-	-	-
9	Technical drawing	2	2	-	-
10	Surveying	3	4	3	2
11	Applied surveying	-	-	2	2
12	Geodetic maps	-	-	2	2
13	Real Estate Cadastre and Land Development	-	-	-	3
14	Photogrametry	-	-	-	2
15	Computer using in surveying	-	2	2	2
16	Surveying measurements and calculations	4	7	6	4
17	Elective course	1	1	1	1
	Total hours per week	29	29	29	29

Higher education

- Higher Education in Serbia is regulated by The Law on Higher Education
- The activity of higher education shall be carried out by the following higher education:
 - University
 - Faculty or academy of arts within University
 - Academy of professional studies
 - Higher school
 - Higher school of professional studies

Higher education

The Higher Civil Engineering-Geodetic School:

- There are three study programs:
 - Civil Engineering
 - Geodesy and geomatics
 - Architecture
- The main characteristics are:
 - Three years program
 - 140 students per year
 - Diploma title: Bachelor appl.
 - The program takes 180 ECTS
 - The program is mainly technically oriented

Higher education

The Higher Civil Engineering-Geodetic School:

	Course/semester/ECTS	1	2	3	4	5	6
1	Practice surveying 1	8					
2	Mathematics 1	9					
3	Physics	6					
4	Descriptive geometry	7					
5	Detail surveying		11				
6	Mathematics 2		9				
7	Informatics for engineers	7					
8	English Professional		3				
9	Practice surveying 2			9			
10	Uncertainty of measurements			8			
11	Computers using			7			
12	Geodetic Maps			6			
13	Engineering surveying - basic				6		
14	Photogrametry - basic				6		
15	State surveying and Real Estate cadastre				7		
16	Adjustment calculation				4		

Higher education

The Higher Civil Engineering-Geodetic School:

	Course/semester/ECTS	1	2	3	4	5	6
17	Geodetic networks in state surveying – E				7		
18	Geodetic networks in Engineering surveying – E				7		
19	Real Estate Cadastre – E					6	
20	GIS – E					7	
21	Land Development - E					5	
22	Geodetic Metrology – E					4	
23	Engineering Surveying – E					6	
24	Photogrametry and Remote Sensing – E					6	
25	Global Positioning System – E					4	
26	Utility Cadastre - E					4	
27	The rules and Management in Geodesy – E					4	
28	Basic Civil Engineering – E					3	
29	Internship (216 h)						17
30	Diploma work (120 h)						13
	Number of exams	4	4	4	5	6	2

E – Elective courses

Higher education

The Higher Civil Engineering-Geodetic School:

After that, students can continue to Specialist level

On Specialist level the School offers three different programs:

- Management in Civil Engineering
- Real Estate Cadastre and Utility Cadastre
- Urban Reconstruction

The program on each profile lasts one year and takes 60 ECTS



Higher education

The Faculty of Civil Engineering:

- Studies are divided into three parts:
 - Basic academic studies - BSc (6. semesters, 180 ECTS)
 - Graduate academic studies - MSc (4. semesters, 120 ECTS)
 - PhD studies (3 years, 180 ECTS)
- After finishing the studies, the student acquires the degree of University Geodesy and Geoinformatics engineer



Higher education

The Faculty of Civil Engineering:

Basic academic studies- BSc

No.	Courses / Semester/ECTS						
		1	2	3	4	5	6
1	Mathematics 1	10					
2	Technical Physics 1	5					
3	Calculate geometry	4					
4	Geosciences - basic	2					
5	Informatics in Geodesy	5					
6	Elective 1	3					
7	Mathematics 2		6				
8	Technical Physics 2		5				
9	Programming - Basic		5				
10	Technics of geodetic measurement		7				
11	Theory of errors of geodetic measurement		5				
12	Elective 2		3				
	Total ECTS	29	31				



Higher education

The Faculty of Civil Engineering:

Basic academic studies - BSc

No.	Courses / Semester/ECTS						
		1	2	3	4	5	6
13	Mathematics 3			6			
14	Surveying 1			5			
15	Geoinformatics 1			5			
16	Real Estate Cadastre 1			5			
17	Cartography 1			4			
18	Adjustment Calculations - basic			5			
19	Surveying 2				4		
20	Practical exercises in surveying				4		
21	Theoretical Geodesy				3		
22	Photogrametry and Remote Sensing 1				5		
23	Geoinformatics 2				5		
24	Land Development				4		
25	Geodetic Metrology				5		
	Total ECTS			30	30		



Higher education

The Faculty of Civil Engineering:

Basic academic studies - BSc

No.	Courses / Semester/ECTS						
		1	2	3	4	5	6
26	Cartography 2					5	
27	Satellite geodesy					3	
28	Photogrametry and Remote Sensing 2					5	
29	Engineering Surveying 1					5	
30	Elective 3					5	
31	Elective 4					5	
32	Elective 5					3	
33	Management in Geodesy - basic						3
34	Engineering Surveying 2						4
35	Practical exercises in Engineering surveying						3
36	Elective 6						5
37	Elective 7						3
38	Internship						2
39	Diploma work						9
	Total ECTS					31	29



Higher education

The Faculty of Civil Engineering:

Graduate academic studies - MSc

Graduate academic studies are divided into three groups:

- Geodesy
- Geoinformatics
- Land Law and Economy

CONCLUSION

- The surveying education in Serbia is trying to be pursuant to European education experiences
- European perspective should be applied to the study programmes - land management, geoinformatics, land law and land economics need to be as much as possible incorporated into education process
- The property market and credit institutes could provide almost completely new markets for surveying students

