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University of Belgrade
Faculty of Civil Engineering

FINAL REPORT OF QUESTIONNAIRE SURVEY AND GEODESY EDUCATION DATABASES

http://osgl.grf.bg.ac.rs/survey/accounts/login/

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GEODESY EDUCATIONAL DATABASE
Content

- Geodesy education institutions
- Geodesy study programmes
- Geodesy stakeholders

The website Home page

Co-funded by the Erasmus+ Programme of the European Union

Modernizing geodesy education in Western Balkan with focus on competences and learning outcomes - GEOWEB

About project

The official GEOWEB project web site:
http://gidec.abe.kth.se/GEOWEB.

The project objectives:

1. Modernization of higher education in geodesy and geography in partner's countries,
2. Integration of partner countries with EU,
3. Strengthening regional cooperation within Western Balkan countries.

The Project coordinator: Huaan Fan, Royal Institute of Technology-Division of Geodesy and Satellite Positioning (KTH, Stockholm, Sweden).

The other partner institutions:

1. Royal Institute of Technology (KTH, Stockholm, Sweden),
2. Vienna University of Technology (TUW, Vienna, Austria),
3. University of Leon (ULE, Leon, Spain),
4. University of Belgrade, Department of Geodesy&Geoinformatics,
5. University of Novi Sad – Department of Comuting&Control Engineering - UNS,
6. University of Tirana, Department of Geography - UT,
7. Polytechnic University of Tirana, Department of Geodesy - UPT,
8. University of Sarajevo, Department of Geodesy - UNSA,
9. University of Mostar, Faculty of Civil Engineering - UNMO,
10. University of Tuzla – Department of Geography - UNTZ,
11. Institute of Development Planning - IDPSA,
12. BNPro d.o.o. - private co.

Western Balkan Geodesy Educational Database

Institutions for Higher Education in Geodesy (15)

Geodesy Educational Programmes (31)

Geodesy Stakeholders (45)

Leave your comments or suggestions:

Forum

→ **Belgrade workshop** (17-21 October 2016)
→ **Curricular development workshop with IAB and WBGF meetings** (Belgrade, 24 October 2016)
→ **Article - Problem based project oriented learning ...** (Kopaonik, Serbia, 2-5 June 2016, Proceedings of GEO 2016)
→ **Geodesy educational database report** (Belgrade, 2 July 2016)
→ **Geodesy stakeholders survey report** (Belgrade, 4 July 2016)
→ **Geodesy - the BSc Study Handbook** (DRAFT VERSION, March 2017)
→ **Geodesy - the MSc Study Handbook** (DRAFT VERSION, March 2017)

Log in to participate in the survey

Geodesy education institutions

Number of higher educational institutions participating in the survey

Country	15
Bosnia and Herzegovina	7
Serbia	3
Albania	2
Croatia	1
Slovenia	1
Macedonia	1

The educational institutions

	INSTITUTION	Country	B.Eng	BSc	M.Eng	MSc	Spec.	PhD	Type of HEI
1	Faculty of Civil Engineering, University of Belgrade	SER		1		1		1	Public
2	School of Applied Studies in Civil Engineering and Geodesy	SER	1		1 New				Public
3	Faculty of Technical Sciences, University of Novi Sad	SER		1		1	1	1	Public
4	Faculty of Civil Engineering, University of Sarajevo	BiH	Not yet						Public
5	Faculty of Natural Sciences and Mathematics University of Tuzla	BiH		1*	Title: Geography, 50, GIS				Public
6	Faculty of Mining, Geology and Civil Engineering, University of Tuzla	BiH		3	Problem with data entered, 5 ECTS and 1 year				Public
7	Center for Geospatial Research Sarajevo (GIS Center)	BiH	Not yet						Private
8	Faculty of Science, University of Banja Luka	BiH	Not yet						Public
9	Faculty of Civil Engineering, Department of Geodesy University of Sarajevo	BiH	1		1		1 ? No data	1	Public
10	Faculty of Architecture, Civil Engineering and Geodesy, University of Banja Luka, Republic of Srpska	BiH		1		1			Public
11	Construction Engineering Faculty, Polytechnic University of Tirana	ALB	1		1	1		1	Public
12	Faculty of Geology and Mining, Tirana	ALB	1						Public
13	Faculty of Civil Engineering, Ss. Cyril and Methodius University, Skopje	MAK				1			Public
14	Faculty of Geodesy, University of Zagreb	CRO		1	1			1	Public
15	Faculty of Civil and Geodetic, Engineering University of Ljubljana	SLO		2		1		1	Public

The content of the Institution's database

- Name of the higher education institution (HEI),
- Complete address (country, place, zip code and street address),
- Web site of HEI,
- Type of HEI (public/state, private/state, private),
- Contact person (name, position, department/unit, email and telephone)

The institutions in short

- 12 described their study programs
- 3 without detailed explanation of geodetic courses
- The Faculty of Mining, Geology and Civil Engineering - University of Tuzla described three BSc study programs, two BSc are of the same name *Geodesy and mine surveying* with different number of students applied. Third BSc study program (*Geodesy*) and both previously mentioned have unclear number of ECTS and should be supervised and corrected
- Serbian educational institutions offer study programs at all three levels, Master of engineering is new program, no more S.Eng at School of Applied studies
- Bosnian institutions have different study contents at various places and under the different study programs
- The Faculty of Civil Engineering, Department of Geodesy - University of Sarajevo, has the most complete offer at all three HEA levels, No clear data for S.Eng
- The Construction engineering Faculty Polytechnic University of Tirana (Albania) has four study programs two at professional level (BEng and MEng) and two at academic level (MSc and PhD)
- Slovenian and Croatian universities described all their study programs while Macedonian only one master program

Geodesy study programmes

The study program database content

- Program title
- Program level (B.Eng,BSc, High School Specialization)
- Number of study years
- Credit system used
- Total number of credits
- Language of study
- Number of admitted students in 2015/16
- Courses included
- Program modules included

Study areas included

- Photogrammetry
- Remote sensing
- GIS
- Geoinformatics
- Land cadaster
- Land/real economics
- Land/real estate law
- Global Navigation Satellite System
- Project management

Study programs in short

- **15 educational institutions ,** 6 regional countries, 3 partner's countries and 3 outside (Macedonia, Croatia and Slovenia),
- **31 study programs** (23 from partner's countries)
- **Active database**
- All accepted **ECTS**
- Bachelor degree lasts **three or four years**, mostly three
- **In English**, mainly at the PhD level
- Two programs with **different divisions** (MSc in Belgrade and MEng in Zagreb)
- Belgrade, Zagreb and Ljubljana offer **all study areas**
- **GIS, Geoinformatics**, **GNSS** and **Land cadaster** are more or less implemented in all educational institutions

Geodesy stakeholders survey

Geodesy stakeholders survey - The objective and the concept

- To be in touch
- To provide better insight into their activities
- To provide better insight into their needs
- To provide feedback information about the students graduated
- Web site is operational and additional input is expected and desired

Questionnaire – fist part

- Name
- Address data
- Information on contact person
- The type of organization
- Number of geodetic/GIS employees and
- Main activities of organization

Questionnaire – second part

Type of organisation

- ○ Local/central government agency
- ○ Other public body
- ◉ Private enterprise
- ○ Other type

Number of geodesy/GIS employees

14

Select main activities of organization

- ☑ Cadastral/topographic surveying
- ☑ Engineering surveying
- ☑ Geodesy (geodetic networks and reference systems)
- ☐ Photogrammetry and remote sensing
- ☐ GIS development and geospatial data management
- ☐ Land management (cadastre, land valuation, land consolidation)
- ☑ Geodetic software and equipment supply and maintenance

Short summary of main activities

As the need for geodesy grows and new technologies are implemented, so do our activities change focus. Beside everyday cadastral/topographic survey, and creating topographic/geodetic plans for the needs of regulation plans, we offer surveying works for all kind of engineering activities, mostly civil engineering. Renewing of geodetic networks in different Municipalities is also something worth mentioning. When talking about reference systems, we have done field measurements for transformation parameters calculation.

Type of specialists which are most needed

- [x] Geodesy (geodetic networks and reference systems)
- [x] Traditional land surveying
- [x] Engineering surveying
- [ ] Global navigation satellite system (GNSS)
- [ ] Laser scanning
- [x] Land cadastre
- [x] Land management
- [ ] Photogrammetry and remote sensing
- [x] GIS and geospatial data management

Other type of specialists. What?

- [x] Organisation can recieve geodesy students

For:

- [x] Visits
- [x] Practice
- [ ] Employment

- [x] Oganization needs staff retraining in the following fields of geodesy

For:

- [x] GIS
- [x] Geoinformatics
- [ ] Photogrammetry
- [x] Remote sensing
- [ ] Global navigation satellite system (GNSS)
- [ ] Land management

Other comments on geodesy education

Technology is constantly growing and improving, and we should follow that. Geodesy students need to be closely familiar with new methods and, and most of all, programming.

Results and Conclusions

Country	
Albania	10
Bosnia and Herzegovina	23
Serbia	12
Total	45

Stakeholders according to their type	
Private enterprises	33
Local/central government agencies	8
Public bodies	4
Total	45

Activity	No.	%
Cadastral/topographic surveying	29	64
Engineering surveying	30	67
Geodesy (geodetic networks and reference systems)	27	60
GIS development and geospatial data management	24	53
Land management	23	51
Photogrammetry and remote sensing	13	29
Geodetic software and equipment supply and maintenance services	11	24

Competences needed

Activity	No.	%
GIS and geospatial data management	32	71
Engineering surveying	29	64
Geodesy (geodetic networks and reference systems)	26	57
GNSS	21	47
Land management	21	47
Land cadastre	18	40
Traditional surveying	16	36
Photogrammetry and remote sensing	15	33
Laser scanning	8	18

Most of the stakeholders are ready to accept geodesy students for visits and practice, and some of stakeholders are also open for new employees

Needs in staff retraining

- Almost all stakeholders from Albania stated that they need staff retraining in almost all offered fields in geodesy
- Needs of stakeholders from Bosnia and Herzegovina in this respect were quite limited
- Stakeholders from Serbia showed no interested at all for staff retraining

Comments provided by stakeholders

- More practical knowledge and skills
- Better cooperation between geodesy stakeholders and educational institutions
- Education should be focused on modern technologies, especially geoinformatics (GIS, programming)
- Other knowledge and skills required (standards, economy, legislation, etc.)