

Dear colleagues,

We are running high on our Business - Academia Cooperation workshops. After Pristina, Podgorica and Chisinau, for this occasion, new issue of the GEOBIZ newsletter has been prepared announcing the workshop itself and presenting GEOBIZ partners Faculty of Civil Engineering, University of Sarajevo, Bosnia and Herzegovina.

We are inviting representatives of geoinformatics sector in Bosnia and Herzegovina and other partner countries to register for the workshop in Sarajevo and support our efforts to establish new forms of business-academia cooperation aiming to develop modern problem-based geoinformatics courses. Direct link to registration Google Form is [here](#).

Vesna Poslončec-Petrić

## BUSINESS-ACADEMIA PARTNERSHIP WORKSHOP, Sarajevo, Bosnia and Herzegovina, June 11<sup>th</sup>, 2021



Medžida Mulić, Faculty of Civil Engineering, University of Sarajevo

If you are reading this newsletter before Jun 11 please feel kindly invited to participate in the **Business-Academia Partnership Workshop**, an event organized within the Erasmus+ Ka2 CBHE "Business driven problem-based learning for academic excellence in geoinformatics - **GEOBIZ**" project.

The workshop will be held on **June 11<sup>th</sup> 2021**, in hybrid form at the Faculty of Civil Engineering, University of Sarajevo, Street Patriotske Lige 30, starting at 10:00 am and **online** using the [ZOOM](#)

app. Participation in the workshop is free but registration is required using Google Form [here](#).

### Business – Academia Partnership Workshop



11th Jun 2021, Sarajevo, Bosnia and Herzegovina

Today we are faced with the fact that technological development is extremely fast. The business sector has difficulty in keeping pace with this development, while academic institutions face even greater challenges in modernizing curricula. The answer to these challenges is the cooperation of the business, public and academic community in the design and implementation of technologically advanced subjects, especially in their practical part.

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Therefore, the goal of the GEOBIZ project and this workshop is to encourage the establishment of new forms of cooperation in the field of geoinformatics (business, public and academic sector) in order to technologically advance geoinformatics content. Earth observation from air and space, laser scanning, satellite positioning, GIS applications could be modernized by problem - based learning (PBL)

and examples from practice in an interactive environment and joint teaching of subjects.

On the [GEOBIZ](#) project website you can find Workshop Agenda and the Invitation letter in [English](#) and [Bosnian](#) language.

We will be honoured with your participation because we believe that you can contribute to solving the challenges and establishing mutually beneficial cooperation.

## FACULTY OF CIVIL ENGINEERING – UNIVERSITY OF SARAJEVO



*Medžida Mulić, Faculty of Civil Engineering,  
Department of Geodesy and Geoinformatics*

The University of Sarajevo is a public university located in Sarajevo, Bosnia and Herzegovina. It is a sizeable and complex organization carrying out the noble mission of educating creative and internationally competent staff in all areas of interest for Bosnia and Herzegovina through teaching and research. Staff are expected to address the challenges of modern economy in the European and global political, economic, social and cultural context.

The Faculty of Civil Engineering is one of 25 faculties of the University in Sarajevo. It belongs to the engineering group of our University and is a regular stakeholder of all University activities. For several decades, the Faculty of Civil Engineering has been mainly organized in four departments and two sub-departments:

- Department of structures
- Department of water resources and environmental engineering
- Department of transportation infrastructure
- Department of geodesy and geoinformatics
- Sub-department for geotechnics and geology
- Sub-department for mathematics, informatics, physics and descriptive geometry.



*University of Sarajevo – Rector Office*



*Faculty of Civil Engineering-main building*

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In accordance with the organizational changes, technology developments, new information, the curricula were changed and adapted. In its more than 70 years, the Faculty of Civil Engineering promoted a couple of thousands of graduates, holders of M.Sc. and Ph.D. Also, a couple of hundred prominent experts, scientists, professors worked at its departments, subdepartments, colleges, institutes, as well as many staff members in ancillary administrations who made a huge contribution to the success of the Faculty and its positioning as a respectable and reputable institution.



*Reading Lady Statue at Entrance*

In recent decades, in the period of reconstruction after the aggression against Bosnia and Herzegovina, there have been numerous consulting assignments for the construction of complex buildings, especially in the capital of Bosnia and Herzegovina. If difficulties occur during the construction of buildings, or designing, or execution of works, both public and private investors regularly approach the Faculty of Civil Engineering in Sarajevo for assistance. In addition to the education and research, the professional work is one of the pillars of the activity of the Faculty. The cooperation with the industry is crucial for the development and affirmation of any engineering faculty. Therefore, the Faculty of Civil Engineering attaches special importance to such activities. In recent two decades, the Faculty has been very active internationally.

Various forms of cooperation were ensured with numerous related institutions across Europe. It included scientific and expert visits of professors and associates, months-long stays of the students of the Faculty of Civil Engineering at renowned German, Austrian and French universities, dual doctoral dissertations of our junior assistants participation in the DAAD, TEMPUS, ERASMUS and other international projects of cooperation with the European higher- education and research institutions.



*Faculty of Civil Engineering- main entrance*

Department of Geodesy and Geoinformatics (DGG) conducts teaching in tree levels in accordance with Bologna standards, Bachelor (180 ECTS) Master (120 ECTS) and doctoral program (120 ECTS).



*Master students: field measuring*

There are IT and geodetic laboratories for students at this Department, but for practical part of educational process, open field lab around faculty buildings is available. Geodetic lab is equipped with many geodetics classical instrument for terrestrial measurements, but also with modern total stations, image stations,

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GNSS receivers and drones. There is one permanent station GNSS SRJV that is a member of the EUREF Permanent Network since June 1999, and it used as reference for number investigations.

According to the new concept of studies, it is defined that the first three-year cycle should provide general education in the area of geodesy and geoinformatics that should be a good basis for the continuation of studies. Geodetic experts who completed the first cycle of education are supposed to have sufficient scope of knowledge for successful work at construction sites, in different levels of administration, engineering offices and companies with appropriately complex assignments. In the continuation, at the second cycle of studies, knowledge is broadened in all areas: cartography, photogrammetry, satellite and physical geodesy, geoinformatics and applied geodesy. Graduates obtain knowledge of designing, measuring and levelling of geodetic networks, determining of size and

shape of any part of Earth surface, designing and managing of information systems, analysis of geospatial data, planning, survey, organization and supervision of geodetic works.



*Department of Geodesy and Geoinformatics:*

*Course Satellite Geodesy in 2018 - Practice exercise in IT Lab*

Today we can say with no pretensions that the Faculty of Civil Engineering in Sarajevo is the leading institution in Bosnia and Herzegovina for education of civil engineers and engineers of geodesy and geoinformatics.

## **PROJECTS IMPLEMENTED AT THE FACULTY OF CIVIL ENGINEERING, UNIVERSITY OF SARAJEVO**



*Medžida Mulić, Faculty of Civil Engineering, Department of Geodesy and Geoinformatics*



*Suada Sulejmanović, Faculty of Civil Engineering, Department of Roads and Transportation*

Faculty of Civil Engineering is involved in the variety of international projects establishing cooperation with great number of academic institutions abroad and participated in different

EU researching Programs as EU FP5 and FP6. Several Department of the Faculty of Civil Engineering participated in the Erasmus + CBHE Projects as well as KA1 Credit Mobility Erasmus+ with bilateral teacher exchange from TU Yilduz from Istanbul (Turkey) and University of Trieste, Italy. Below is an overview of the projects in which he is involved Faculty of Civil Engineering, Sarajevo.

### **GEOWEB - Modernizing geodesy education in Western Balkan with focus to competences and learning outcomes**

The first project in the Erasmus+ Ka2 capacity building (2015-2018) was GEOWEB project. The

wide objective was to modernize higher education in geodesy in order to support sustainable development in Serbia, Albania, and Bosnia and Herzegovina and facilitate these countries' integration with the European Union. The following specific objectives were set:

- develop and start a new geodesy master programme,
- develop new geodesy teaching materials,
- introduce e-learning and new pedagogical methods,
- implement quality assurance, and
- promote regional cooperation in geodesy education and development.

The GEOWEB project lasted for three years and it consisted of 12 partners, with Royal Institute of Technology (KTH) as the coordinating institution. UNSA local coordinator was Prof. Medžida Mulić, PhD.



*GEOWEB Kick off meeting in Sarajevo*

It can be sad that all specific objectives were achieved at Department of Geodesy and Geoinformatics – Faculty of Civil Engineering - University of Sarajevo (UNSA): new laboratories established equipped by IT and modern geodetic equipment, staff participated in five training and workshops. E-learning platform Moodle installed and active learning and pedagogical methods introduced.

GEOWEB project considered that e-learning was crucial in an up-to date learning environment and encouraged the use of Web-based resources and platforms, so the students could benefit from a blended-learning approach, where face-

to-face learning co-exists with e-learning. It was great pre-training for online teaching that everybody started forced by COVID-19 pandemic.

Modernized curricula for BSc and MSc programs adopted by senate of UNSA started since October 2018. The quality assessment started implementing on the regular bases in accordance with The European Network for Quality Assurance in Higher Education - ENQA (established in 2000 to promote European co-operation in the field of quality assurance and updated in 2015). The quality assurance is crucial in supporting higher education systems and institutions in responding to changes like:



*IT and Geodetic Labs Opening ceremony*

1. A more student-centred approach to learning and teaching,
2. Embracing flexible learning paths or
3. Recognising competences gained outside formal curricula, while ensuring the qualifications achieved by students and their experience of higher education remain at the forefront of institutional missions (ENQA, 2015).

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In accordance with (ENQA, 2015), “Quality is mainly a result of the interaction between teachers, students and the institutional learning environment. Quality assurance should ensure a learning environment in which the content of programmes, learning opportunities and facilities are fit for purpose”. Therefore, quality assurance activities have to be an important part of the learning environment, with the twin purposes of accountability and enhancement.

The specific cooperation was realized between the Department of Geodesy and Geoinformatics at the University of Sarajevo (UNSA) and the Department of Geography at the University of Tuzla (UNTZ).

#### **BESTSDI - Western Balkans Academic Education Evolution and Professional’s Sustainable Training for Spatial Data Infrastructures**

Erasmus+ CBHE BESTSDI project had the wider objectives to improve the quality of higher education in Geographical Science and Technology field, SDI and geodesy, to enhance its relevance for the labor market and society and to improve the level of competences and skills in HEI’s by developing new and innovative education programmes within the field of SDI.

The specific project objectives were to develop, test and adapt new curricula, courses, learning material and tools within the field of SDI. In doing so, existing undergraduate and graduate geodesy and geoinformatics curricula in the academic institutions in the West Balkan region were lifted to higher levels, recognising the spatial data for modern society and its development. By the incorporation of SDI concept and other modern concepts based on spatial data and information, the students of the new courses have the ability to provide spatial data and services to SDI users.

BESTSDI project consisted of 15 partners, with University of Zagreb as the coordinating institution and three associated partners. UNSA local leaders were Prof. Slobodanka Ključanin, PhD. and Prof. Suada Sulejmanović, PhD.

Through two Summer School held at University of Split, achieving goal for improving the quality through training of teachers. The goal of the first Summer School was to transfer theoretical and practical knowledge about SDI mostly from program countries to partner countries. The second goal was to transfer teaching methods and approaches in teaching and implementing the SDI. The third goal was to exchange relevant and valuable information and ideas through teachers. The goal of the second Summer School was to prepare teachers for delivering lectures in SDI courses in the next academic year through their presentations on the content of SDI curriculum using teaching material. According to lecturers, previously planned presentations covered all three modules.



*BESTSDI Final Conference, Sarajevo 2018*

The specific BESTSDI project objectives were to develop, test and adapt new curricula, courses, learning materials and tools within the field of SDI. Learning materials in the form of lecture notes, recorded lectures, assignments, data, and reading instructions etc. were created in order to conduct the academic subjects as specified by the project curriculum.

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Throughout the project BESTSDI, the existing courses were updated and some new courses were introduced. These SDI related courses are supported by a textbook, written by Prof. Slobodanka Ključanin, PhD, Prof. Vesna Poslončec-Petrić, PhD and Prof. Željko Bačić, PhD, published in Sarajevo in 2018 titled Basics of Spatial Data Infrastructure.



*Participant of the BESTSDI & NatRisk  
Final Conference in Sarajevo*

At the beginning of this project, spatial data infrastructure was not included in undergraduate and graduate studies at Faculty of Civil Engineering, University of Sarajevo as we wanted it to be. Today, three years later, we can say that all BESTSDI objectives have been fully met and incorporated in several courses of the study program of geodesy and at the departments for roads and transportation and hydrotechnics.

#### **ALL4R&D - All for research and development**

The aim of the ALL4R&D project is to accelerate research, innovation, knowledge and technology transfer in Bosnia and Herzegovina and Armenia through enhancing strategic academia-industry alliances. The specific project objectives are:

- To reinforce existing and to establish new university structures - Cooperative R&D Units together with industry; partners in the areas of knowledge creation and transfer, research and innovation, commercialisation of R&D results;

- To develop a methodology for collaboration and open innovation and establish web-based platform focusing on knowledge transfer, innovation and networking potential;
- To test and review the model of collaboration between universities and companies through pilot projects; and
- To enhance career development and employability of students and alumni by offering new and innovative opportunities in research and education.

The following stakeholders are potential users of the project results:

1. Academic and research institutions;
2. Industry partners (private companies, especially those who have strong research and innovation potential);
3. Students and alumni;
4. Government agencies, ministries, public enterprises; business and professional associations;
5. Investing agencies and third-party funds.

More information at: <http://platform.all4rd.net/>

#### **NatRisk - Development of master curricula for natural disasters risk management in Western Balkan countries**

Overall Broader Objective is education of experts for prevention and management of natural disasters in the region of Western Balkan (WB) according to the national and EU policies.

Specific Objectives:

- Development and implementation of methodology for identification of natural disasters to be managed in WB region and all aspects of prevention and consequences in order to define specific competencies for professional practice,

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- Development and implementation of the new advanced master curricula in Natural Disasters Risk Management (NDRM) in line with the Bologna requirements and national accreditation standards,
  - Development of trainings for the public sector and citizens for reaction in case of various natural disasters

Project coordinator at the University of Sarajevo Faculty of Civil Engineering: Prof. Emina Hadžić, PhD.

### **SWARM - Strengthening of master curricula in water resources management for the Western Balkans HEIs and stakeholders**

- Overall Broader Objective is education of experts for water resources management in the Western Balkans (WB) in line with the national and EU policies.
- Specific Objectives:
  - Improve the level of competencies and skills in HEI's by developing new and innovative master programmes in the field of water resources management (WRM) in line with the Bologna requirements and national accreditation standards by October 2021.
  - Design and implement seven new and up-to-date laboratories in WB partner HEIs in cooperation with EU project partners by November 2019.
  - Develop and implement LLL courses for the water sector in line with EU Water Framework Directive by January 2021

Project coordinator at the University of Sarajevo Faculty of Civil Engineering: Prof. Emina Hadžić, PhD.

More at: <https://www.swarm-project.eu/>

### **FLORIS (Project name Innovative tools for improving Flood risk reduction strategies)**

FLORIS project aims at studying innovative approaches for the development of integrated flood risk scenarios considering the specific critical issues of areas at risk and the consequences of high frequency/low damage events that affect them.

Specific Objectives are:

- Developing innovative modelling for cascading effects of flood hazard to improve flood risk management actions with a specific interest on studying the functional vulnerability of critical infrastructures to reduce disruptive impacts during and after flood events,
- Applying and refining the designed approach for protocol development planning in each case study,
- Supporting Civil Protection in disaster prevention by providing a spendable procedure for human resources management during emergencies, in rescuing actions.

Project coordinator at the University of Sarajevo Faculty of Civil Engineering: Prof. Emina Hadžić, PhD.

More at: <https://floris.unime.it/>

### **OBSERVE - Strengthening and development of Earth observation activities for the environment in the Balkan area**

Balkan countries do not have a coherent and continuous approach towards the challenge of implementing integrated Earth observation (EO) applications in environmental monitoring and management. It should be mentioned that the Balkan countries, except Greece and Romania, are not European Space Agency (ESA) members. Besides, Albania, Bulgaria, FYROM, Montenegro



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and Bosnia Herzegovina are also not members of the Group on EO (GEO).

The defect in the implementation of EO applications and their use in the environmental decision making are manifested through the limited synergies among national and regional institutions, ineffective technological means and discontinuous record of participation to international organisations and committees. On the other hand, the increasing importance of a common approach towards effective environmental monitoring practices, for the benefit of the societal web of the broader Balkan region, calls for immediate action, setting as a starting point the built up of regional institutional capacity and spillage of technology transfer.

The main goal of the OBSERVE project has been to collect and compile all the necessary information for delivering an integrated analysis on the current status of EO activities and networks in the Balkan area regarding environmental monitoring, the potential benefit from the full exploitation of an integrated capacity development strategy and the prospect of establishing a relevant permanent EO Community in the region.

Project results: The strategic key result of OBSERVE was the Roadmap and Strategy plan for strengthening EO capacity in the Balkans for environmental monitoring. The development of the Roadmap and Strategy plan has been supported by a number of activities that contributed to other deliverables including the creation of a stakeholders database, national thematic reports regarding EO capacity, a multilevel assessment and gap analysis, and the OBSERVE spatial information system and CIP. Another important part of the project was the creation of informative publications along with the organisation of workshops that contributed to capacity strengthening and capacity development. Furthermore, various

dissemination activities were performed that helped to raise awareness of the general public and disseminate the project's results to a wider audience.

<https://cordis.europa.eu/project/id/265282>

### **BALGEOS - BALKan GEodetic Observing System - a scientific challenge for Balkan countries**

The project had aims to strengthen the scientific co-operation between Austrian, Albanian, Bosnian and Herzegovina, Bulgarian, Kosovar, and Macedonian institutions to further partners' integration in the GGOS. The project will contribute to the regional implementation of GGOS by developing national and regional capacities for coordinating, using and sharing geodetic data and information. The objectives of the proposal include an evaluation of the possibility to extend the EUREF Permanent Network (EPN) in Southeast Europe, testing the models for space geodetic observations processing, and integration of the obtained results from previous geodetic studies for the regions of Central and Southeast Europe in an unified frame. The research consortium plan to prepare two workshops, which will cover the top priorities of the GGOS in Europe, as well as to suggest a way for regional implementation in the Balkans for consideration by the responsible IAG institutions. It is foreseen to disseminate the results by publications in international specialized journals and at geodetic meetings. The project results will contribute to the geodetic strategy for development of Earth observation systems in Southeast Europe. The expected impact of the joint project is an effective collaboration among partners to successfully initiate activities in the 7FP - Theme 6: Environment and other European initiatives.

More at: <http://balgeos.cc.bas.bg/Balk/bal.html>

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### **GEOBIZ - Business driven problem-based learning for academic excellence in geoinformatics**

In Erasmus+ Ka2 CBHE GEOBIZ project, Faculty of Civil Engineering – University of Sarajevo is one of 18 partners and 5 associated partners. UNSA local coordinator is Prof. Medžida Mulić, PhD. UNSA participate by its three departments:

- Department of Geodesy and Geoinformatics,
- Department of water resources and environmental engineering
- Department of transportation infrastructure

## **Impressum**

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