



The DSinGIS News

No.3

Highlights

- ❖ Project results
- ❖ Eighteen courses are developed
- ❖ Meeting calendar
- ❖ Events to be organized

Project results

The DSinGIS project aims to support Uzbekistan in sustainable development by GISc focusing on the PhD level of the educational system. The project offers a PhD programme and methods to deliver. The demand on establishing a Doctoral School in the field of Geoinformation Science is in line with the aims of the Ministry of Higher and Secondary Specialized Education of Uzbekistan (MHSSE); consequently, as a breakthrough, the establishment of the Doctoral School has already been registered by the Supreme Attestation Commission under the Cabinet of Ministers (VAK) as a state-recognized PhD course.



The following eighteen courses were developed as part of the PhD program in accordance with the project objectives.

I. Common courses (in English)

- 1) *Spatial representations and spatial data infrastructures (SDI)*. The course providing a comprehensive overview on the state-of-the art of SDI, the underlying principles, as well as technological and non-technological components of SDIs.
- 2) *Spatial statistics*. The course aims at advancing knowledge on spatial data analysis and spatial statistics. It focuses on methods that are relevant in fields related to sustainable resource use and development of rural areas, such as land use change, climate change, soil degradation, and spatial analysis of well-being.
- 3) *Global Navigation Satellite Systems (GNSS)*: This course provides the students with an in-depth knowledge about global navigation satellite systems, in particular positioning methods and algorithms as used in the fields of geoinformation science. The course will focus on high accuracy positioning

methods, long term static observation methods for deformation monitoring and reference networks, and on atmospheric effects on GNSS signals.

- 4) *Visually interfacing with spatial information*: This course aims at introducing the complex field of visually interfacing with spatial information. Techniques and tools as well as concepts and standards to find, filter and visualize spatial data are presented. Technical skills and human-computer interaction competencies are built up.
- 5) *Research methodology and scientific communication*: This course introduces students to general research methods as well as practical research process, with focus on critical and creative thinking, addressing also scientific writing and communication in different forms and different media. Furthermore, social impact of scientific research, commercialization of research results through innovation is concerned.
- 6) *Advanced remote sensing and digital image processing*: This course aims at advancing remote sensing and digital image processing knowledge, techniques and skills for getting information from imagery and ability to solve complex tasks based on remote sensing. Emphasis is placed on gaining a practical understanding of the principles behind each technique and a consideration of their appropriateness in different applications.



II. Courses for specializations

These courses are organised into 3 specialisations as follows:

II/1. Geodesy

- *Geodetic Reference Systems*. This course aims to further deepen the theoretical knowledge and practical skills for the development and management of research projects.

- *Advanced theory of errors.* This course consists of studying the theoretical foundations of multivariate statistical analysis in relation to the processing and analysis of geodetic measurements.



- *Satellite gravimetry & advanced physical geodesy* (in English). The course aims at advancing on physical geodesy knowledge from observational aspects, focusing on obtaining positioning and physical information from satellite-borne observations.
- *3D laser scanning and mapping by UAV.* This course focuses on application of 3D laser scanners and unmanned aerial vehicles in analysing data and creating digital maps or update existing maps.

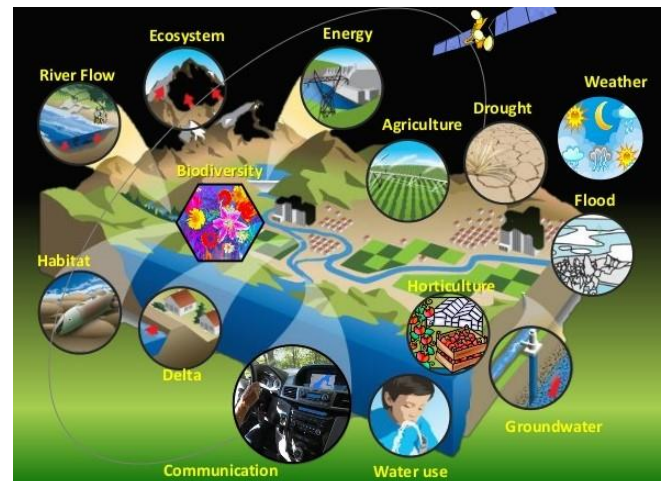
II/2. Geoinformatics

- *Geo-databases and distributed architectures.* This course is on developing techniques and skills for designing and building a geospatial database, as well as managing such distributed geodatabases, and working with multi-user spatial data base.
- *Advanced thematic mapping.* The course supports candidates in cartography, thematic mapping, cartosemiotics, contemporary issues of spatial data representation, use of automation and tools in geovisualisation.
- *Advanced spatial analyses.* This course aims to provide knowledge and skills necessary to investigate the spatial patterns, advanced analytical and practical skills to identify and apply the correct analytical tools for problem solving, and to appropriately interpret the analysis results.
- *Integration of remote sensing and GIS.* This course is a compulsory course for the PhD degree programs and main aim of this course is exploring the synergies of integrated remote sensing systems and GIS.

II/3. GIS applications

- *Spatial decision support in land management:* is to get an idea of the current regulatory and legal acts that regulate the subject of green law, and the application of this knowledge in practical activities, with emphasis on the current legislation of Uzbekistan.

- *Land use economics:* This course is aimed at promoting the knowledge of doctoral students in the field of land use and its economics.
- *Spatial simulation of environment:* This course is a prolegomenon to spatial simulation of ecosystems, embedding of the PhD student in modern research practices, introducing a young scientist into up-to-day context and language of the simulation domain, including proper software background.
- *Sustainable resource management* (in English): This course introduces key concepts related to natural resource management for food security and sustainable development. The course summarizes major trends in changes in resource management globally, across scales, and by geographic zone and country, considering also impacts of global climate change on water and land use, and their implications for sustainable resource management.



Doctoral candidates studying EU

Taking into account the one of the aim of the project there are total six doctoral candidates had an opportunity to make a short term research at DSinGIS EU project partner universities.

There are: Mamanbek REIMOV, “Study ecosystems and its services of Aral Sea region on the basis of GIS technologies to create a network of protected natural areas in Uzbekistan” at Obuda University, Szekesfehervar, Hungary (for more details see: <http://www.dsingis.eu/study-visit-in-szekesfehervar-hungary/>); Zokhid MAMATKULOV, “Applying GIS and RS technologies in precision agriculture” at Obuda University, Szekesfehervar (for more details see: <http://www.dsingis.eu/study-visit-2-in-szekesfehervar-hungary/>), Hungary; Yakhshimurad KHUDAYBERGENOV “Numerical analysis of the relief for the post delta landscapes in the Amudarya river delta” (for more details see: <http://www.dsingis.eu/study-visit-in-iamo/>) at IAMO, Halle, Germany; Kuvatbay BEKANOV “GIS methods



for land use optimisation in irrigated agriculture area with ecological constraints.” at IAMO, Halle, Germany; Otabek AVEZBAEV “Cross-cultural web map design – recommendations and prototypes” PLUS, Salzburg,



Austria; Sitora SODIKOVA “Formation of landscape - recreational zones in town planning conceptions of Uzbekistan” PLUS, Salzburg, Austria

Implementation of e-learning centres

Following modern equipment has been purchased in order to establish e-learning centres in five UZ partner universities: Servers, Video-conference sets, 4K Ultra HD LED Smart TV, Static and Mobile Workstations, printers and tablets.



Meetings

Within the second project year, the following key events (project meetings, scientific conferences, trainings) has been organized:

First Review Meeting

The meeting was organized by the National University of Uzbekistan (NUU) in October 2018. During the meeting Project Handbook; Dissemination Plan; Exploitation Plan; Needs Analysis; Preparation of Joint Research Centre; Conceptual design; Quality Manual; Website; Newsletter, Poster, Leaflet; External Evaluation Report #1 were

discussed, and recommendations prepared for the next period.

First Scientific Conference

The International Scientific and Practical Conference “Scientific research work in the field of Geoinformatics: current state and prospects” was organised by NUU in October 2018. NUU is deemed as national pride for fundamental and socio-economic sciences. The event was valuable opportunity not only for in-house students but also for other Higher Educational Institutions and Research Institutions with direct cooperation links and scientific interest. The event was supported by Association of Geographers which is based at premises of NUU. There were more than 30 presentations and more than 100 participants. The proceedings are available on our website.



Workshop on learning support methodology

During the 5-day workshop organised jointly with the review meeting 20 potential scientific advisors were advanced on learning support methodologies. Their skills on eLearning tools and competencies were developed. The workshop is aimed to introduce the eLearning methodologies and approaches, interactive multimedia, and tools for reflection, gamifications, story maps, ePortfolios and ArcGIS online.

Awareness building events

Following 3 Awareness building events/seminars was organized:

- Tashkent, February 22, 2019
- Samarkand, April 9, 2019
- Nukus, May 4, 2019.

In the seminars representatives were attended from state enterprises, and also participants from the educational sphere, including young researchers.

Workshop on interdisciplinary doctoral courses

During the workshop at University of Salzburg in June 2019 25 participants discussed the recent tasks and



challenges of the project, such as PhD programme specification, Supervision and mentoring, Recruitment and enrolment, Writing PhD research proposals, Defence of the thesis.



The meeting was a good opportunity to sign bilateral agreements between the partners on further educational and research cooperation. The concepts of UZ national agreements were discussed to be signed among Uzbek partners for staff exchange, field of cooperation and especially for the common and sustainable use of the learning infrastructure and Joint Research Center.

Training on supervision and research methodologies

This training was organised by Tashkent Institute of Architecture and Construction (TIAC) in October 2019. It aimed to prepare 20 potential scientific advisors and 10 doctoral candidates about supervision and research methodologies. The participants advanced their knowledge and competences in GI Sciences to upgrade the level of doctoral education.

Second Review Meeting

During the meeting at TIAC organised jointly with the above training the current project results were presented and evaluated. The Project Management Board has prepared decisions and give recommendations for the next period.

Second Scientific Conference

The International Scientific and Practical Conference under the topic "Current problems of the development of Geoinformation Systems (GIS) technology and their solutions" will be held 22-23 October, 2019 at Samarkand State Architecture and Civil Engineering Institute named after Mirzo Ulugbek. There will be more than 30 presentations and more than 70 participants' presentations expected in total seven sessions. The information letter for conference is available on <http://www.dsingis.eu/conference-on-gis-in-october-22-23-2019-in-samarkand/>

Events to be organised soon

Within the third project year, the following key events will be organized.

Geoinformatics Summer School

The Summer School for Geoinformatics is to be organized at Karakalpak State University in May 2020. The main aim of the course is to provide participants with practical and methodological skills which make them capable to use advanced spatial analysis methodologies and techniques of GISc in solving environmental management, socio-economic issues and spatial decision support.

Third Scientific Conference

The GI Conference is planning to be combined with annual GISCA 2020 and InterCarto, InterGIS, SilkGIS under the topic „Applied Geoinformatics for Sustainable Development” at Tashkent Institute of Irrigation and Agricultural Mechanization Engineers. In this conference total 10 sessions will work in different thematic fields. Proceedings expected to be published in Journals which recognized in Scopus base. The deadline for paper submission is 1 December 2019. For more information please visit <http://intercarto.msu.ru/jour/>.

Websites

Two project websites are operated and updated regularly. The English site is available at www.dsingis.eu/

The Uzbek site is available
www.geoinformatics.uz/dsingis/

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