

**Final Report  
36 Months of project  
implementation**

**New and Innovative  
Courses for Precision  
Agriculture**



**NATIONAL UNIVERSITY OF UZBEKISTAN  
NAMED AFTER MIRZO ULUGBEK**

**Dr. ABDUMANAP NASIROV**

**Joint Project: Capacity Building in the Field  
of Higher Education ERASMUS+ 2018**

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





# Work plan

МИНИСТЕРСТВО ВЫСШЕГО И СРЕДНЕГО СПЕЦИАЛЬНОГО ОБРАЗОВАНИЯ  
РЕСПУБЛИКИ УЗБЕКИСТАН

НАЦИОНАЛЬНЫЙ УНИВЕРСИТЕТ УЗБЕКИСТАНА  
ИМЕНИ МИРЗО УЛУГБЕКА

ERASMUS+  
ПОВЫШЕНИЕ ПОТЕНЦИАЛА В ВЫСШЕМ ОБРАЗОВАНИИ



«УТВЕРЖДАЮ»  
Ректор  
А.П.МАРАХИМОВ  
2018 г.

## ВНУТРЕННИЙ ПЛАН

реализации мероприятий проекта:

«Новые и инновационные курсы по точному сельскому хозяйству»  
«New Innovation Courses of Precision Agriculture» - NICOPA

Ташкент 2018

Ref. No	Activities	Start	End	Responsible person for activity
<b>PREPARATION</b>				
1.1	Review of the current curricula for BA/MSc in target area in PC HEIs.	15.11.2018	30.04.2019	Abdumanap Nasirov Ilkhomjon Abdullaev Mashkura Fakhrutdinova
1.2	Agreement on instructional strategy and guidelines for BA/MSc curricula design including the use of new Educational Technologies	15.11.2018	31.03.2019	Abdumanap Nasirov Ilkhomjon Abdullaev Tokhtasin Abdrakhmonov
<b>DEVELOPMENT</b>				
2.1	a) Prepare a set of new core curricula and transferable modules inclusive innovative teaching/ learning facilities; develop syllabi; b) adopt on institutional level c) accredit on national level	a) 01.12.2018 b) 01.10.2019 c) 01.10.2020	a) 30.03.2020 b) 30.09.2020 c) 31.08.2021	Rasul Rakhmonov Abdumanap Nasirov Ilkhomjon Abdullaev Tokhtasin Abdrakhmonov
2.2	a) Prepare a set of documentation for PAL and VCR; b) purchase the equipment incl. software; install the equipment	a) 01.02.2019 b) 01.03.2019	a) 30.09.2019 b) 30.01.2020	Abdumanap Nasirov Ilkhomjon Abdullaev Pavel Parchinskiy Abdujalil Muminov Bekzod Rakhmonov
2.3	a) Casting criteria for participants and retraining program for academic teachers. b) Retrain academic teachers in new curricula using innovative teaching/ learning facilities and agreed instructional strategies.	a) 01.01.2019 b) 01.09.2019	a) 30.03.2019 b) 31.08.2020	Abdumanap Nasirov Ilkhomjon Abdullaev Mashkura Fakhrutdinova Tokhtasin Abdrakhmonov
2.4	To update the current BA/MSc curricula/create updated programs in the target area according to the Bologna requirements and the new developments	01.04.2019	30.09.2020	Ilkhomjon Abdullaev Mashkura Fakhrutdinova Azizjon Ruziev Pavel Parchinskiy
2.5	Master Classes in new curricula/pilot operation of PAL and VCR	01.09.2020	30.04.2021	Abdumanap Nasirov Ilkhomjon Abdullaev Bakhtiyar Kholmatjanov Azizjon Ruziev
2.6	Pilot teaching/operation of PAL and VCR	01.08.2020	14.11.2021	Ilkhomjon Abdullaev Bakhtiyar Kholmatjanov Azizjon Ruziev Abdujalil Muminov
<b>QUALITY PLAN</b>				
3.1	The Quality assurance strategy/Q Plan of each PC university including internal/external Quality evaluation/reports according to Q Plan	15.11.2018	14.11.2021	Abdumanap Nasirov Ilkhomjon Abdullaev Tokhtasin Abdrakhmonov Tulkin Abdullaev

<b>DISSEMINATION &amp; EXPLOITATION</b>				
4.1	Project DISSE EXP /communication plan using a Set of Promotional Materials; Dissemination Events, Joint WEB based platform, "NICOPA+" Agreement	15.11.2018	14.11.2021	Rasul Rakhmonov Abdumanap Nasirov Bakhtiyar Kholmatjanov
4.2	Full media coverage of the project activities inclusive developing and maintenance of Joint WEB based platform	15.11.2018	14.11.2021	Abdumanap Nasirov Ilkhomjon Abdullaev Bakhtiyar Kholmatjanov Abdujalil Muminov
4.3	Develop a set documentation on PASO with stakeholders support /purchase /install equipment /establish	01.02.2019	30.04.2020	Abdumanap Nasirov Ilkhomjon Abdullaev Bakhtiyar Kholmatjanov Abdujalil Muminov
4.4	Staff training for PASO, establishing Regional /International PASO network, pilot operation	01.04.2020	30.09.2021	Abdumanap Nasirov Ilkhomjon Abdullaev Tulkin Abdullaev Pavel Parchinskiy
4.5	Refresh training courses for graduates in PASO	01.09.2020	31.07.2021	Tokhtasin Abdrakhmonov Mashkura Fakhrutdinova Bakhtiyar Kholmatjanov
4.6	International BA/ MSc Summer Schools	01.04.2020	31.04.2021	Rasul Rakhmonov Abdumanap Nasirov Ilkhomjon Abdullaev
<b>MANAGEMENT</b>				
5.1	Management of the project including Project management online, daily project administration and coordination	15.11.2018	14.11.2021	Abdumanap Nasirov Ilkhomjon Abdullaev
5.2	Coordination meetings	15.11.2018	14.11.2021	All participants

Abbr.: PAL - Precision agriculture lab  
VCR - Virtual Class Room  
PASO - Precision Agriculture Service Office

Координатор проекта

Насиров А.А.



# Work group

No.	Name; email	Role in project	Position
1.	Abdumanap Nasirov <a href="mailto:aanasirov1962@mail.ru">aanasirov1962@mail.ru</a>	National Coordinator and contact person of the project (WP1.2 Preparation, WP2.1, 2.2, 2.3, 2.5, 2.6 Development, WP3.1 Quality, WP4.1, 4.3, 4.4, 4.5, 4.6 Dissemination, WP5.1, 5.2 Management)	Associate Professor, Head of Department of Semiconductors and Polymers Physics
2.	Rasul Rakhmonov <a href="mailto:rakhmonov@nuu.uz">rakhmonov@nuu.uz</a>	Administrative Staff (WP1.2 Preparation, WP4.1, 4.2, 4.6 Dissemination, WP 5.2 Management)	Vice-rector for International Relations
3.	Tulkin Abdullaev <a href="mailto:t.abdullaev@inbox.ru">t.abdullaev@inbox.ru</a>	Project Advisor (WP3.1 Quality, WP4.4 Dissemination)	Associate professor, Department of Geodesy and Geoinformatics
4.	Tokhtasin Abdrakhmonov <a href="mailto:soilecology@yandex.ru">soilecology@yandex.ru</a>	Academic leader (WP1.1, 1.2. Preparation, WP2.1, 2.3, 2.4 Development, WP3.1 Quality, WP4.5 Dissemination)	Dean of the faculty Biology and Soil Sciences
5.	Mashkura Fakhrutdinova <a href="mailto:mashkura.fakhrutdinova@mail.ru">mashkura.fakhrutdinova@mail.ru</a>	Researcher (WP1.1, 1.2. Preparation, WP2.1, 2.3, 2.4 Development, WP3.1 Quality, WP4.5 Dissemination)	Associate professor, Department of Soil Sciences
6.	Pavel Parchinskiy <a href="mailto:pavelphys@mail.ru">pavelphys@mail.ru</a>	Researcher (WP1.1, 1.2. Preparation, WP2.2, 2.4 Development, WP3.1 Quality, WP4.4, 4.5, 4.6 Dissemination)	Associate professor, Department of Semiconductors and Polymers Physics
7.	Ilkhomjon Abdullaev <a href="mailto:ilkhomjon.abdullaev@gmail.com">ilkhomjon.abdullaev@gmail.com</a>	Project Manager (WP1.1, 1.2 Preparation, WP2.1, 2.2, 2.3, 2.4, 2.5, 2.6 Development, WP3.1 Quality, WP4.3, 4.4, 4.6 Dissemination, WP5.1, 5.2 Management)	Associate professor, Department of Geodesy and Geoinformatics
8.	Bakhtiyar Kholmatjanov <a href="mailto:b.kholmatjanov@gmail.com">b.kholmatjanov@gmail.com</a>	Researcher (WP1.1, 1.2. Preparation, WP2.1, 2.2, 2.4, 2.5, 2.6 Development, WP3.1 Quality, WP4.1, 4.2, 4.3, 4.4, 4.5 Dissemination)	Associate professor, Department of Astronomy and Atmosphere Physics
9.	Azizjon Ruziev <a href="mailto:azizjon.ruziev84@gmail.com">azizjon.ruziev84@gmail.com</a>	Teacher (WP1.1, 1.2. Preparation, WP2.1, 2.2, 2.4, 2.5, 2.6 Development, WP4.6 Dissemination)	Senior Lecturer, Department of Geodesy and Geoinformatics
10.	Abdualil Muminov <a href="mailto:mominov010@gmail.com">mominov010@gmail.com</a>	Teacher (WP1.1, 1.2. Preparation, WP2.1, 2.2, 2.4, 2.5, 2.6 Development, WP4.2, 4.3 Dissemination)	Teacher, Department of Cartography
11.	Bekzod Rakhmonov <a href="mailto:bekzod_13@bk.ru">bekzod_13@bk.ru</a>	Technical Staff (WP2.2, WP4.1, 4.3 Dissemination);	Accountant



## Implementing of the developed new courses within the project

**The university has implemented the following activities:**

**WP1:**

**Agreement on instructional strategy and guidelines for BA/MSc curricula design including the use of new Educational Technologies**

***It was agreed to update the following modules:***

Geodesy (BA)

Geographic Information Systems (BA)

Photogrammetry and Remote Sensing (BA)

Agricultural Meteorology (BA)

Applied Geoinformatics (MSc)

Applied Geodesy (MSc)

***It was agreed to develop the following new modules:***

Application of Remote Sensing Data (MSc)

Satellite geodesy (Global Navigation Satellite Systems) (Master)

Innovative Technologies in Soil Science (Master)

*10 teaching staff involved in the new courses development.*



## Implementing of the developed new courses within the project

### WP2:

- **2.1 Prepare a set of new core curricula and transferable modules inclusive innovative teaching/ learning facilities; develop syllabi; adopt new curricula and modules on institutional /accredit on national level**

The courses “Application of Remote Sensing Data (Master)”, “Satellite Geodesy (Global Navigation Satellite Systems) (Master)” and “Innovative Technologies in Soil Science (Master)” have been accepted at the institutional level and allowed to publish (license uploaded to the Google Drive).

- **2.2 Prepare a set of documentation for PAL and VCR; purchase the equipment incl. software; install the equipment**

Documentation of PASO have been approved (uploaded to the Google Drive). A list of equipment has been approved. Tender announcement have been posted, and winner company selected. Agreement on EQ purchase have been signed.



# Updated Courses

UPDATED COURSES						
Course №	Title of the course and in which program it is taught (Bachelor, Master)	Its volume (in ECTS)	Number of students participating in the course	Name new elements in the course and estimate the percentage they represent in relation to the preexisting course	Link to the course on the university page	Accreditation and recognition: Specify the date when the course was accredited in the curriculum and when the pilot teaching started
Course 1	Geodesy (Bachelor)	19 (6-4-4-5) WS-SS- WS-SS	240	Surveying, GNSS systems, Field Data processing, <b>20%</b>	<a href="http://webdars.nuu.uz/login/index.php">http://webdars.nuu.uz/login/index.php</a> This is a Moodle platform of NUU. Teachers and students have a personal login and password.	Accredited on June 30, 2020. Pilot course started on September 3, 2020.
Course 2	Geographic Information Systems (Bachelor)	10 (4-4-2)	310	Spatial Data Visualization, Geospatial Analysis, Application of GIS, <b>33%</b>	<a href="http://webdars.nuu.uz/login/index.php">http://webdars.nuu.uz/login/index.php</a> This is a Moodle platform of NUU. Teachers and students have a personal login and password.	Accredited on June 30, 2020. Pilot course started on September 3, 2020.
Course 3	Photogrammetry and Remote Sensing (Bachelor)	8 (5-3)	250	Digital Image Processing, Object-based classification, NDVI, Classification technics and algorithms, <b>25%</b>	<a href="http://webdars.nuu.uz/login/index.php">http://webdars.nuu.uz/login/index.php</a> This is a Moodle platform of NUU. Teachers and students have a personal login and password.	Accredited on June 30, 2020. Pilot course started on September 3, 2020.
Course 4	Agricultural Meteorology (Bachelor)	5 SS	84	The Earth's atmosphere and its importance for agriculture, Heat transfer at different soil depths, <b>35%</b>	<a href="http://webdars.nuu.uz/login/index.php">http://webdars.nuu.uz/login/index.php</a> This is a Moodle platform of NUU. Teachers and students have a personal login and password.	Accredited on August 27, 2021. Pilot course started on September 3, 2021.
Course 5	Applied Geoinformatics (Master)	5 WS	30	Spatial relationships in GIS analysis, Multidimensional data analysis, Geospatial Analysis, Application of GIS in decision support, <b>35%</b>	<a href="http://webdars.nuu.uz/login/index.php">http://webdars.nuu.uz/login/index.php</a> This is a Moodle platform of NUU. Teachers and students have a personal login and password.	Accredited on June 30, 2020. Pilot course started on September 3, 2020.
Course 6	Applied Geodesy (Master)	5 WS	30	Surveying, GNSS systems, Field Data processing in Precision agriculture, <b>35%</b>	<a href="http://webdars.nuu.uz/login/index.php">http://webdars.nuu.uz/login/index.php</a> This is a Moodle platform of NUU. Teachers and students have a personal login and password.	Accredited on June 30, 2020. Pilot course started on September 3, 2020.

$\Sigma(\text{Total number of updated courses}) = 6$

$\Sigma(\text{Total number of ECTS}) = 52$



# Implementing of the developed new courses within the project

## II. ЎҚУВ РЕЖАСИ

T/p	Ўқув фанлари, блоклар ва фаолият турларининг номлари	Семестрлар бўйича тақсимот		Талабанинг ўқув юкламаси, соатларда							Соатларнинг курс, семестр ва ҳафталар бўйича тақсимоти							
		Илгичқонлар	Синовлар	Умумий юклама ҳажми		Аудитория машғулоти, соатларда					Мустақил таълим	1-курс	2-курс	3-курс	4-курс			
						Жами	Маъруза	Амалий	Лаборатория	Семинар		Курс лойиҳаси (иши)	Курслардаги ҳафталар сони					
		соат	%	Жами	Маъруза	Амалий	Лаборатория	Семинар	Курс лойиҳаси (иши)	Мустақил таълим	44	43	42	39				
													Семестрлар					
											1	2	3	4	5	6	7	8
											Семестрдаги аудитория машғулоти ҳафталарининг сони							
											17	17	17	17	17	15	8	8
1.00	Гуманитар ва табиий-илмий фанлар			1654	26	866	292	469		107		787	19	19	7	6		
1.01	Ўзбекистон тарихи	1		78		51	24			27		27	3					
1.02	Ўзбекистонни ривожлантириш стратегияси. Фуқаролик жамияти		4	78		50	24			26		27			3			
1.03	Фалсафа		3	128		68	34			34		60		4				
1.04	Диншунослик		1	64		34	16			18		30	2					
1.05	Ўзбек (рус) тили		1,2	150		85		85				65	2	3				
1.06	Хорижий тил	2	1	272		136		136				136	4	4				
1.07	Жисмоний тарбия ва спорт*		1,2	136		68	10	58				68	2	2				
1.08	Математика ва информатика	1,2	1,2	204		102	50	52				102	3	3				
1.09	Физика	1	1	102		51	25	26				51		3				
1.10	Тупроқшунослик ва экология		3	136		68	34	34				68			4			
1.11	Геология ва геоморфология		1	102		51	25	26				51	3					
1.12	Ўзбекистон географияси		2,3	204		102	50	52				102			3	3		
2.00	Умумқасбий фанлар			3320	52	1670	700	754	216	1кн, 2кн, кл	1650	9	9	18	18	22	22	6
2.01	Геодезия	1,2,3,4	1,2,3,4	606		306	126	120	60		300	6	4	4	4			
2.02	Геодезик ўлчашларни математик ишлаб чиқиш назарияси	3	3	136		68	30	38			68			4				
2.03	Олий геодезия	5,6	5,6	256		128	52	48	28		128				4	4		
2.04	Фотограмметрия ва Ерни масофадан туриб тадқиқ қилиш	5,6	5,6	290		144	58	54	32		146				5	4		
2.05	Компьютер графикаси ва карталарни жиҳозлаш	1,2	1,2	258		136	46	90			122	3	5					
2.06	Карташунослик	3,4	3,4	408		204	84	70	50	кн	204			6	6			
2.07	Умумгеографик карталарни лойиҳалаш ва тузиш	5,6	5,6	256		128	64	64			128				4	4		
2.08	Табиий карталарни лойиҳалаш ва тузиш	6	6	120		60	30	30			60					4		
2.09	Географик ахборот тизимлари	5	4,6	426		214	86	82	46		212			4	5	4		
2.10	Давлат кадастрлари асоси	4	3,4	272		136	60	76			136			4	4			



# Updated courses



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



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Program title:	Geodesy	University:	National University of Uzbekistan
Degree:	BA	Standard period of study:	30 weeks
Web link of the university:	<a href="https://nuu.uz/">https://nuu.uz/</a>		
Web link of the program:			
Credit points (ECTS):	10	Teaching language:	Uzbek
Contact (email):	<a href="mailto:azizjon.ruziev@gmail.com">azizjon.ruziev@gmail.com</a>		
Program Description:	<p>This program includes tasks on the shape and size of the Earth, the system of geodetic coordinates and heights, topographic plan and maps, their nomenclature and scales, the design of geodetic instruments and performing calculations with their help, performing contour and topographic surveys, processing measurement results, drawing up a plan terrain, maps and profiles, determination of land area.</p> <p>Objectives: The main goal of the subject is for students in this area to obtain knowledge on the types of geodetic measurements performed and sustainable skills in solving various engineering and geodetic problems, drawing maps and profiles, planning land plots, performing surveys of the earth's surface, and working with measuring instruments.</p>		
Prerequisites:	<p>To know: Mathematics, physics, geomorphology</p> <p>Possess: Use application of GIS</p>		

ЎЗБЕКИСТОН РЕСПУБЛИКАСИ  
ОЛИЙ ВА ЎРТА МАХСУС ТАЪЛИМ ВАЗИРЛИГИ

МИРЗО УЛУГБЕК НОМИДАГИ  
ЎЗБЕКИСТОН МИЛЛИЙ УНИВЕРСИТЕТИ



2020 йил

ГЕОДЕЗИЯ  
ФАНИНИНГ  
ИШЧИ ЎҚУВ ДАСТУРИ

Билим соҳаси: 300000 – Ишлаб чиқариш техник соҳа  
Таълим соҳаси: 310 000 - Мухандислик иши  
Таълим йўналиши: 5311500 – Геодезия, картография ва кадастр (функциялари бўйича)

Ўқув соатлари ҳажми: 300 соат  
Маъруза 60 (1-семестр- 30 с. 2-семестр- 30 с.)  
Амалий 40 (1-семестр- 20 с. 2-семестр- 20 с.)  
Лаборатория 20 (1-семестр- 10 с. 2-семестр- 10 с.)  
Мустақил таълим 180 (1-семестр- 120 с. 2-семестр-60 с.)

ERASMUS+

HIGHER EDUCATION CAPACITY BUILDING

Erasmus+ Project

New and Innovative Courses for Precision Agriculture

(NICOPA)

Erasmus+ 597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-JP

STUDY PROGRAM DESCRIPTION

Geodesy

National University of Uzbekistan

Тошкент - 2020





# Updated courses



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



ERASMUS+

HIGHER EDUCATION CAPACITY BUILDING

Erasmus+ Project

New and Innovative Courses for Precision Agriculture

(NICOPA)

Erasmus+ 597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-JP



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



<b>Program title:</b>	Higher Geodesy	<b>University:</b>	National University of Uzbekistan
<b>Degree:</b>	BA	<b>Standard period of study:</b>	30 weeks
<b>Web link of the university:</b>	<a href="https://nuu.uz/">https://nuu.uz/</a>		
<b>Web link of the program:</b>			
<b>Credit points (ECTS):</b>	9	<b>Teaching language:</b>	Uzbek
<b>Contact (email):</b>	<a href="mailto:azizjon.ruziev@gmail.com">azizjon.ruziev@gmail.com</a>		
<b>Program Description:</b>	This program is associated with the provision of geodetic and topographical work carried out on a significant part of the land or on the territory of the country by networks of state planned and high-altitude geodetic bases. Study of the shape of the Earth, determination of its dimensions, measurement of angles, lines and relative heights with high accuracy in the construction of state geodetic networks, studying the structure of measuring instruments, measurements include processing the result.		
<b>Objectives:</b>	The purpose of higher geodesy is to study the shape and size of the Earth, build state geodetic reference networks, study geodynamic phenomena, and develop the skills to solve problems related to representing the surface of the Earth's ellipsoid on a horizontal plane.		
<b>Prerequisites:</b>	To know: Geodesy, mathematics, physics, geomorphology Possess: Use application of GIS		

STUDY PROGRAM DESCRIPTION

Higher Geodesy

National University of Uzbekistan

ЎЗБЕКИСТОН RESPUBLIKASI  
ОЛИЙ ВА ЎРТА МАХСУС ТАЪЛИМ ВАЗИРЛИГИ

МИРЗО УЛУҒБЕК НОМИДАГИ ЎЗБЕКИСТОН  
МИЛЛИЙ УНИВЕРСИТЕТИ



“ТАСДИҚЛАНДИ”  
Ўқув ишлари бўйича проректор  
Ш. Тошматов  
«    »                    2020 йил

ОЛИЙ ГЕОДЕЗИЯ  
ФАНИНИНГ  
ИШЧИ ЎҚУВ ДАСТУРИ

Таълим соҳаси: 310000 – Мухандислик иши

Таълим йўналиши: 5311500 – Геодезия, картография ва каластр (фан)

		5-семестр	6-семестр
Умумий ўқув соати:	– 188 с	130 с	58 с
Маъруза	– 48 с	34 с	14 с
Амалий машғулот	– 50 с	34 с	16 с
Мустақил таълим соати	– 90 с	62 с	28 с

ТОШКЕНТ - 2020



# Updated courses



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ERASMUS+

HIGHER EDUCATION CAPACITY BUILDING

Erasmus+ Project

New and Innovative Courses for Precision Agriculture

(NICOPA)

Erasmus+ 597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-JP

STUDY PROGRAM DESCRIPTION

Geographic Information Systems

National University of Uzbekistan



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



<b>Program title:</b>	Geographic Information Systems	<b>University:</b>	National University of Uzbekistan
<b>Degree:</b>	BA	<b>Standard period of study:</b>	15 weeks
<b>Web link of the university:</b>	<a href="https://nuu.uz/">https://nuu.uz/</a>		
<b>Web link of the program:</b>			
<b>Credit points (ECTS):</b>	4	<b>Teaching language:</b>	Uzbek
<b>Contact (email):</b>	<a href="mailto:ilkhomjon.abdullov@gmail.com">ilkhomjon.abdullov@gmail.com</a>		
<b>Program Description:</b>	Of great importance in the production activities of bachelors of the specialty "Geodesy, cartography and cadastre" are the methods of geoinformation technologies, including in the organization of geodetic field observation and measurement work, in the creation of various cartographic works and cadastral data, as well as in the effective use of such data in various industries national economy. In this regard, the subject "Geographic Information Systems" is an integral part of the system for training highly qualified specialists in this area.		
<b>Objectives:</b>	The purpose of teaching science is to develop in students knowledge and skills on the theoretical foundations of geographic information science, the essence of technology, the structure and main functions of systems, methods of their use, collection, processing, storage, and dissemination of spatial data, essence, characteristics and methods of constructing databases.		
<b>Prerequisites:</b>	To know: Geodesy, Cartography, Mathematics, geomorphology Possess: Use application of GIS		

ЎЗБЕКИСТОН RESPUBLIKASI  
ОЛИЙ ВА ЎРТА МАХСУС ТАЪЛИМ ВАЗИРАЛИГИ

МИРЗО УЛУГБЕК НОМИДАГИ ЎЗБЕКИСТОН  
МИЛЛИЙ УНИВЕРСИТЕТИ



"ТАСДИҚЛАНДИ"  
Уқувчилари бўлими проректор  
Ш. Тошмагов

2020 йил

ГЕОГРАФИК АХБОРОТ ТИЗИМЛАРИ  
ФАННИНИНГ  
ИШ ЧИ Ш ҚУВ ДАСТУРИ

Таълим соҳаси: 310000 – Мухандислик иши

Таълим йўналиши: 5311500 – Геодезия, картография ва кадастр (функциялар бўлими)

Умумий ўқув соати:	4-семестр
Мисъруза	– 134 с
Амалий машғулот	– 28 с
Лаборатория машғулот	– 26 с
Мустақил таълим соати	– 14 с
	– 66 с

ТОШКЕНТ - 2020



# Updated courses



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

ERASMUS+

HIGHER EDUCATION CAPACITY BUILDING

Erasmus+ Project

New and Innovative Courses for Precision Agriculture

(NICOPA)

Erasmus+ 597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-JP



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

Program title:	Geographic Information Systems	University:	National University of Uzbekistan
Degree:	BA	Standard period of study:	30 weeks
Web link of the university:	<a href="https://nuu.uz/">https://nuu.uz/</a>		
Web link of the program:			
Credit points (ECTS):	6	Teaching language:	Uzbek
Contact (email):	<a href="mailto:ikhomjon.abdullaev@gmail.com">ikhomjon.abdullaev@gmail.com</a>		
Program Description:	Of great importance in the production activities of bachelors of the specialty "Geodesy, cartography and cadastre" are the methods of geoinformation technologies, including in the organization of geodetic field observation and measurement work, in the creation of various cartographic works and cadastral data, as well as in the effective use of such data in various industries national economy. In this regard, the subject "Geographic Information Systems" is an integral part of the system for training highly qualified specialists in this area.		
Objectives:	The purpose of teaching science is to develop in students knowledge and skills on the theoretical foundations of geographic information science, the essence of technology, the structure and main functions of systems, methods of their use, collection, processing, storage, and dissemination of spatial data, essence, characteristics and methods of constructing databases.		
Prerequisites:	To know: Geodesy, Cartography, Mathematics, geomorphology Possess: Use application of GIS		

STUDY PROGRAM DESCRIPTION

Geographic Information Systems

National University of Uzbekistan

ЎЗБЕКИСТОН РЕСПУБЛИКАСИ  
ОЛИЙ ВА ЎРТА МАХСУС ТАЪЛИМ ВАЗИРЛИГИ

МИРЗО УЛУҒБЕК НОМИДАГИ ЎЗБЕКИСТОН  
МИЛЛИЙ УНИВЕРСИТЕТИ



“ТАСДИҚЛАНДИ”  
Ўқув ишлари бўйича проректор  
Ш. Тошиматов

2020 йил

ГЕОГРАФИК АХБОРОТ ТИЗИМЛАРИ  
ФАНИНИНГ  
ИШЧИ ЎҚУВ ДАСТУРИ

Таълим соҳаси: 310000 – Мухандислик иши

Таълим йўналиши: 5311500 – Геодезия, картография ва кадастр (фан)

		5-семестр	6-семестр
Умумий ўқув соати:	– 190 с	130 с	60 с
Маъруза	– 48 с	34 с	14 с
Амалий машғулот	– 50 с	34 с	16 с
Мустақил таълим соати	– 92 с	62 с	30 с

ТОШКЕНТ - 2020



# Updated courses



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



ERASMUS+  
HIGHER EDUCATION CAPACITY BUILDING

Erasmus+ Project  
New and Innovative Courses for Precision Agriculture  
(NICOPA)  
Erasmus+ 597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-JP

## STUDY PROGRAM DESCRIPTION

Photogrammetry and Remote Sensing  
National University of Uzbekistan



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



<b>Program title:</b>	<b>Photogrammetry and Remote Sensing</b>	<b>University:</b>	National University of Uzbekistan
<b>Degree:</b>	BA	<b>Standard period of study:</b>	30 weeks
<b>Web link of the university:</b>	<a href="https://nuu.uz/">https://nuu.uz/</a>		
<b>Web link of the program:</b>			
<b>Credit points (ECTS):</b>	10	<b>Teaching language:</b>	Uzbek
<b>Contact (email):</b>	<a href="mailto:ikhomjon.abdullaev@gmail.com">ikhomjon.abdullaev@gmail.com</a>		
<b>Program Description:</b>	Currently, aerospace data is widely used in creating and updating various thematic maps, in the geographical study of terrain, in studying the dynamics of events and phenomena, and in solving problems such as monitoring the state of natural objects. The use of aerospace materials in solving the above problems ensures that work is completed in a short time at low cost. The science of Photogrammetry and Remote Sensing of the Earth plays an important role in training qualified personnel necessary to solve the above problems.		
<b>Objectives:</b>	The purpose of teaching the subject is to teach students in this area the role of photogrammetry and remote sensing of territories in the national economy, types of stereophotogrammetric measurements performed from images, theoretical and practical knowledge of measuring instruments and working with them, familiarization with modern instruments used in surveying, shape, size, spatial arrangement of objects. It consists of teaching theoretical and practical skills in determining its location from its photographic image, as well as presenting its features in digital and graphical form, creating plans, maps and profiles of the earth's surface, as well as developing practical skills in solving various engineering and geodetic problems using photographs.		
<b>Prerequisites:</b>	To know: Geodesy, Cartography, Mathematics, physics, geomorphology Possess: Use application of GIS		

ЎЗБЕКИСТОН РЕСПУБЛИКАСИ  
ОЛИЙ ВА ЎРТА МАХСУС ТАЪЛИМ ВАЗИРЛИГИ  
МИРЗО УЛУҒБЕК НОМИДАГИ ЎЗБЕКИСТОН  
МИЛЛИЙ УНИВЕРСИТЕТИ



“ТАСДИҚЛАНДИ”  
Ўқув-чиқари бўлими проректор  
Ш. Тошматов

2020 йил

ФОТОГРАММЕТРИЯ ВА ЕРНИ МАСОФАДАН ТУРИБ ТАДҚИҚ ҚИЛИШ  
ФАНИНИНГ  
ИШЧИ ЎҚУВ ДАСТУРИ

Таълим соҳаси: 310000 – Мухандислик иши  
Таълим йўналиши: 5311500 – Геодезия, картография ва кадастр (фан)

		5-семестр	6-семестр
Умумий ўқув соати:	– 246 с	130 с	116 с
Маъруза	– 64 с	34 с	30 с
Амалий машғулот	– 30 с	16 с	14 с
Лаборатория машғулоти	– 34 с	18 с	16 с
Мустақил таълим соати	– 118 с	62 с	56 с

ТОШКЕНТ - 2020



# Updated courses



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

ERASMUS+  
HIGHER EDUCATION CAPACITY BUILDING

Erasmus+ Project

New and Innovative Courses for Precision Agriculture

(NICOPA)

Erasmus+ 597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-IP

STUDY PROGRAM DESCRIPTION

Agrometeorology

National University of Uzbekistan



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

Program title:	<b>Geodesy</b>	University:	National University of Uzbekistan
Degree:	DA	Standard period of study:	30 weeks
Web link of the university:	<a href="https://nuu.uz/">https://nuu.uz/</a>		
Web link of the program:			
Credit points (ECTS):	10	Teaching language:	Uzbek
Contact (email):	<a href="mailto:b.kholmstjanov@gmail.com">b.kholmstjanov@gmail.com</a>		
<b>Program Description:</b> The purpose of teaching science is to study the composition and structure of the atmosphere, solar radiation, the temperature regime of air and soil, the influence of humidity on the life of plants, as well as dangerous phenomena for agriculture, and to create the ability to apply them in practice. The mission of the science is to provide students with theoretical and practical knowledge of the main agrometeorological factors that affect the activity of agricultural production, to teach the quantities describing solar radiation, the temperature and humidity of the air and soil, to fight against dangerous meteorological phenomena, to develop the methods of analyzing and using agrometeorological data. is to introduce the perspective.			
<b>Objectives:</b> The purpose of teaching science is to study the composition and structure of the atmosphere, solar radiation, the temperature regime of air and soil, the influence of humidity on the life of plants, as well as dangerous phenomena for agriculture, and to create the ability to apply them in practice.			
<b>Prerequisites:</b> To know: Mathematics, Physics, Physics of Atmosphere, Climatology Possess: use of agrometeorological data, know how to compile agrometeorological data; to be able to assess the agrometeorological situation; must have the skills to apply agrometeorological data to practice			

ЎЗБЕКИСТОН РЕСПУБЛИКАСИ  
ОЛИЙ ВА ЎРТА МАХСУС ТАЪЛИМ ВАЗИРЛИГИ

МИРЗО УЛУГБЕК НОМИДАГИ  
ЎЗБЕКИСТОН МИЛЛИЙ УНИВЕРСИТЕТИ



Рўйхатта олинди: № БД-5140700-3.05  
2020 йил 29 август

АГРОМЕТЕОРОЛОГИЯ

ФАН ДАСТУРИ

Билим соҳаси: 100000 – Гуманитар соҳа

Таълим соҳаси: 140000 – Табiiй фанлар

Таълим йўналиши: 5140700 – Гидрометеорология

Тошкент-2020



# New Courses

## NEW COURSES

Course №	Title of the course and in which program it is taught (Bachelor, Master)	Its volume (in ECTS)	Number of students participating in the course	Link to the course on the university page	Accreditation and recognition: Specify the date when the course was accredited in the curriculum and when the pilot teaching started
Course 1	Application of Remote Sensing Data (Master)	5 SS	30	<a href="https://websaboq.nuu.uz/auth/login">https://websaboq.nuu.uz/auth/login</a> This is a Moodle platform of NUU. Teachers and students have a personal login and password.	Accredited on June 30, 2020.  Pilot course started on September 3, 2020.
Course 2	Satellite geodesy (Global Navigation Satellite Systems) (Master)	5 SS	30	<a href="https://websaboq.nuu.uz/auth/login">https://websaboq.nuu.uz/auth/login</a> This is a Moodle platform of NUU. Teachers and students have a personal login and password.	Accredited on June 30, 2020.  Pilot course started on September 3, 2020.
Course 3	Innovative Technologies in Soil Science (Master)	5 SS	30	<a href="http://webdars.nuu.uz/login/index.php">http://webdars.nuu.uz/login/index.php</a> This is a Moodle platform of NUU. Teachers and students have a personal login and password.	Accredited on August 25, 2021

$\Sigma(\text{Total number of new courses}) = 3$

$\Sigma(\text{Total number of ECTS}) = 15$



# Implementing of the developed new courses within the project

## II. ЎҚУВ РЕЖАСИ

Код	Фан номи	Синов / имтиҳон	Кредит	Соат	Аудитория соатлари						Код	Фан номи	Синов / имтиҳон	Кредит	Соат	Аудитория соатлари													
					Жанп	Маъруза	Амалий	Лаборатория	Семинар	Мустақил таълим						Жанп	Маъруза	Амалий	Лаборатория	Семинар	Мустақил таълим								
<b>1 семестр (15 ҳафта)</b>															<b>2 семестр (15 ҳафта)</b>														
MGGR1102	Илмий тадқиқот методологияси	и	2	60	30	14	16			30		Мутахассислик танлов фани 1	и	5	150	60	30	30						90					
MGVG1205	Амалий геодезия	и	5	150	60	30	30			90		Мутахассислик танлов фани 2	и	5	150	60	30	30						90					
MGVK1305	Атлас картографияси	и	5	150	60	30	30			90		Мутахассислик танлов фани 3	и	5	150	60	30	30						90					
MGVK1405	Геонформацион картография	и	5	150	60	30	30			90	MIP12407	Илмий тадқиқот иши ва магистрлик диссертациясини тайёрлаш 2	с	7	210									210					
MIP11507	Илмий тадқиқот иши ва магистрлик диссертациясини тайёрлаш 1	с	7	210						210	MIL52592	Илмий семинар 2	с	2	60	30						30	30						
MIL51602	Илмий семинар 1	с	2	60	30				30	30	MIP12604	Илмий педагогик иш 2	с	4	120									120					
MIP11704	Илмий педагогик иш 1	с	4	120						120		Курс иши (MIP12407)	с	2	60									60					
	<b>Жами семестрда</b>		<b>30</b>	<b>900</b>	<b>240</b>	<b>104</b>	<b>106</b>			<b>30</b>	<b>660</b>	<b>Жами семестрда</b>			<b>30</b>	<b>900</b>	<b>210</b>	<b>90</b>	<b>90</b>			<b>30</b>	<b>690</b>						
												<b>Жами йилда:</b>			<b>60</b>	<b>1800</b>	<b>450</b>	<b>194</b>	<b>196</b>			<b>60</b>	<b>1350</b>						
<b>3 семестр (15 ҳафта)</b>															<b>4 семестр (15 ҳафта)</b>														
	Мутахассислик танлов фани 4	и	5	150	60	30	30			90	MIL54102	Илмий семинар 4	с	2	60	30						30	30						
	Мутахассислик танлов фани 5	и	5	150	60	30	30			90	MPL4218	Илмий амалиёт	с	18	540									540					
MIP13314	Илмий тадқиқот иши ва магистрлик диссертациясини тайёрлаш 3	с	14	420						420		Магистрлик диссертацияси	и	10	300									300					
MIL53402	Илмий семинар 3	с	2	60	30				30	30																			
MIP13504	Илмий педагогик иш 3	с	4	120						120																			
	<b>Жами семестрда</b>		<b>30</b>	<b>900</b>	<b>150</b>	<b>60</b>	<b>60</b>			<b>30</b>	<b>750</b>	<b>Жами семестрда:</b>			<b>30</b>	<b>900</b>	<b>30</b>					<b>30</b>	<b>870</b>						
												<b>Жами йилда:</b>			<b>60</b>	<b>1800</b>	<b>180</b>	<b>60</b>	<b>60</b>			<b>60</b>	<b>1620</b>						
												<b>Жами:</b>			<b>120</b>	<b>3600</b>	<b>630</b>	<b>254</b>	<b>256</b>			<b>120</b>	<b>2970</b>						

Фан коди	Мутахассислик танлов фанлари
	<b>Мутахассислик танлов фани 1</b>
MGVG2115	Сунъий йўлдош геодезияси
MGVG2125	Маълумотларни олиш ва интеграциялаш
	<b>Мутахассислик танлов фани 2</b>
MGVK2215	Геодезия ва картографияда илмий тадқиқот ишлари
MGVK2225	Картография ва геоинформацион таълим
	<b>Мутахассислик танлов фани 3</b>
MGVG2315	Масофадан зондлаш маълумотларини амалий қўллаш
MGVG2325	Фазовий таҳлил ва моделлаштириш



# Implementing of the developed new courses within the project



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



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

<b>Program title:</b>	Application of Remote Sensing Data	<b>University:</b>	National University of Uzbekistan
<b>Degree:</b>	MA	<b>Standard period of study:</b>	15 weeks
<b>Web link of the university:</b>	<a href="https://nuu.uz/">https://nuu.uz/</a>		
<b>Web link of the program:</b>			
<b>Credit points (ECTS):</b>	5	<b>Teaching language:</b>	Uzbek
<b>Contact (email):</b>	<a href="mailto:ikhomjon.abdullaev@gmail.com">ikhomjon.abdullaev@gmail.com</a>		
<b>Program Description:</b> This course gives all about remote sensing and satellite imagery, starting out with an introduction to remotely sensed data and the electromagnetic spectrum before learning about satellite and aerial imagery capture and data products. You'll learn how to find and download satellite imagery online and how to use it in two different common types of analysis: NDVI and a trained classification. In the second lesson, you'll learn how to use some basic tools to support image analysis using Raster Calculator and Spatial Analyst.			
<b>Objectives:</b> This course aims at application of remote sensing, 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. The knowledge obtained as a result of mastering the discipline is necessary for solving practical problems in the field of professional activity, designing and developing in Land Surveying and precision agriculture.			
<b>Prerequisites:</b>			
<b>To know:</b> Geodesy, Land Surveying, GIS, Photogrammetry, Remote Sensing			
<b> possess:</b> Application of GIS and Remote Sensing			

O'ZBEKISTON RESPUBLIKASI  
OLIY TA'LIM, FAN VA INNOVATSIYALAR VAZIRLIGI

MIRZO ULUG'BEK NOMIDAGI  
O'ZBEKISTON MILLIY UNIVERSITETI



MASOFADAN ZONDLASH MA'LUMOTLARINI AMALIY QO'LLASH  
FANINING

ISHCHI O'QUV DASTURI

Bilim sohasi	300000 –	Muxandislik, ishlov berish va qurilish sohalari
Ta'lim sohasi:	310000 –	Muhandislik ishi
Mutaxassislik:	5A313401 – 5A311502 -	Geodeziya va geoinformatika Geodeziya va kartografiya (funktsiyalari bo'yicha)
Umumiy o'quv soati	2-semestr – 150 soat	
<i>Shu jumladan:</i>		
Ma'ruza	– 22 soat	
Amaliy mashg'ulot	– 24 soat	
Mustaqil ta'lim soati	– 104 soat	

TOSHKENT-2020

ERASMUS+

HIGHER EDUCATION CAPACITY BUILDING

Erasmus+ Project

New and Innovative Courses for Precision Agriculture

(NICOPA)

Erasmus+ 597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-JP

STUDY PROGRAM DESCRIPTION

Application of Remote Sensing Data

National University of Uzbekistan





# Implementing of the developed new courses within the project



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



ERASMUS+  
HIGHER EDUCATION CAPACITY BUILDING

Erasmus+ Project

New and Innovative Courses for Precision Agriculture

(NICOPA)

Erasmus+ 597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-JP

STUDY PROGRAM DESCRIPTION

Satellite geodesy (Global Navigation Satellite Systems)

National University of Uzbekistan



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



<b>Program title:</b>	Satellite geodesy (Global Navigation Satellite Systems)	<b>University:</b>	National University of Uzbekistan
<b>Degree:</b>	MA	<b>standard period of study:</b>	15 weeks
<b>Web link of the university:</b>	<a href="https://nuu.uz/">https://nuu.uz/</a>		
<b>Web link of the program:</b>			
<b>Credit points (ECTS):</b>	5	<b>Teaching language:</b>	Uzbek
<b>Contact (e-mail):</b>	<a href="mailto:azisfan.ruziev@gmail.com">azisfan.ruziev@gmail.com</a>		
<b>Program Description:</b>	This course gives an introduction of GNSS by introducing the characteristic of the satellite systems (GPS, NAVSTAR, GLONASS, GALILEO, etc), signal structure and forms the skills for using various GNSS systems, applying modern positioning methods of GNSS systems. The knowledge obtained as a result of mastering the discipline is necessary for solving practical problems in the field of professional activity, designing and developing in Land Surveying and precision agriculture.		
<b>Objectives:</b>	The main goal of the subject is for masters of this speciality to teach their students coordinate systems used in satellite geodesy, methods of satellite observations, geodetic satellites, movements of Earth satellites, geometric issues of space geodesy, global navigation satellite systems (GNSS) and the tools and technologies used in it consist of teaching theoretical and practical knowledge.		
<b>Prerequisites:</b>	To know: Geodesy, Land Surveying, GIS Posses: Use application of GIS		

O'ZBEKISTON RESPUBLIKASI  
OLIIY TA'LIM, FAN VA INNOVATSIYALAR VAZIRLIGI

MIRZO ULUG'BEK NOMIDAGI O'ZBEKISTON  
MILLIY UNIVERSITETI



2020 yil

“SUN'IY YO'LDOSH GEODEZIYASI”  
FANIDAN

ISHCHI O'QUV DASTURI

Bilim sohasi:	300000 –	Muxandislik, ishlov berish va qurilish sohalari
Ta'lim sohasi:	310000 -	Muhandislik ishi
Ta'lim mutaxassisligi	5A313401 – 5A311502 -	Geodeziya va geoinformatika Geodeziya va kartografiya (funktsiyalari bo'yicha)

	2-semestr
Umumiy o'quv soati	– 150 soat
Ma'ruza	– 22
Amaliy mashg'ulot	– 24
Mustaqil ta'lim soati	– 104

Toshkent-2020



# QUALITY ASSURANCE OF THE NEW COURSES

## QUALITY ASSURANCE – Courses

Course №	Course title	Peer reviewers (Name, position, organization)
1	Satellite geodesy (Global Navigation Satellite Systems) (Master)	1. Muborakhov Kh. Associate Professor, NUU 2. Xushvaqto'v B. Head of the Department of Geodesy of the National Center for State Cadastres, Geodesy and Cartography
2	Application of Remote Sensing Data (Master)	1. Mirmakhmudov E. Associate Professor, NUU 2. Shukina O. Associate Professor, NUU
3	Innovative Technologies in Soil Science (Master)	1. Tokhtasin Abdrakhmonov, Professor, NUU 2. Mashkura Fakhrutdinova, Associate Professor, NUU



## Peer reviewers (EXTERNAL)

**4 peer reviews have been conducted for the 2 new courses which developed within the Erasmus+ NiCoPA Project in 2020.**

***Experts reviewed the course Remote Sensing and Application of Earth and Environment related PA:***

- M.N.Kenjabojev - Head of the Department of Topography and Remote Sensing of the Central Air Geodetic Enterprise under The State Committee on Land Resources, Geodesy, Cartography and State Cadastre
- B.Khushvaqto'v - Head of the Department Remote Sensing, Geodesy and cartography under The State Committee on Land Resources, Geodesy, Cartography and State Cadastre

***Experts reviewed the course Global Navigation Satellite Systems:***

- Prof. S.Tashpolatov – Head of the Department Geodesy and cadaster of the Tashkent Institute of Architecture and Civil Engineering
- M.N.Kenjabojev - Head of the Department of Topography and Remote Sensing of the Central Air Geodetic Enterprise under The State Committee on Land Resources, Geodesy, Cartography and State Cadastre



# Quality indicators

## **Which quality indicators have you chosen for the peer review template?**

1. Balance of student's workload: theory, practical work (not less than 50%), individual work, internship in a company, testing system
2. Application of ECTS by developing new modules/courses/curricula or modernizing the old ones
3. Usage of information about the latest (up to 5 years old) results of scientific research of foreign scientists in teaching materials
4. Usage of the university online educational platform during the educational process
5. Ability of students to influence the educational content or process. For instance, ability of students to choose a topic of reporting or practical works, to attend elective modules/courses.
6. Correspondence to the national norms (standards) of education
7. Consideration of a new module by the university council of experts with the participation of potential employers (chair meeting, meeting of educational council)



## Peer-review, main conclusions

- In order to meet the needs of the stakeholders in the field of precision agriculture, the have been modernized existing curricula and developed new modules using GNSS, Remote Sensing and GIS technologies in compliance with the principles of the Bologna Process.
- The developed new and innovative courses are focused on the application of remote sensing techniques and skills for getting information from imagery and ability to solve complex tasks based on remote sensing in the field of precision agriculture. In the courses authors more focused on topics, like using of modern smart technologies in the field of GNSS, Geographic Information System, Big data, Digital Image Processing, Application of Remote Sensing in Natural resource management.
- In general, by authors have been analyzed and implemented foreign experience this area in education system of NUU to develop the professional activities of graduates that meet the requirements of employers.



## Positive changes/benefits at NUU

**The updated modules has been included to this curricula:**

5311500 - Geodesy, cartography and cadastre (BA)

5A313401- Geodesy and geoinformatics (MSc)

5A141001 - Soil science (MSc)

**The new modules has been included to**

**this curricula:**

5A313401– Geodesy and Geoinformatics (MSc)

5A311502– Geodesy and Cartography (MSc)

3 master classes organized and 14 teachers have been retrained.

The updated modules “Geodesy”, “Geographic Information Systems”, “Photogrammetry and Remote Sensing” have been accepted at national level and allowed to publish (license uploaded to the Google Drive).

The new modules “Application of Remote Sensing Data (Master)”, “Satellite Geodesy (Global Navigation Satellite Systems) (Master)” and “Innovative Technologies in Soil Science (Master)” have been accepted at the institutional level and allowed to publish (license uploaded to the Google Drive). Teachers have been retrained, they improved their skills on PA.



# TEACHING MATERIALS

TEACHING MATERIALS				
No	Title of the materials	Type (manuals/text books/methodological recommendations)	Short description	Estimated date of the development of the digital versions-drafts (.doc files)
1	Geodesy	Textbook	The textbook are considered the subject of geodesy and its tasks, general questions of geodesy, types and methods of geodetic measurements, the devices of geodetic instruments and the production of measurements by them, the mathematical processing of measurements and the construction of plans, maps of profiles. It also are described the methods for producing accurate measurements and simplified methods for the equation of results in the construction of thickening networks, as a geodetic base for ensuring the production of large-scale topographic surveys and the needs of construction work.	December 2021
2	Photogrammetry and Remote Sensing of the Earth	Textbook	This textbook discusses general information about photogrammetry, gives the concept of the elements of central projection, elements of image orientation, distortions affecting the displacement of points on an aerial photograph, describes the interpretation of survey materials, and also discusses the concept of Earth Remote Sensing Data. In this textbook describes methods for obtaining digital images, types of digital aerial cameras, digital photogrammetric stations used in Uzbekistan and in other countries of the world. The technical means used in digital photogrammetry are considered, as well as issues of obtaining a digital terrain model, digital orthophotomap and issues of three-dimensional modeling. This manual is intended for students in the field of education "Geodesy, Cartography and Cadastre" who are studying the subject "Photogrammetry and Remote Sensing of the Earth" as independent self-education.	September 2020
3	Photogrammetry and Remote Sensing	Methodological Guide	This methodological Guide provides a detailed description of the PHOTOMOD DSP and its modules, creation of various projects, formation of phototriangulation networks, measurement and adjustment of networks, as well as the depiction of the terrain by horizontal lines and the creation of digital maps. Methodical guidance is recommended for completing interconnected laboratory tasks in the PHOTOMOD software package in the subjects "Photogrammetry and Remote Sensing of the Earth", "Geographic Information Systems" for 3rd year students.	March 2021



# TEACHING MATERIALS

H. Muborakov, Z.D. Oxunov,  
A.S. Ro'ziyev, X.J. Xayitov, G.Z. Yakubov

## GEODEZIYA

I va II qism



Oliy o'quv yurtlari uchun  
DARSLIK



O'ZBEKISTON RESPUBLIKASI  
OLIIY VA O'RTA MAXSUS TA'LIM VAZIRLIGI

H. MUBORAKOV, Z.D. OXUNOV,  
A.S. RO'ZIYEV, X.J. HAYITOV, G'. Z.YAKUBOV

## GEODEZIYA

(I va II qism)

DARSLIK

H.Muborakov umumiy tahriri ostida

O'zbekiston Respublikasi Oliy va o'rta maxsus ta'lim vazirligi tomonidan «Geodeziya, kartografiya va kadastr» hamda «Geodeziya va geoinformatika» ta'lim yo'nalishlari talabalari uchun tavsiya etilgan

Spectrum Media Group  
Toshkent – 2021

foydalanib, amaliy mashqlarni yechish batafsil tushuntirilgan. Bu esa talabalarga topshiriqlarni mustaqil bajarishda yengillik tug'diradi.

Darslikni yozishda qo'llanilgan bunday metodik yondashuv 1- va 2-kurslarda talabalarining fan bo'yicha oddiy geodezik o'lchashlardan aniq o'lchashlarga o'tish, ular uslubini o'zaro taqqoslash va ishlarni bajarish, natijalarni ishlab chiqish ketma-ketligini to'la tushunish imkonini beradi.

Darslik O'zMU Geodeziya va geoinformatika kafedrasida professor-o'qituvchilari tomonidan tayyorlangan. Bunda mualliflarning hissasi quyidagicha: Muborakov H. – Kirish, XIV, XV, XVI, XVII, XVIII, XIX, XX, boblar va XXI bobning 1–2 bo'limlari, Oxunov Z.D. – II, III, IX, X, XI boblar; Ro'ziyev A.S. – IV, V, VII boblar, XXI bobning 3 – 4 bo'limlari; Hayitov X.J. (TIQXMMI) – VI, XIII boblar; Yakubov G.Z. – VIII, XII boblar.

Ishlarni tashkil etishda t.f.n., prof. H.Muborakov rahbarlik qilgan. Darslikning zamonaviy asboblar bilan bog'liq mavzulari kafedra a'zolarining Erasmus+ dasturi NICOPA loyihasi doirasida Yevropa Ittifoqining hamkor OO'Yu larida tashkil etilgan trening kurslarida bevosita qatnashib o'rtirilgan tajribalariga tayanib yoritildi.

Darslik ilk bor yozilgani sababli unda ayrim nuqsonlar uchrashi mumkin. Bu haqda bildirilgan fikr va mulohazalarni mualliflar mamnuniyat bilan qabul qilishadi.





# TEACHING MATERIALS

МИНИСТЕРСТВО ВЫСШЕГО И СРЕДНЕГО СПЕЦИАЛЬНОГО  
 ОБРАЗОВАНИЯ РЕСПУБЛИКИ УЗБЕКИСТАН  
 НАЦИОНАЛЬНЫЙ УНИВЕРСИТЕТ УЗБЕКИСТАНА  
 ИМЕНИ МИРЗО УЛУГБЕКА  
 Щукина О.Г.



## ФОТОГРАММЕТРИЯ И ДИСТАНЦИОННОЕ ЗОНДИРОВАНИЕ ЗЕМЛИ

5311500 - Геодезия, картография и кадастр

Ташкент-2020

В данном учебном пособии рассматриваются общие сведения о фотограмметрии, дается понятие об элементах центральной проекции, элементах ориентирования снимков, искажениях влияющих на смещение точек на аэроснимке, описывается дешифрирование материалов съемок, а также рассматривается понятие о данных дистанционного зондирования Земли. Описываются способы получения цифрового изображения, типы и виды цифровых аэрофотоаппаратов, цифровые фотограмметрические станции, используемые в Узбекистане, так и в других странах мира. Рассматриваются технические средств, используемые в цифровой фотограмметрии, а также вопросы получения цифровой модели местности, цифрового ортофотоплана и вопросы трехмерного моделирования.

Данное пособие предназначено для студентов направления образования « геодезия, картография и кадастр», изучающие предмет «фотограмметрия и дистанционное зондирование Земли» в качестве самостоятельного самообразования.

Ответственный редактор: доц.Мубораков Х.- зав.кафедрой Геодезии и геоинформатики, НУУз

Рецензенты: Ковалев Н.В. – старший преподаватель кафедры «маркшейдерское дело и геодезия» ТИИМСХ

Мирмахмудов Э.Р. - кандидат физико-математических наук кафедры «Геодезии и геоинформатики НУУз»

Учебное пособие рекомендовано к изданию решением Научно методического совета Национального Университета Узбекистана им. Мирзо Улугбека от

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# TEACHING MATERIALS

Абдуллаев И.Ў., Якубов Г.З., Мўминов А.А.,  
Юсупжонов О.Ғ.

## ФОТОГРАММЕТРИЯ

ва ерни масофадан тадқиқ қилиш  
фанидан лаборатория ишлари учун  
услубий қўлланма



Тошкент–2021

### Аннотация

Маъмур услубий қўлланма «PHOTOMOD» РФС ва унинг модуллари билан танишиш, турли хил лойиҳаларни яратиш, фототриангуляция тармоғини шакллантириш, ўлчашларни бажариш ва тенглаштириш, шунингдек, рельефини горизонталлар билан тасвирлаш ва рақамли хариталарни тузиш ҳақида батафсил маълумот берилган.

Услубий қўлланмадан 3 курс талабаларини «Фотограмметрия ва Ерни масофадан тадқиқ қилиш» ва «Географик ахборот тизимлари» фанлари бўйича «PHOTOMOD» дастурий мажмуасида ўзаро боғланган лаборатория топшириқларини бажаришда фойдаланиш тавсия этилади.

### Аннотация

В данном методическом указании дано подробное описание ЦФС PHOTOMOD и ее модулей, создание различных проектов, формирование фототриангуляционных сетей, выполнение измерений и уравнивание сетей, а также изображение рельефа горизонталями и создание цифровых карт.

Методическое указание рекомендуется для выполнения взаимосвязанных лабораторных заданий в программном комплексе «PHOTOMOD» по предметам «Фотограмметрия и дистанционное зондирование Земли», «Географические информационные системы» студентам 3 курса.

### Annotation

This methodological instruction provides a detailed description of the PHOTOMOD DSP and its modules, creation of various projects, formation of phototriangulation networks, measurement and adjustment of networks, as well as the depiction of the terrain by horizontal lines and the creation of digital maps.

Methodical guidance is recommended for completing interconnected laboratory tasks in the PHOTOMOD software package in the subjects "Photogrammetry and Remote Sensing of the Earth", "Geographic Information Systems" for 3rd year students.

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Босилган руҳлат эгилди 25.03.2021. Бевволи 60×84 1/16.  
Ҳажми 3.0 босма тибек. Адади 50 нусха. Бузурги №29.  
Мирзо Улуғбек номидаги Ўзбекистон Миллий Университети  
басмагонисиди чоп этилди.



# Criteria for teacher selection for trainings

## NICOPA Selection Criteria for teachers



NICOPA:  
NEW AND INNOVATIVE COURSES FOR PRECISION AGRICULTURE  
597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-IP

NICOPA Selection Criteria



NICOPA:  
NEW AND INNOVATIVE COURSES FOR PRECISION AGRICULTURE  
597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-IP

NICOPA Selection Criteria



### NICOPA Selection Criteria for teachers

#### Objective:

This document contains information about selection criteria for teachers to participate in trainings planned at EU universities.

#### Selection Committee:

1. Dr. Rasul Rakhmonov (Chair, NUU)
2. Dr. Abdumanap Nasirov (Vice chair, NUU)
3. Dr. Tokhtasin Abdrakhmonov (member, NUU)
4. Dr. Khamidxon Muborakov (member, NUU)

#### Compulsory (seamed) Documents:

1. Photocopy of international passport (only main/photo page)
2. Academic and/or professional Curriculum Vitae (europass model)
3. English language certificate
4. Motivation Letter
5. One letter of recommendation supporting your application
6. Other Documentation (optional)

#### Selection Criteria:

The selection procedure is established according to the minimum requirements set by the European Commission. The selection procedure guarantees the transparency of the selection process and an equitable treatment of individual applications. The selection process is starting with shortlisting. The short list will be based on an interview by national (local) coordinator persons for initial "filtering". This initial filtering based on rating contributes to the selection procedure. Rating is done by national (local) coordinator and is based on this standard evaluation form.

The Selection Committee will receive a summary of ratings and (filtered) proposals from the project administration, where we also will take care of all quotas as planned in the proposal. Each applicant will be interviewed. Based on the ratings and interviews the Selection Committee will provide a proposal for the project leader before places being offered on the mobility programme.

#### NICOPA Point Score

Rating	Code Rating
80-100	Outstanding
60-80	Highly competent
40-60	Competent
20-40	Not yet competent
0-20	Not achieved

#### Prerequisites:

1. Working experience in NUU for at least 3 years;
2. Lecturing experience of at least 2 years;
3. Basic education in the field related with trainings within the project.

Applicant:		Full Name	
No	Criteria Items	Points max.	Points scores
1.	Level of English of instruction at host institution	20	
2.	Average of grades in presented certificates	20	
3.	Prior Learning in subjects related with trainings within the project	20	
4.	Motivation letter	20	
5.	Bonus points (max. 4 points each) - Publications - Conference presentations - Teaching Experience - First scholarship award - Other	20	
<b>TOTAL Points (..... / 100)</b>		<b>100</b>	
Evaluator is encouraged to conduct a personal/phone interview where this is deemed necessary to fairly assess the candidate's qualifications			
Additional Comments:			



# Sustainability of PASO Offices

PASO Service Office		
№	Question	Answer
1	Name of the person(s) responsible for PASO operation in your university	Azizjon Ruziev, project member
2	Provide scan of PASO regulations approved at institutional level	Provided (see slide №26)
3	Provide scan of PASO work plan/business plan approved at institutional level	Work plan of precision agriculture service office (PASO) during the project and after the end of the project to ensure sustainability (see slide №30)
4	Indicate activities, that was already been implemented according to PASO work plan (title of activity, date, link to agenda, number of persons involved)	<ul style="list-style-type: none"> <li>- The Regulation of the PASO was prepared and signed;</li> <li>- Pilot operation of PAL and VCR started with on-line meetings on discussion and confirmation the list of equipment;</li> </ul>
5	Provide link to the PASO web page at the university website / FB page or any other digital source of PASO	<a href="https://www.nuu.uz/eng/info/nicopa">https://www.nuu.uz/eng/info/nicopa</a> <a href="https://www.facebook.com/Nicopa.NUU">https://www.facebook.com/Nicopa.NUU</a>
6	How many NICOPA+ agreements were signed so far?	<ol style="list-style-type: none"> <li>1. NICOPA+ agreements have been signed so far with the following non-academic stakeholders: "UNITEK STANDART" LLC;</li> <li>2. Scientific Research Hydrometeorological Institute (NIGMI)</li> </ol>



# Concept of PASO

## НАЦИОНАЛЬНЫЙ УНИВЕРСИТЕТ УЗБЕКИСТАНА ИМЕНИ МИРЗО УЛУГБЕКА



«УТВЕРЖДАЮ»

Ректор НУУз

А.П.Марахимов

08.09.2019 г.

### ПОЛОЖЕНИЕ ОБ ОФИСЕ ПО ПОДДЕРЖКЕ И РАСПРОСТРАНЕНИЮ УСЛУГ И ЗНАНИЙ ПО ТОЧНОМУ СЕЛЬСКОМУ ХОЗЯЙСТВУ «PRECISION AGRICULTURE SERVICE OFFICE» (PASO)

### REGULATION ABOUT OFFICE ON SUPPORT AND DISTRIBUTION SERVICES AND KNOWLEDGE OF PRECISION AGRICULTURE (PASO)

Разработано в рамках реализации проекта Erasmus+ 597985-EPP-1-2018-1-KZ-EPPK2-  
CBHE-JP «New and innovative Courses for Precision Agriculture (NICOPA)»

Ташкент - 2019

#### 1. ОБЩИЕ ПОЛОЖЕНИЯ

Настоящее Положение является внутренним нормативным документом «Национального университета Узбекистана имени Мирзо Улугбека» и определяет цели, задачи, функции и деятельность Офиса услуг и знаний по точному сельскому хозяйству «Precision Agriculture Service Office» (PASO).

Разработано в рамках реализации Европейского проекта "New and Innovative Courses for Precision Agriculture (NICOPA)" по программе ERASMUS+ Programme - Capacity Building in Higher Education (Project +597985-EPP-1-2018-1-KZ-EPPK2-CBHE-JP)

PASO является структурным подразделением кафедры «Геология и геоинформатика» факультета "География и природные ресурсы" Национального университета Узбекистана, а также сотрудничает с кафедрой «Почвоведение» факультета биологии.

PASO в своей деятельности руководствуется законами Республики Узбекистан.

- Положением кафедры «Геология и геоинформатика»;

- Настоящим положением.

PASO проводит работы, связанные с глубоким освоением учебных материалов и знаний, создаваемых в рамках проекта, и обновлением содержания учебных дисциплин в области точного сельского хозяйства в соответствии с последними достижениями в данной сфере;

Руководитель офиса:

- руководит всей деятельностью PASO;

- несет персональную ответственность за своевременное и качественное выполнение возложенных на офис задач и функций;

- участвует в перспективном и текущем планировании деятельности офиса.

Руководитель офиса имеет право подписи документов по вопросам деятельности офиса, входящих в его компетенцию.

Месторасположение Офиса PASO: 1000174, г. Ташкент, ул. Университетская, 4.

#### 2. ЦЕЛЬ СОЗДАНИЯ PASO

Создать условия для развития результатов проекта после его завершения и облегчить поток средств на техническое обслуживание и развитие, созданный лабораторными объектами проекта.

#### 3. ОСНОВНЫЕ ЗАДАЧИ PASO

- 3.1. Маркетинг потребностей в области ООПТ и развитие соответствующие услуги для разных целевых групп.
- 3.2. Разработка и внедрение учебных курсов и/или повышения квалификации различных целевых групп.
- 3.3. Маркетинг образовательных услуг.
- 3.4. Сервис для фермерских ассоциаций.
- 3.5. Изучение требований работодателей.
- 3.6. Изучение соответствия компетенций/навыков выпускников требованиям работодателей, информационная поддержка.
- 3.7. Периодическое проведение аудита университета на существующих учебных курсах с целью выявления/обновления устаревших учебных программ и разработки новых.
- 3.8. Изучение потребностей промышленных предприятий в сервисном обучении персонала.
- 3.9. Поиск заинтересованных организаций и спонсоров.
- 3.10. Модернизация устаревшего сельскохозяйственного оборудования - для оснащения старой техники датчиками, системами навигации для улучшения работы.
- 3.11. Обработка спутниковых данных.

#### 4. ОСНОВНЫЕ ФУНКЦИИ PASO

В соответствии с возложенными на него задачами PASO осуществляет следующие функции:

- 4.1. Сотрудничество в высших образовательных учреждениях, специализирующихся в подготовке кадров области сельского хозяйства, изучение и решение реальных задач этой сферы и внедрение в учебный процесс полученных результатов;
- 4.2. Разработка и проведение мероприятий по подготовке и повышению квалификации и предметной (академической) области факультета;
- 4.3. Организация тренингов, семинаров, конференций;
- 4.4. Повышение информированности целевых групп путем освещения о результатах работ в средствах массовой информации;
- 4.6. Выявление и освоение технических новшеств, научных открытий и изобретений, передового опыта, способствующих улучшению по подготовке и повышению квалификации для сотрудников PASO;
- 4.7. Анализ, поиск, привлечение источников финансирования деятельности;
- 4.8. Осуществление в соответствии с законодательством Республики Узбекистан работы по комплектованию, хранению, учету и использованию архивных документов, образовавшихся в ходе деятельности PASO;
- 4.9. Организация инженерно-технических работ по запросу / заказу заинтересованных лиц/организаций;
- 4.10. Возложение на PASO функций, не относящихся к компетенции PASO, не допускается.

#### 5. ПРАВА PASO

- 5.1. Создавать экспертные и рабочие группы по вопросам улучшения и контроля курсов обучения и/или повышения квалификации различных целевых групп;
- 5.2. Проводить в пределах своей компетенции в установленном порядке переговоры со сторонними организациями, подписывать договоры;
- 5.3. Использовать средства, выделяемые на финансирование развития учебных программ университета по подготовке специалистов, переквалификации и повышению квалификации кадров;
- 5.4. Вносить предложения по вопросам, входящим в компетенцию PASO, в виде проектов;
- 5.5. Запрашивать и получать от руководства университета, кафедр и других структурных подразделений информацию, необходимую для выполнения возложенных на него задач и функций.

#### 6. ОТВЕТСТВЕННОСТЬ РУКОВОДИТЕЛЯ PASO

- 6.1. Всю полноту ответственности за качество и своевременность выполнения возложенных настоящим Положением на PASO задач и функций несет Руководитель PASO;
- 6.2. Степень ответственности других работников устанавливается должностными инструкциями;
- 6.3. Руководитель и другие сотрудники PASO несут персональную ответственность за соответствие оформляемых ими документов и операций с корреспонденцией законодательству Республики Узбекистан;
- 6.4. Ведение документации, предусмотренной действующей нормативно - правовой базой.

Разработано на основе Положения PASO Concept (nicopa.eu) членами рабочей группы проекта NICOPA: Насиров А.А., Абдуллаев И.У., Рузиев А.

Координатор проекта

А.А.Насиров



# Plan of PASO

## WORK PLAN OF PRECISION AGRICULTURE SERVICE OFFICE (PASO) ON SUPPORT AND DISTRIBUTION SERVICES AND KNOWLEDGE OF PRECISION AGRICULTURE

№	Activities	Time
1.	Develop a set documentation on PASO (Precision agriculture service office) with stakeholders support / purchase / install equipment / establish	February 2019 – March 2020.
2.	Staff training for PASO, establishing Regional / International PASO network, pilot operation	February 2020 – September 2021.
3.	Master Classes in new curricula /pilot operation of PAL (Precision Agriculture Laboratory) and VCR (Virtual Class Room)	February-April 2021 r.
4.	Pilot teaching / operation of PAL and VCR	October-November 2021.
5.	Using the capabilities of the PAL training laboratory in teaching students and undergraduates	Every academic year
6.	Refresh training courses for graduates in PASO	September 2020 – July 2021.
7.	Organizing meetings with school graduates	Annually April-May
8.	Participation in the traditional conference “GIS in Central Asia”	Annually
9.	As part of the project, invite project participants from partner universities, organize lectures and master classes	May-November 2022
10.	Inviting foreign experts in the field of applied geoinformatics, organizing lectures and master classes	June-July 2022

Project coordinator

Nosirov A.

## ACTION PLAN TO ENSURE SUSTAINABILITY OF PASO OFFICE AFTER THE END OF THE PROJECT

№	Activities	Time
1.	Using the capabilities of the PAL (Precision Agriculture Laboratory) training laboratory in teaching students and undergraduates	Every academic year
2.	Organizing meetings with school graduates	Annually April-May
3.	Participation in the traditional conference “GIS in Central Asia”	Annually
4.	Inviting foreign experts in the field of applied geoinformatics, organizing lectures and master classes	Annually
5.	Establishing cooperation with industry organizations in the field of sustainable development	Annually November-December
6.	Establishing cooperation with the government of the city of Tashkent on the topic “Sustainable cities and residential areas.”	Annually April-May
7.	Preparation of innovative projects and participation in competitions	Annually January-September

Project coordinator

Nosirov A.



# Business Plan of PASO



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

**PASO (Precision Agriculture Service Office)  
Business Plan**

Erasmus+ Project  
New and Innovative Curricula in Precision Agriculture / (NICOPA)  
597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-JP

Tashkent, 2022

## CONTENT

- Introduction
- Section 1. Brief summary of the business idea
- Section 2. Brief Description of Products and Services
- Section 3. Competitor analysis
- Section 4. Target market analysis
- Section 5. Marketing section of the business plan
- Section 6. Production section of the business plan
- Conclusion

## Project sustainability

Table 3 - Action plan to ensure sustainability of PASO office

No	Activities	Time
1.	Using the capabilities of the PAL (Precision Agriculture Laboratory) training laboratory in teaching students and undergraduates	<del>Every academic year</del>
2.	Organizing meetings with school graduates	<del>Annually</del> <del>April-May</del>
3.	Participation in the traditional conference "GIS in Central Asia"	Annually
4.	Inviting foreign experts in the field of applied geoinformatics, organizing lectures and master classes	Annually
5.	Establishing cooperation with industry organizations in the field of sustainable development	<del>Annually</del> <del>November-December</del>
6.	Establishing cooperation with the government of the city of Tashkent on the topic "Sustainable cities and residential areas."	<del>Annually</del> <del>April-May</del>
7.	Preparation of innovative projects and participation in competitions	<del>Annually</del> <del>January-September</del>
8.	Establishing financial support for PASO office employees by concluding business agreements with industry organizations	Annually
9.	Use of the PASO office and PAL laboratory facilities for the preparation of theses, master's theses, master's theses and doctoral theses.	Regularly
10.	Preparation and printing of articles	Annually



# Laboratories and equipment

**Titles of laboratory works that are planned to be conducted at PAL and VCR and which equipment is planned to be used in these works (specify modules, in which these laboratory works are planned to be conducted and at which faculties)**

**Laboratory works in the course “Geographic Information Systems”, “Basics of the Precision agriculture”, “Soil and Agroecology”, “Soil cover monitoring” (at the Faculty of Geography and Natural resources and the Faculty of Biology and Soil Sciences):**

- **Sensing Technology on Precision Agriculture**
  - IMETOS® IMT280, ECH874EXT, SEN-SDI12, SE1200S;
- **Data collection and Analysis on Precision Agriculture**
  - IMETOS® IMT280, ECH874EXT, SEN-SDI12, IM5041D, SE1200S;
- **Sustainable Intensification in Crop Farming and Yield Monitoring Technology**
  - PI54-D/5, MD510SM;
- **Smart Farming Technology Types, Equipment for Variable Rate Application**
  - ECH874EXT, TNS107, SE1200S.

Moreover, all equipment of VCR will be used during the practical works of this course.





# Laboratories and equipment

**All equipment of VCR** will be used during the following practical works of the course “Geographic Information Systems”, “Photogrammetry and Remote Sensing”, “Application of Remote Sensing Data”, “Satellite geodesy (Global Navigation Satellite Systems)” (at the Faculty of Geography and Natural resources and the Faculty of Biology and Soil Sciences):

- Digital Image Processing
- Image Classification
- Object-based image analysis
- Land Cover/Land Use and Change Detection
- Working with ArcMap software
- Application of Remote Sensing in Agriculture
- Geographical and attribute information
- Development of map configuration and preparation for publication
- Display data in Geographic Information System.

**The following equipment of VCR** will be used during the laboratory and practical works of the courses “Innovative Technologies in Soil Science”, “Soil and Agroecology”, “Soil cover monitoring” (at the Faculty of Geography and Natural resources and the Faculty of Biology and Soil Sciences):

*Personal Computer All in One;*

*Mobile Workstation;*

*Color MFD A3;*

*Monochrome MFD A4;*

*Smart Board;*

*Projector.*

**All the equipment** of VCR will be used for processing the data obtained during the practical and laboratory works of the courses “Geographic Information Systems”, “Innovative Technologies in Soil Science”, “Soil and Agroecology”, “Soil cover monitoring” (at the Faculty of Geography and Natural resources).



# Equipment

6.10.2022 № 0110-11-C.126

даги № 30

Справка дана в том, что оборудования, приобретенные в июне 2021 года на деньги международного проекта "NISORA: новые и инновационные курсы для точного земледелия" 597985-ERP-1-2018-1-KZ-EPK/A2-C/INE-JP, поставлены на баланс Национального университета Узбекистана

№	Счет	Идентификационный номер	Наименование основных средств	Количество (шт.)	Сумма	Дата ввода
1	013/003	1306101788	Рациональный Компьютер All in One/ Персональный компьютер с веб-камерой	12	104,718,845.00	11.06.2021
2	013/003	1306101789	Мобильный Workstation/ Мобильный рабочий станция	1	35,874,615.65	11.06.2021
3	013/003	1306101790	Смарт МФД A3/ Планшет МФД A3	1	7,909,161.10	11.06.2021
4	013/003	1306101791	Мини-компьютер МФД A2/ Мини-компьютер МФД A2	1	6,311,871.30	11.06.2021
5	013/003	1306101792	Персональный Smart Storage/ Персональные облачные хранилища	2	31,172,915.40	11.06.2021
6	013/003	1306101793	Digital Camera (DSR)/ Цифровая камера (беспроводная)	1	5,513,226.36	11.06.2021
7	013/003	1306101795	Smart Board/ Смарт-доска	1	8,372,390.50	11.06.2021
8	013/003	1306101794	Розетный Проксатор	1	14,565,441.82	11.06.2021
9	013/003	1311002100	Смарт ТВ 55 дюймов ТВ	1	3,388,145.50	11.06.2021
10	013/003	1306101796	UPR (HDMI)	1	2,756,613.10	11.06.2021
11	013/003	1306101797	24-дюймовый Graphi Tablet/ 24-дюймовый планшетный экран	1	1,069,153.71	11.06.2021
12	013/003	131026584	DMETOS 4015T 200 Базовый станция с датчиками, датчиком температуры и влажности почвы (интерактивный) датчиком (автоматический) датчиком	1	52,842,422.38	11.06.2021
13	013/003	131026595	ICM 474 4x4 Встроенный интерфейс для подключения 1x датчика влажности содержания воды в почве производства Resol Инновации или Meter Group 4x, беспроводная датчика. Waterproof + 1x температура почвы с кабелем 5 м.	1	6,988,194.88	11.06.2021
14	013/003	131026586	SEN - SD 112 Встроенный интерфейс для подключения 2 x профессиональных датчиков влажности содержания воды в почве типа bench или Agriculture.	1	3,752,673.91	11.06.2021
15	013/003	131026587	IM 5041 D 2 Интерактивный датчик температуры почвы с сенсорной частью P2	1	3,699,632.58	11.06.2021
16	013/003	131026588	FS 54-105 Датчик влажности содержания воды в почве производства Resol Instruments с кабелем 5 м.	1	3,487,467.27	11.06.2021
17	013/003	131026589	MDS 10 SSM Точнометрический датчик Waterproof с кабелем 3,5	1	1,538,198.49	11.06.2021
18	013/003	131026510	TNS 107 Гематометр Тензометр 90 см, без компьютера	1	2,832,723.38	11.06.2021
19	013/003	131026511	SE 12065 Профессиональный датчик влажности содержания воды в почве производства Resol Dnd) Точная 120 см, 12 x температура, 12 x влажность и 12x влажность почвы, с кабелем 5 м. ИД: 01-013/003	1	31,320,903.81	11.06.2021
				31	415,385,096.76	



Пресс-рост

Ширнизова Р. X.





# Information about the project on the webpage of NUU

Information about the project is available on the University website (in English, Uzbek and Russian)

<https://nuu.uz/eng/info/nicopa>

<https://nuu.uz/uzc/info/nicopa>

<https://nuu.uz/rus/info/nicopa>

The screenshot shows the English version of the NICOPA project page. The header includes the university logo and navigation links. The main content area features the project title "NICOPA: New and Innovative Courses for Precision Agriculture" and a brief description. A sidebar on the right lists "International Projects and Grants" with sub-items like UNICAC, DSINGG, and SPACECOM. The page is clean and professional, with a blue and white color scheme.

The screenshot shows the Uzbek version of the NICOPA project page. The header and navigation are in Uzbek. The main content area contains the project title "NICOPA: аниқ қишлоқ хўжалиги учун янги ва инновацион курслар" and a brief description in Uzbek. A sidebar on the right lists "Халқаро лойиҳа ва грантлар" (International projects and grants) with sub-items like UNICAC, DSINGG, and SPACECOM. The layout is consistent with the English version but adapted for the Uzbek language.

The screenshot shows the Russian version of the NICOPA project page. The header and navigation are in Russian. The main content area contains the project title "NICOPA: новые и инновационные курсы для точного земледелия" and a brief description in Russian. A sidebar on the right lists "Международные проекты и гранты" (International projects and grants) with sub-items like UNICAC, DSINGG, and SPACECOM. The layout is consistent with the other versions but adapted for the Russian language.



# Regional Coordination Meeting

Regional Meeting (UZ)  
20 November 2018  
National University of Uzbekistan

Considered questions: The goals and objectives of the NICOPA project, expected results, project management, familiarization with project data, definition of project plans for projects at each university, a management seminar, project implementation reports, financial tasks.

<https://www.nicopa.eu/index.php/meetings/5-regional-coordination-meeting-with-uzbekistan-universities>

Erasmus+ 597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-JP  
New and Innovative Courses for Precision Agriculture  
NICOPA

Minutes of Coordination meeting with Uzbekistan universities

**Organisers:** National University of Uzbekistan

**Date:** November 20, 2018, 15<sup>00</sup>-18<sup>00</sup>.

**Venue:** National University of Uzbekistan, Faculty of Physics, 2<sup>nd</sup> floor, room 122

**Participants:** Representatives of the project working groups from the Tashkent University of Information Technologies, Tashkent Institute of Irrigation and Agricultural Mechanization and the National University of Uzbekistan, Coordinator of the National Office of Erasmus + Uzbekistan (List of participants is attached).

**Working language:** Russian and English

**Objectives:** Meeting with the project manager Dr. Arnold Sterenharz (Germany). Preparation for the start of the project





# Grantholders meeting of new CBHE projects

## Grantholders meeting of new CBHE projects January 28-29, Brussels

A two-day meeting of Grantholders and project participants who received funding within the framework of the 4th Call on “Capacity Building in Higher Education” was held on January 28-29 in Brussels. During the coordination meeting, the participants were familiarized with the information on the results of project selection, effective project management, financial management and preparation of project reports.

<http://www.erasmusplus.uz/news/Grantholders-meeting-of-new-CBHE-projects.htm>





# Activities

## Kick-Off Meeting Berlin

04 - 05 March 2019

Technical University of Berlin

Special session was conducted where presentations of each consortium partner took place; key roles/activities and responsibilities in the project of each consortium partner were determined.

<https://www.nicopa.eu/index.php/meetings/8-kick-off-meeting-berlin>





# Field monitoring of NICOPA project

Field monitoring of NICOPA project  
2 May 2019  
National University of Uzbekistan

Discussion of the field monitoring results of the NICOPA project by the National Erasmus + Office have been taken place on May 2, 2019, as well as a discussion of the conclusions and recommendations of the EACEA (Agency) employee - project advisor Piia Heinämäki based on the results of the monitoring.

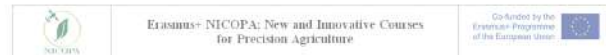




# National meeting

## Discussion of the field monitoring results of the NICOPA project 4 August 2019 National University of Uzbekistan

In order to ensure the active participation of NUU in the implementation of NICOPA project, the meeting of the project was held between National partners. The meeting was organized to discuss results of the field monitoring of the Erasmus + program in order to implement the comprehensive monitoring policy of the Agency for Education, Audiovisual and Culture Executive Agency (EACEA).



### Meeting minutes

**Date:** August 4, 2019  
**Time:** 14:00  
**Venue:** National University of Uzbekistan,  
Faculty of Physics, 4th floor, room  
404

### Objectives

Discussion of the letter from the National Erasmus +  
Office of Uzbekistan No. NEO-103 dated August 1, 2019.

### Participants:

- |                    |   |
|--------------------|---|
| 1. A. Nasirov      | National Coordinator of the project Erasmus+ NICOPA (NUU) |
| 2. I. Abdurahmanov | Local coordinator of the project Erasmus+ NICOPA (TILAME) |
| 3. T. Kuchkorov    | Local coordinator of the project Erasmus+ NICOPA (TUIT)   |
| 4. I. Abdullaev    | Manager of the project Erasmus+ NICOPA (NUU)              |

### Considered questions:

Discussion of the field monitoring results of the NICOPA project by the National Erasmus + Office have been taken place on May 2, 2019, as well as a discussion of the conclusions and recommendations of the EACEA (Agency) employee - project advisor Pia Heinämäki based on the results of the monitoring.

### 14:00-16:30

### Main part:







# Training in TU Berlin

Training TU Berlin  
19 - 30 August 2019  
Technical University of Berlin

The training focuses on precision farming using new technologies in the physical sciences such as Geographic Information System / GIS, Big Data and Remote Sensing. The academic teachers retrained at TU Berlin according to the plan. As a result the retrained academic teachers of the NUU will be able to handle the new methodology using the new integrated facility, the students will learn to use the new equipment.

<https://nicopa.eu/index.php/meetings/22-training-berlin-2>





# Seminar about the results of training in TU Berlin

Seminar about the results of training in TU Berlin  
20 September 2019  
National University of Uzbekistan

Participants of the training in TU Berlin held a number of events in October to disseminate information about the project itself and information about the training held at the Technical University (Berlin).





# Erasmus Plus Information Day

**Erasmus Plus Information Day**  
**4 October 2019**  
**Tashkent State Technical University**

This event was organized by the National Erasmus +Office in Uzbekistan (NEO) under the name “Erasmus + Info Day” at the Tashkent State Technical University named after Islam Karimov. At this event, executives of successfully accomplished projects shared their experiences on how to present applications, issuing requirements, development and management of the projects.





# Erasmus Plus Information Day

**Erasmus Plus Information Day**  
**12 October 2019**

**National University of Uzbekistan**

More than 70 people representing 5 higher education institutions from Tashkent and all country regions, line ministries and stakeholder organizations took part in the Information Day. During the event a round table was held, which was attended by the University management, employers, graduates, etc. during the round table, the results of all projects at the University, including the NICOPA project, were highlighted, most of the participants were interested in NICOPA who had an overview of the project, its purpose, and objectives, and received answers to their questions.





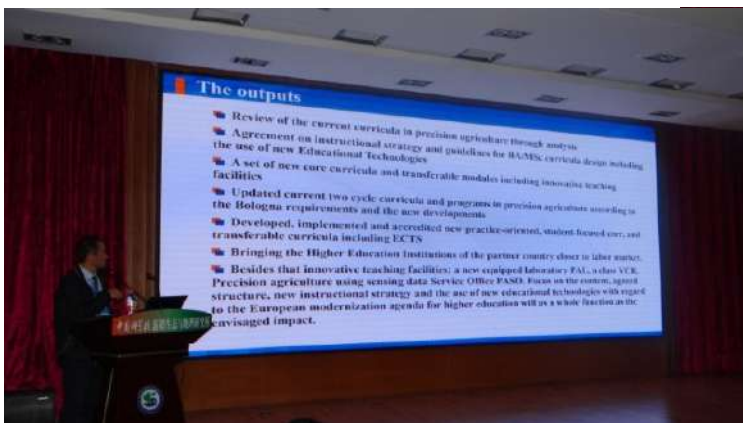
# Activities “General information and achievements of the NICOPA project”

International Uzbek-Chinese Symposium Sino-Uzbekistan on the initiative of bilateral cooperation on the topic “Ecology, environment and sustainable development of the region”

11-15 October 2019

Xinjiang Institute of Ecology and Geography, China

The Symposium was organized by Xinjiang Institute of Ecology and Geography with the assistance of Chinese Academy of Science. In this event, Ilkhomjon Abdullaev made the presentation which contains general information and achievements of the project NICOPA: New and Innovative Courses for Precision Agriculture.





# Regional Coordination Meeting

## Regional Coordination Meeting with Uzbekistan Organizations 20 November 2019 Tashkent University of Information Technologies

### Objectives:

1. NICOPA: Milestones and Deliverables. The second and third project years.
2. Discussing the current state of the project plan and the first-year work progress at Uzbekistan universities.





# Regional Coordination Meeting

## Regional Coordination Meeting with Uzbekistan Organizations

4 March 2020

### Tashkent University of Information Technologies

#### Objectives:

1. Status of the updating of existing and development of new courses
2. Preparation for acceptance / installation of new equipment
3. Activities to disseminate information and ensure sustainability of project results and work plan for 2020





## Coordination meetings with partners

#	Meeting topic	Date	Participated
1	Online coordination meeting with the partner universities	07.04.2020	All partners
2	NICOPA equipment discussion	04.05.2020	UZ partners
3	Online coordination meeting with the project consortium (Discussion of development teaching materials)	02.06.2020	All partners with external reviewer
5	NICoPA meeting for 18M report	26.06.2020	All partners





# International Conference GISCA 2020, GISCA 2021, GISCA 2022

## 'GIS IN CENTRAL ASIA' CONFERENCE – GISCA 2020, "Applied Geoinformatics for Sustainable Development", Online, June 1-2, 2020

### PRESS RELEASE

'GIS IN CENTRAL ASIA' CONFERENCE – GISCA 2020  
"Applied Geoinformatics for Sustainable Development"

Online, June 1-2, 2020

#### GISCA Conferences

Geographic Information Science and Technologies have evolved into a key instrument for managing our societies, environments and infrastructures, as well as individuals' daily lives. Continued success of this development depends on cooperation across disciplines, open information policies and a highly educated workforce.

The GISCA series of conferences aims at building a Central Asian network of GIS professionals supporting the sustained development of this region into an environmentally friendly, secure and prosperous society. It serves as a platform for communication, collaboration and learning in Geographic Information Science, GIS and related sciences and technologies. GISCA was launched by the Austria-Central Asia Centre for GIScience in 2005.

The main objectives of this English language conference are to bring together geospatially oriented academics, researchers and practitioners in the Central Asian countries and encourage international cooperation and knowledge exchange in GIS education.

#### GISCA 2020

In 2020, GISCA is focused on the theme "Applied Geoinformatics for Sustainable Development". Geographic Information Science as a conceptual foundation, Geoinformatics as the methodology and GIS as software technologies are powerful instruments for linking information across different sources by location. This is exactly what is needed to successfully manage our environments and natural resources, our economies and ultimately our societies.

GISCA 2020 is being organized by the Austria-Central Asia Centre for GIScience (ACA\*GIScience) jointly with the Erasmus+ DSinGIS project led by the Alba Regia Technical Faculty, Óbuda University, Hungary and the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIAME).

GISCA 2020 is supported by Trimble International, GeoTwo and the Austrian Academy of Sciences. The conference originally was planned to be held in Tashkent, Uzbekistan, but due to current circumstances has been scheduled entirely online as a virtual conference on June 1-2, 2020.

The GISCA conference series and its publications are managed by ACA\*GIScience supported by Eurasia-Pacific Uninet and the Austrian Academy of Sciences' Commission for GIScience.

#### Key topics of the GISCA 2020

- Key themes (additional themes and sessions are welcome) of the conference are:
- GIS for regional Sustainable development

- Development of Spatial Data Infrastructure
- GIS for management in the field of environmental protection
- GIS for the prevention and elimination of emergency situations
- GIS for water resources management
- GIS in agriculture
- New trends and technologies in geodesy, cadastre and land management
- Professional and further education in the field of geoinformatics
- GIS in Hydrotechnical Construction and Melioration
- GIS in Mechanization and Automatization of Agriculture and Water Resources.

#### Participants

Participants: Erasmus+ DSinGIS and NiCoPA Project Partners (staff and students), BSc, MSc and PhD students in GIS related specialties, GIS related organisations and companies.

#### Organizers

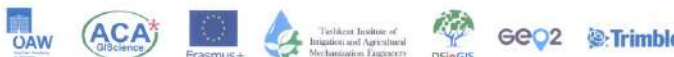
- Austria-Central Asia Centre for GIScience (ACA\*GIScience);
- Erasmus+ DSinGIS project;
- Universität Salzburg, Austria;
- Alba Regia Technical Faculty, Óbuda University, Hungary;
- Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIAME).

#### Contacts

Contact to TIAME – Local organizers (Uzbekistan)  
Conference secretary: **Mr. Ilhom Abdurahmanov**, [gisca2020@aca-gis-science.org](mailto:gisca2020@aca-gis-science.org)  
Tel.: +998712371909, Fax: +998712373879  
Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIAME)  
Kory Niyoziy Str. 39, Tashkent 100000, UZBEKISTAN

Contact to ACA-GIScience (Kyrgyzstan):  
**Dr. Akylbek Chymyrov**, [akylbek.chymyrov@aca-gis-science.org](mailto:akylbek.chymyrov@aca-gis-science.org)  
Tel.: +996-312-545602, Fax: +996-312-545136  
Kyrgyz State University of Construction, Transport and Architecture (KSUCTA)  
Maldybaev Str. 34 "b", Bishkek 720020, Kyrgyzstan

Contact to GISCA coordinator (Austria):  
**Academician Prof. Josef Strobl**, [Josef.Strobl@sbg.ac.at](mailto:Josef.Strobl@sbg.ac.at)  
Department of Geoinformatics, University of Salzburg &  
GIScience Commission of the Austrian Academy of Sciences



## CERTIFICATE

of attendance

given to

**Ilkhomjon ABDULLAEV**

confirming participation in the 'GIS in Central Asia' Conference –  
GISCA 2020 "Applied Geoinformatics for Sustainable Development".

1-2 June 2020, International Online Conference



Prof. Dr. Josef Strobl  
Austrian Academy of Sciences  
GIScience Commission

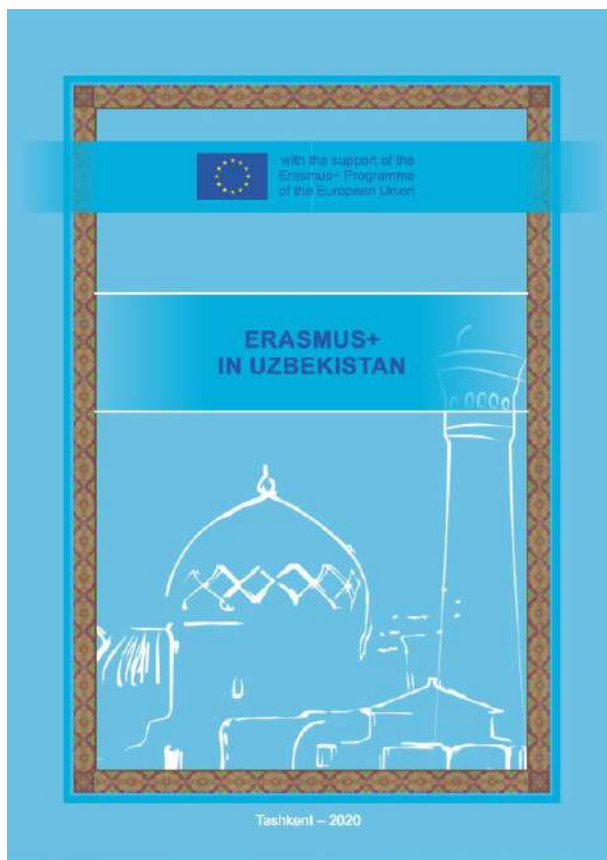
Prof. Dr. Uktam Umurzakov  
Rector, Tashkent Institute of Irrigation and  
Agricultural Mechanization Engineers (TIAME)

Dr. Földváry Lóránt  
Erasmus+ DSinGIS Project Coordinator  
Óbuda University



# NICOPA in the proceedings “Erasmus+ in Uzbekistan” (2020, 2021)

- Paper with the title “Project Management, Curriculum and Achievements of the NiCoPA project” in the proceedings “Erasmus+ in Uzbekistan”: [http://www.erasmusplus.uz/images/shared/file/ERASMUS+\\_IN\\_UZB\\_2020\\_print.pdf](http://www.erasmusplus.uz/images/shared/file/ERASMUS+_IN_UZB_2020_print.pdf) (page#119)



Then Anvar Nizamov, module leader in Team University, spoke on “Training and development as a part of Human resource management”, and Anvar Shirinov gave a lecture on “Recent changes in labor legislation in Uzbekistan”.

Topics were discussed by speakers and participants of the seminar.

The seminar was organized at a high level and was widely disseminated through social networks and the media (<https://buxdu.uz/index.php/en/activity-international-cooperations/active-projects/2757-talent-project>, <https://youtu.be/a7IW3bRwvVA>).

In conclusion, the project results will serve to satisfy public and civil organizations with qualified HR managers soon. In this regard, local organizations are trying to prepare their HR managers according to the program formulated by the TALENT project team.

## Project Management, Curriculum and Achievements of the NiCoPA project

*Arnold Sterenharz<sup>1</sup>, Elena Engorn<sup>1</sup>  
Abdumanap Nostrov<sup>2</sup>, Komil Tashev<sup>2</sup>, Temurbek Kuchkorov<sup>2</sup>, Ikhom  
Abdurahmanov<sup>4\*</sup>*

<sup>1</sup> Technische Universität Berlin (TUB), Berlin, Germany,

<sup>2</sup> Tashkent University of Information Technologies (TUIT), Tashkent,  
Uzbekistan,

<sup>3</sup> National University of Uzbekistan (NUU), Tashkent, Uzbekistan,

<sup>4</sup> Tashkent Institute of Irrigation and Agricultural Mechanization Engineers,  
Tashkent, Uzbekistan

\*Corresponding author: [ikhom.isakovich@gmail.com](mailto:ikhom.isakovich@gmail.com)

**Abstract:** The aim of the Erasmus+ project “NiCoPA: New and Innovative Course for Precision Agriculture” is to modernize curricula in precision agriculture using new technologies such as Geographic Information System (GIS), Big Data and Remote Sensing. Project is addressed to improve the quality of higher education and enhance its relevance for the labor market and society, the level of competences and skills in HEIs by developing new and innovative education programs, support the modernization and internationalization of the HE in precision agriculture in the targeted Universities in Kazakhstan, Uzbekistan and Turkmenistan through innovation of two cycles curricula. The information about the project management, curriculum and output activities done within the project NiCoPA are given in this paper.

Based on the obtained skills of NiCoPA project and experience of EU universities, the following new BSc and MSc programs have been established and they have started admission of students from the 2020/2021 academic year:

- Geoinformation systems and technologies, MSc Program, Tashkent university of information technologies named after Muhammad al-Khwarizmi;
- Innovative technologies in Remote Sensing of Land Resources, BSc Program, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers.

Prospective BSc and MSc students will study on modern curriculum which is developed in collaboration with highly experienced European partner universities (Technical University of Berlin, Agricultural University Plovdiv, Czech University of Life Sciences Prague). Specialization modules that are Geoinformation systems, Remote sensing technologies and applications, SENTINEL-1-2-3 imagery processing, Computer vision, Web technologies for geo-portal, geo-services and geo-analytical systems, Precision agriculture basics, Artificial intelligence in geoinformation systems, WebGIS, Digital Photogrammetry, 3D Modelling in GIS, Space Geodesy, Geospatial Data Visualization, Spatial Data Analysis, Decoding Spatial Images and other subjects are included in the curriculum.

According to the statistics of the Ministry of Higher and Secondary Specialized Education of the Republic of Uzbekistan: 19 applicants with a bachelor degree submitted their documents to continue the study in MSc program in Geoinformation systems and technologies, and 3 of them have been accepted to study in this program at TUIT; more than 300 applicants submitted their documents to study in BSc program in Innovative technologies in Remote Sensing of Land Resources, and 29 of them have been accepted to study in this program at TIAME. It is planned opening the new PAL (Precision Agriculture Lab) laboratory and VCR (Virtual Classroom) for BSc and MSc students to study modules and conduct their researches effectively using modern hardware and software tools.

To complete BSc program in Innovative technologies in Remote Sensing of Land Resources students should score 240 ECTS, and to get MSc degree in Geoinformation systems and technologies, they should score 120 ECTS at all. Credits are divided into the three modules that are general (21%), major (48%) and elective (31%) subjects in MSc program.

## References

1. Erasmus+ CBHE Project “DSinGIS: Doctoral Studies in Geoinformation Sciences” (<http://www.dsingis.eu/>), <http://www.dsingis.eu/>.
2. Erasmus+ CBHE Project “Environmental Protection In Central Asia (EPCA): Disaster Risk Management With Spatial Methods”, <http://www.eu-epca.eu/>.
3. Erasmus+ CBHE Project “NiCoPA: New and Innovative courses for Precision Agriculture”, <http://www.nicopa.eu/>.



# News about Advisory monitoring meeting by NEO

<https://telegra.ph/Erasmus-project-New-and-Innovative-Courses-for-Precision-Agriculture-NICOPA-2018-2021-10-09>

Erasmus+ project New and Innovative Courses for Precision Agriculture (NICOPA) (2018-2021)

October 09, 2020

The online field monitoring meeting with the project teams of Erasmus+ CBHE NICOPA took place on 9 October 2020. The regional project involving universities of Germany, Bulgaria, Czech Republic, Kazakhstan, Turkmenistan and Uzbekistan is aimed on modernization and internationalisation of BA/MSc studies in precision agriculture using new technologies including besides machines Geographic Information System (GIS), big data and remote sensing in targeted universities in Central Asian countries through innovative two cycles curricula in line with the Bologna and principles, market demand and best practice..

The project teams of National University of Uzbekistan, Tashkent University of Information Technologies, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers have already developed majority foreseen courses in precision agriculture together with EU partners. The project website <https://www.nicopa.eu/> provides detailed information about the project activities. .

The information about the project is also available in the [Erasmus+ Project Results Platform](#).

Zoom meeting interface showing five participants in a grid view. The participants are identified as 'Tashkent Institute of Irrigation and Agricultural Mechanization Engineers' and 'Erasmus+ CBHE'.

Implemented dissemination activities

The screenshot shows a website with various news items and images related to the project's dissemination activities.



# Advisory Monitoring with NEO UZ, October 9, 2020



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



ERASMUS+ Capacity Building in the Field of Higher Education (CBHE)

## NICOPA PROJECT

«New and Innovative Courses for Precision Agriculture" (NICOPA)  
597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-JP

Advisory monitoring meeting (Online)

9 October 2020 at 14.30 (Tashkent time)

Online communication details: <https://us02web.zoom.us/j/81960206603>

### MEETING AGENDA

14:30-14:40	Opening speech	Raima Shirinova, Vice-rector for International Relations of NUU
14:40-14:50	Objectives of the Advisory Monitoring visit	Aziza Abdurakhmanova, NEO coordinator Kudratkhon Bakhadirov, NEO expert
14:50-15:20	Activities performed of NICOPA project in TIAME	Ilhom Abdurahmanov, Institutional coordinator of NICOPA project
15:20-15:50	Activities performed of NICOPA project in TUIT	Temurbek Kuchkorov, Institutional coordinator of NICOPA project
15:50-16:20	Activities performed of NICOPA project in NUU and, in general, in Uzbekistan	Abdumanap Nasirov, National coordinator of NICOPA project
16:20-16:35	On the progress of work on the NICOPA project in partner universities of Uzbekistan	Anastasiya Tatarintseva - Project Manager, EXOLAUNCH GmbH, Berlin, Germany, Sara Kitaibekova - Project coordinator, S. Seifullin KATU, Kazakhstan
16:35-17:00	Discussion	All participants
17:00-17:10	Conclusions and preliminary recommendations of the monitoring	Aziza Abdurakhmanova, NEO coordinator Kudratkhon Bakhadirov, NEO expert



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



ERASMUS+ Capacity Building in the Field of Higher Education (CBHE)

## NICOPA PROJECT

«New and Innovative Courses for Precision Agriculture" (NICOPA)  
597985-EPP-1-2018-1-KZ-EPPKA2-CBHE-JP

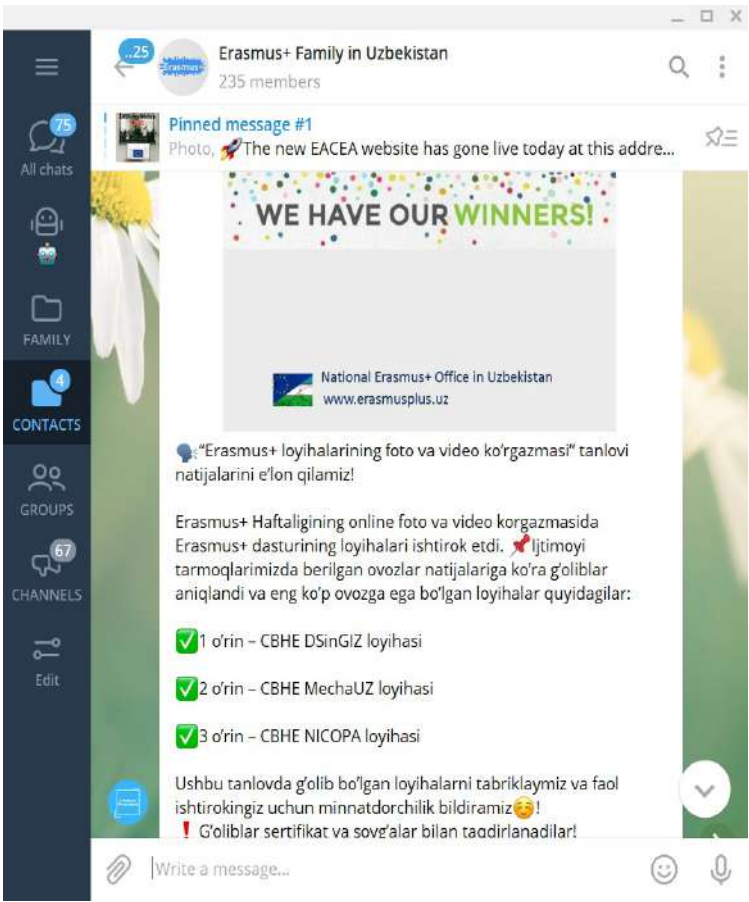
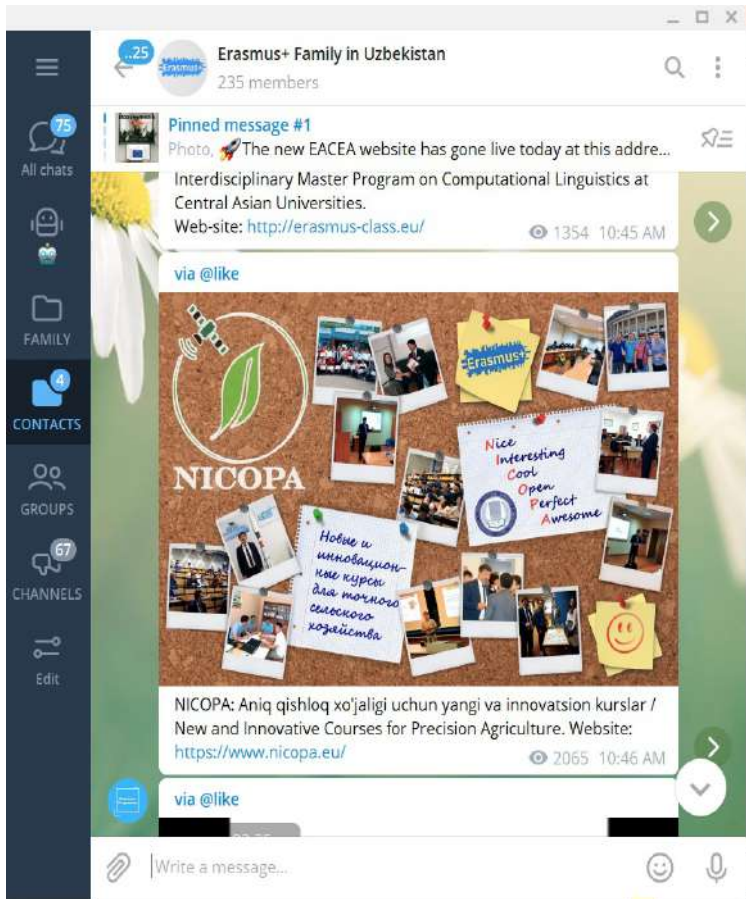
Advisory monitoring meeting (Online)  
9 October 2020 at 14.30 (Tashkent time)

### List of participants

Organisation	Name, surname, position, email of authorized representatives
National University of Uzbekistan	Raima Shirinova, Vice-rector for International Relations of NUU <a href="mailto:r.shirinova@nuu.uz">r.shirinova@nuu.uz</a> Abdumanap Nasirov, Associate professor, National coordinator, <a href="mailto:anasirov1962@mail.ru">anasirov1962@mail.ru</a> Ilhomjon Abdullaev, Senior Lecturer, Local Manager, <a href="mailto:ilhohjonabdullaev@gmail.com">ilhohjonabdullaev@gmail.com</a> Pavel Parchinskiy, Associate professor, project member, <a href="mailto:pavelphys@mail.ru">pavelphys@mail.ru</a> Azizjon Ruziev, Senior Lecturer, project member, <a href="mailto:azizjon_ruziev54@gmail.com">azizjon_ruziev54@gmail.com</a> Andrey Nebesny, Blogger of the project, <a href="mailto:nebesny-andrey@yandex.ru">nebesny-andrey@yandex.ru</a>
Tashkent University of Information Technologies	Temurbek Kuchkorov, Associate professor, Local coordinator <a href="mailto:tumanet3u@gmail.com">tumanet3u@gmail.com</a> Zamira Allamaratova, Lecturer, project member, <a href="mailto:zamira74@mail.ru">zamira74@mail.ru</a> Mexriddin Raximov, Associate professor, project member, <a href="mailto:raximov072@gmail.com">raximov072@gmail.com</a> Nozima Atadjanova, Teacher assistant, project member, <a href="mailto:nozimaatadjanova@gmail.com">nozimaatadjanova@gmail.com</a>
Tashkent Institute of Irrigation and Agricultural Mechanization Engineers	Ilhom Abdurahmanov, Researcher, Local Coordinator, <a href="mailto:ilhoh.isakovich@gmail.com">ilhoh.isakovich@gmail.com</a> Mamanbek Reimov, Researcher, Local Manager, <a href="mailto:maman1990@mail.ru">maman1990@mail.ru</a> Zohid Mamatkulov, Researcher, project member, <a href="mailto:zohid3095@gmail.com">zohid3095@gmail.com</a> Ilhomjon Aslanov, Assistant Professor, project member, <a href="mailto:ilhomaslanov@gmail.com">ilhomaslanov@gmail.com</a>
EXOLAUNCH GmbH	Anastasiya Tatarintseva, Project Manager <a href="mailto:anastasia@exolaunch.com">anastasia@exolaunch.com</a>
S. Seifullin KATU, Kazakhstan	Sara Kitaibekova, Project coordinator, <a href="mailto:saraorazbek@mail.ru">saraorazbek@mail.ru</a>
National Erasmus+ Office (NEO) in Uzbekistan	Aziza Abdurakhmanova, NEO coordinator, <a href="mailto:coordinator@erasmusplus.uz">coordinator@erasmusplus.uz</a> Kudratkhon Bakhadirov, NEO expert, <a href="mailto:expert@erasmusplus.uz">expert@erasmusplus.uz</a> Gulshoda Karibaeva, NEO project manager, <a href="mailto:neo@erasmusplus.uz">neo@erasmusplus.uz</a>



# Erasmus+ Info Week, October 12-17, 2020





# Regional Cluster Meeting Capacity Building in Higher Education Project impact in Central Asia

19-20 November 2020



## Regional Cluster Meeting

- Capacity Building in Higher Education
  - Project impact in Central Asia

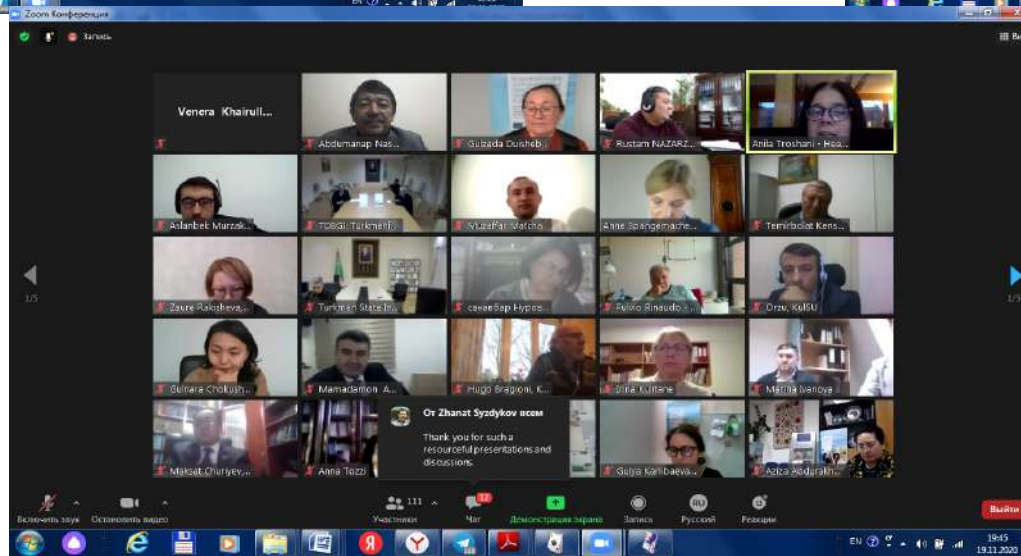
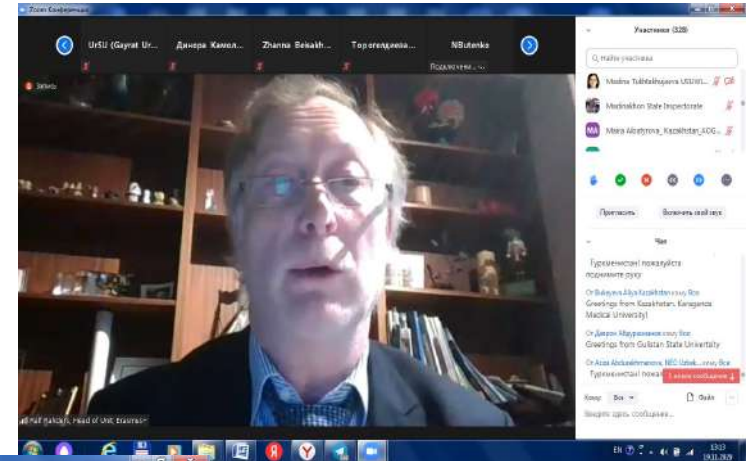
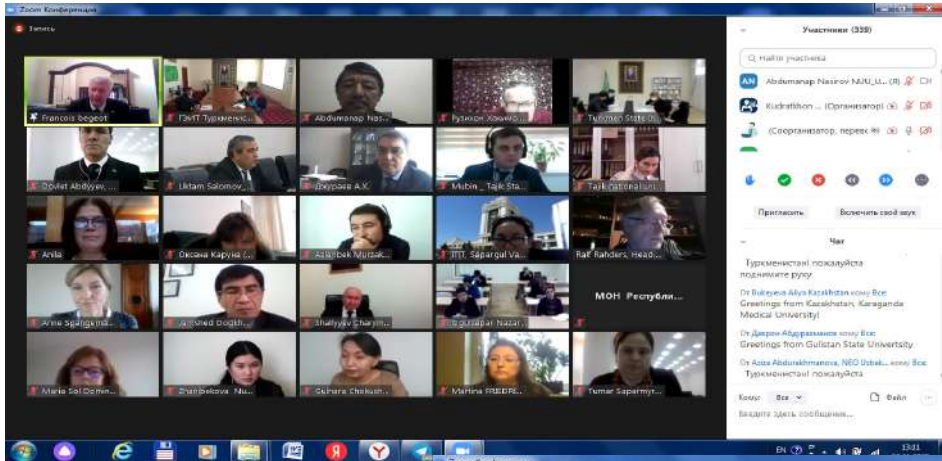
On-line event coordinated by NEO Uzbekistan

Day 1 - 19 November 2020

08:15 CET	On-line connection of participants
08:35-09:05	<p>Chairman (<a href="#">Anila Troshani</a> - Head of Sector Erasmus+: Higher Education – International Capacity Building (CBHE), Education <a href="#">Audiovisual</a> and Culture Executive Agency)</p> <p><b>Welcome by the Ministers of Education and Science</b></p> <ul style="list-style-type: none"> <li>• Uzbekistan</li> <li>• Kazakhstan</li> <li>• Kyrgyzstan</li> <li>• Tajikistan</li> <li>• Turkmenistan</li> <li>• Delegation of the European Union in Tashkent, Uzbekistan (10 minutes)</li> </ul>
09:05-09:15	Impact of Capacity Building in the field of Higher Education in Central Asia – presentation PP



# Regional Cluster Meeting Capacity Building in Higher Education Project impact in Central Asia





# Seminar

## Seminar

8 April 2021

National University of Uzbekistan

### Objectives:

1. Small Satellite system
  2. Tracking of Uzbekistan Airways aircrafts
  3. Remote Sensing mission for detection traffic jams on road and land use change in Tashkent
- <https://www.youtube.com/watch?v=3z07YC0poUI>







# Central Asia: Geographic Information Systems - GISCA 2021

Conference

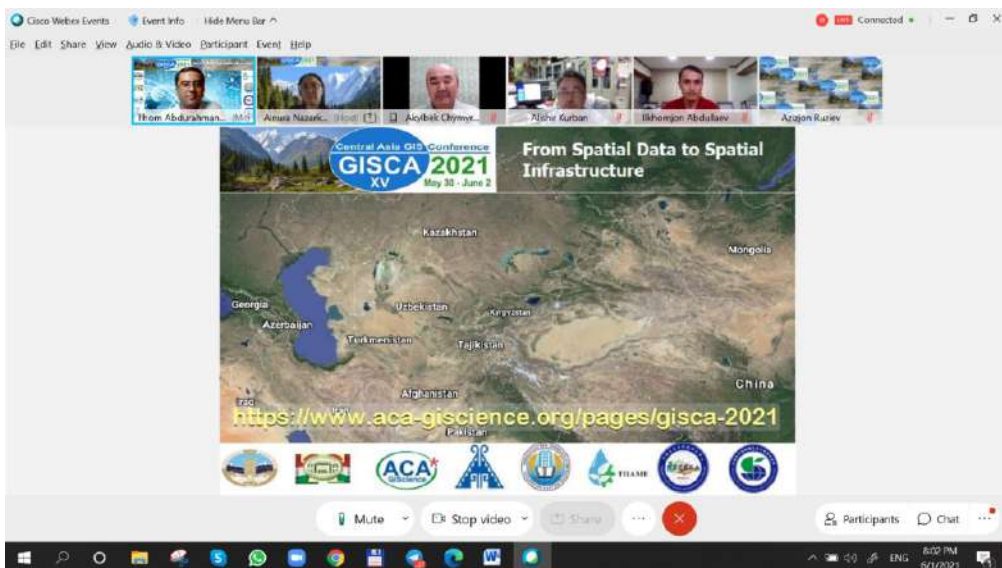
30 May - 2 June 2021

Offline/Online

XV conference “Central Asia: Geographic Information Systems - GISCA 2021” was held in a hybrid format with the regional distribution of Almaty, Bishkek, Dushanbe, Tashkent and Urumqi, May 30 - June 2, 2021.

<https://nuu.uz/rus/press/news/events/ev-international/1754>

<https://www.youtube.com/watch?v=R4eua26dr1o>





## Photo and video exhibition of Erasmus+ CBHE projects

19 October 2021

Online

Organizers: National Erasmus+ Office (NEO), National University of Uzbekistan,  
Erasmus+ CBHE projects team

All materials will be posted on the Facebook, Instagram and Telegram pages.





# Testimonials of Uzbekistan Erasmus+ CBHE project participants

11 May 2022

National University of Uzbekistan

Organisers: National Erasmus+ Office (NEO), National University of Uzbekistan,

Erasmus+ CBHE projects team

Participants: academic and administrative staff, doctorates and students and Representatives of higher educational institutions (HEIs) from Tashkent

ERASMUS+ WEEK 2022		
DATE	EVENT	VENUE/TIME
10 May (TUE)	Press-conference "Europe Days in Uzbekistan"	10.00
	Talk on Erasmus+ opportunities for students	Live stream on Instagram, 14.00
	Session: Skills gained through Erasmus+ mobility	Karshi Engineering-Economic Institute, 14.30
11 May (WED)	Information Session "Erasmus+ opportunities for institutional cooperation"	Management Development Institute of Singapore, 10.00
	Testimonials of Uzbekistan Erasmus+ CBHE project participants	National University of Uzbekistan, 14.30
	Information Session "Erasmus+ opportunities for institutional cooperation"	Tashkent State Pedagogical University, 15.00
12 May (THU)	Session "Best practices of Erasmus+ projects in Jizzakh"	Jizzakh State Pedagogical Institute, 15.30
	Testimonials from Erasmus+ beneficiaries	Karakalpak Institute of Agriculture and Agrotechnology, 15.00
	Information Session "Erasmus+ opportunities for institutional cooperation"	Tashkent Financial Institute, 14.30
13 May (FRI)	Session "Best practices of Erasmus+ projects in Andijan"	Andijan Institute of Agriculture and Agrotechnology, 10.00
	Storytelling: How Erasmus+ programme helped me to find my Career	Place to be confirmed, 16.30
	Erasmus Mundus: scholarships for master's studies	Live stream on Instagram, 15.00



ERASMUS+ WEEK IN UZBEKISTAN

"Testimonials of Uzbekistan Erasmus+ CBHE project participants"

Date and time: Wednesday, 11 May 2022, 14:30

Venue: National University of Uzbekistan, main building, 1<sup>st</sup> floor, Library

Organisers: National Erasmus+ Office (NEO), National University of Uzbekistan, Erasmus+ CBHE projects team

Participants: academic and administrative staff, doctorates and students and Representatives of higher educational institutions (HEIs) from Tashkent

14:20-14:30	Registration
14:30-14:40	Opening by NUUz administration
14:40-15:00	Erasmus+ opportunities for Uzbekistan higher educational institutions: Capacity Building in Higher Education, opportunities for new comers, international credit mobility, Jean Monnet Gulshoda Karibayeva, NEO project manager Q&A
15:00-15:10	Implementation of CBHE "DECIDE: Developing services for Individuals with Disabilities" project in Uzbekistan Sherzod Gulomov, Tashkent University of Information Technologies Q&A
15:10-15:20	Impact of CBHE "ITEM: Innovative Teaching Education in Mathematics" project Javlon Karimov, National University of Uzbekistan Q&A
15:20-15:35	Implementation of CBHE "NICOPA: New and Innovative Courses for Precision Agriculture" and "SPACECOM: New study program in space systems and communications engineering" projects Abdumanoq Nasirov, National University of Uzbekistan Q&A
15:35-15:45	Results of CBHE "UNICAC: University Cooperation Framework for Knowledge Transfer in Central Asia and China" project Nilyufar Sadullayeva, National University of Uzbekistan Q&A
15:45-16:00	Q&A Discussion



# Opening VCR and PASO office

16 June 2021

National University of Uzbekistan

At the NUU the official opening of a PAL -VCR took place, prospects for cooperation between higher educational institutions were discussed.





# Training in VCR

## Training on “Introduction to GIS and Spatial Analysis

12-25 July 2022

## National University of Uzbekistan

The classes covered geoinformatics and Spatial Analysis methods in detail using interactive e-learning methods.

At the end of the training, the students presented the projects which they had prepared based on acquired knowledge, and were awarded with certificates..





# Summer school

Through research toward practical application of precision agriculture  
25-29 July 2022

Czech University of Life Sciences Prague

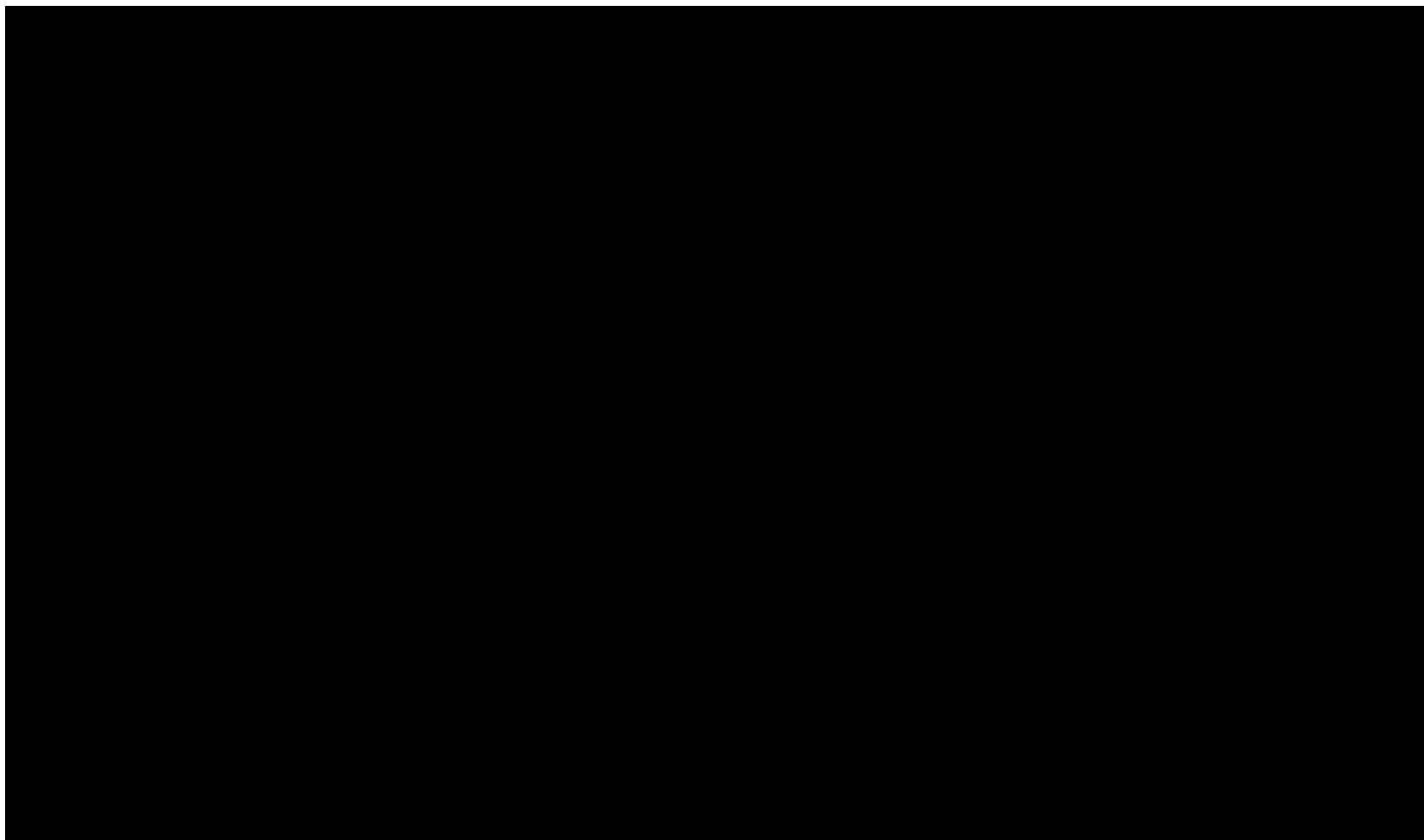
Introductory lectures:

- 1) New trends in Agricultural Machinery
- 2) Monitoring of crop production using satellite sensing
- 3) Soil infiltration properties





# Dissemination





# Dissemination (internet links)

www.facebook.com (5) Nicopa NUU | Facebook

Мирзо Улуг'бек Номидаги Ўзбекистон Миллий Университети

**Nicopa NUU**  
@Nicopa.NUU · Не компания

Сообщение

Главная Отзывы Фото Информация Ещё

NICOPA

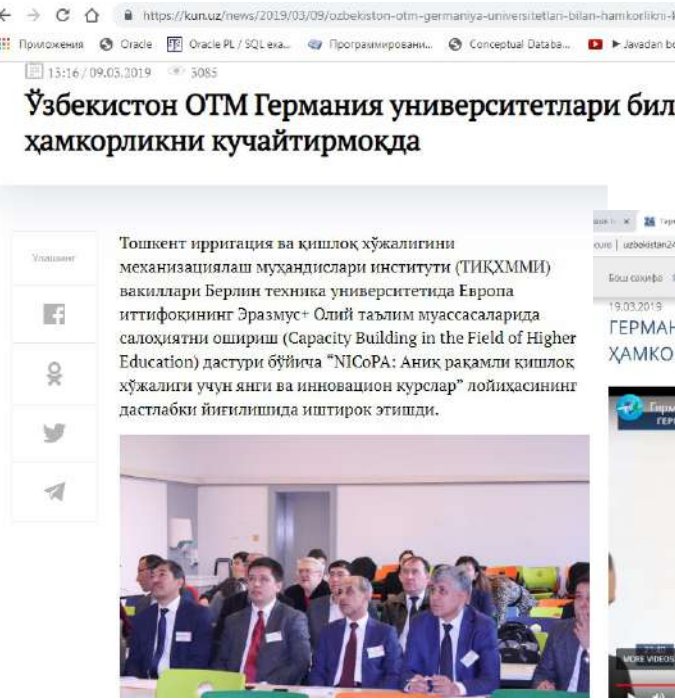
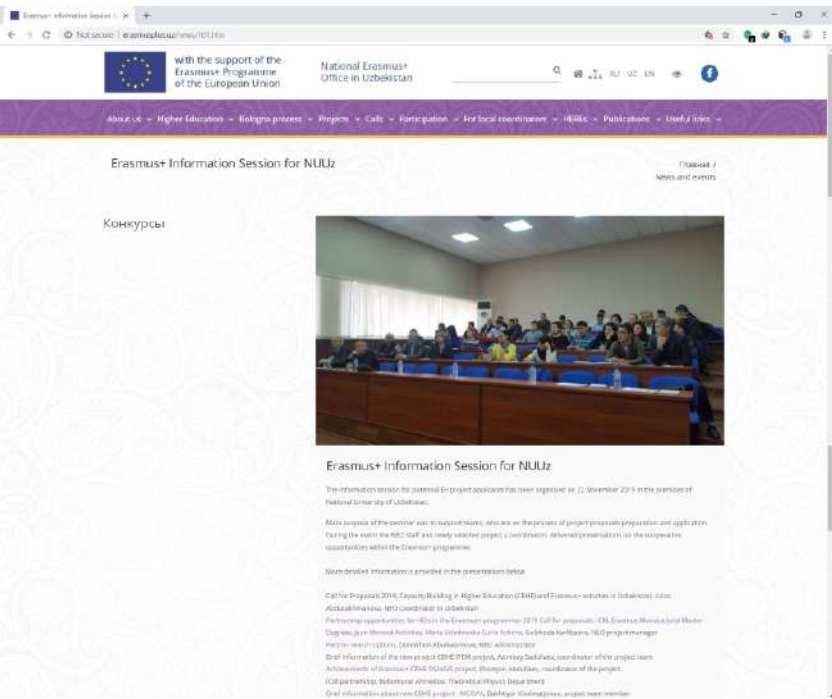
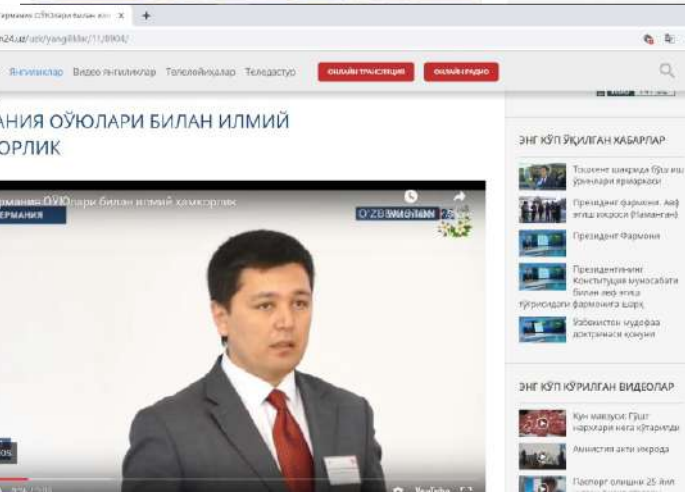
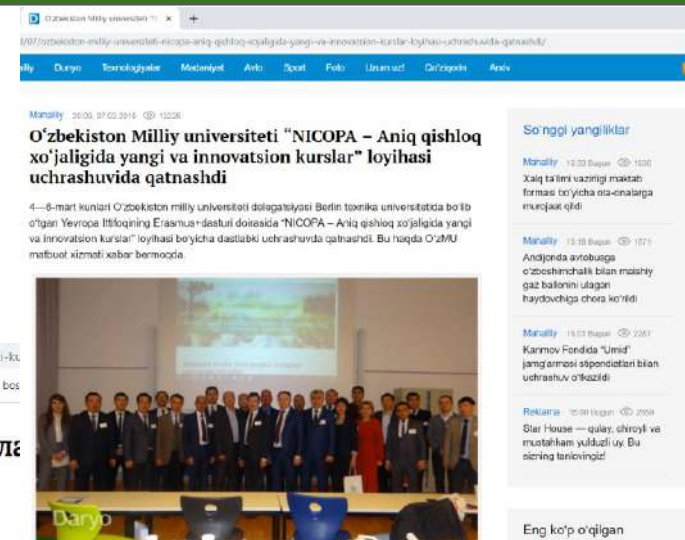
**Tender UZ**





# Dissemination (internet links)

1. <http://www.erasmusplus.uz/news/161.htm>
2. <http://www.erasmusplus.uz/Information-about-the-projects/Erasmus-plus/4-call/index.htm>
3. <http://nuu.uz/eng/info/nicopa/>
4. <http://uzbekistan24.uz/uzk/yangiliklar/11/8904/>
5. <https://kun.uz/news/2019/03/09/ozbekiston-otm-germaniya-universitetlari-bilan-hamkorlikni-kuchaytirmoqda>
6. <https://daryo.uz/2019/03/07/ozbekiston-milliy-universiteti-nicopa-aniq-qishloq-xojaligida-yangi-va-innovatsion-kurslar-loyihasi-uchrashuvida-qatnashdi/>
7. <http://uza.uz/uz/society/berlinda-zmu-mutakhassislari-ishtirokida-isti-bolli-loyi-a-a-06-03-2019>





Thank you for you attention!



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

**Dr. ABDUMANAP NASIROV**  
**National coordinator of the NICOPA**

**[aanasirov1962@mail.ru](mailto:aanasirov1962@mail.ru)**