

Final Report  
of project  
implementation



# New and Innovative Courses for Precision Agriculture



# S. SEIFULLIN KAZAKH AGROTECHNICAL UNIVERSITY

MSc. SARA KITAIBEKOVA

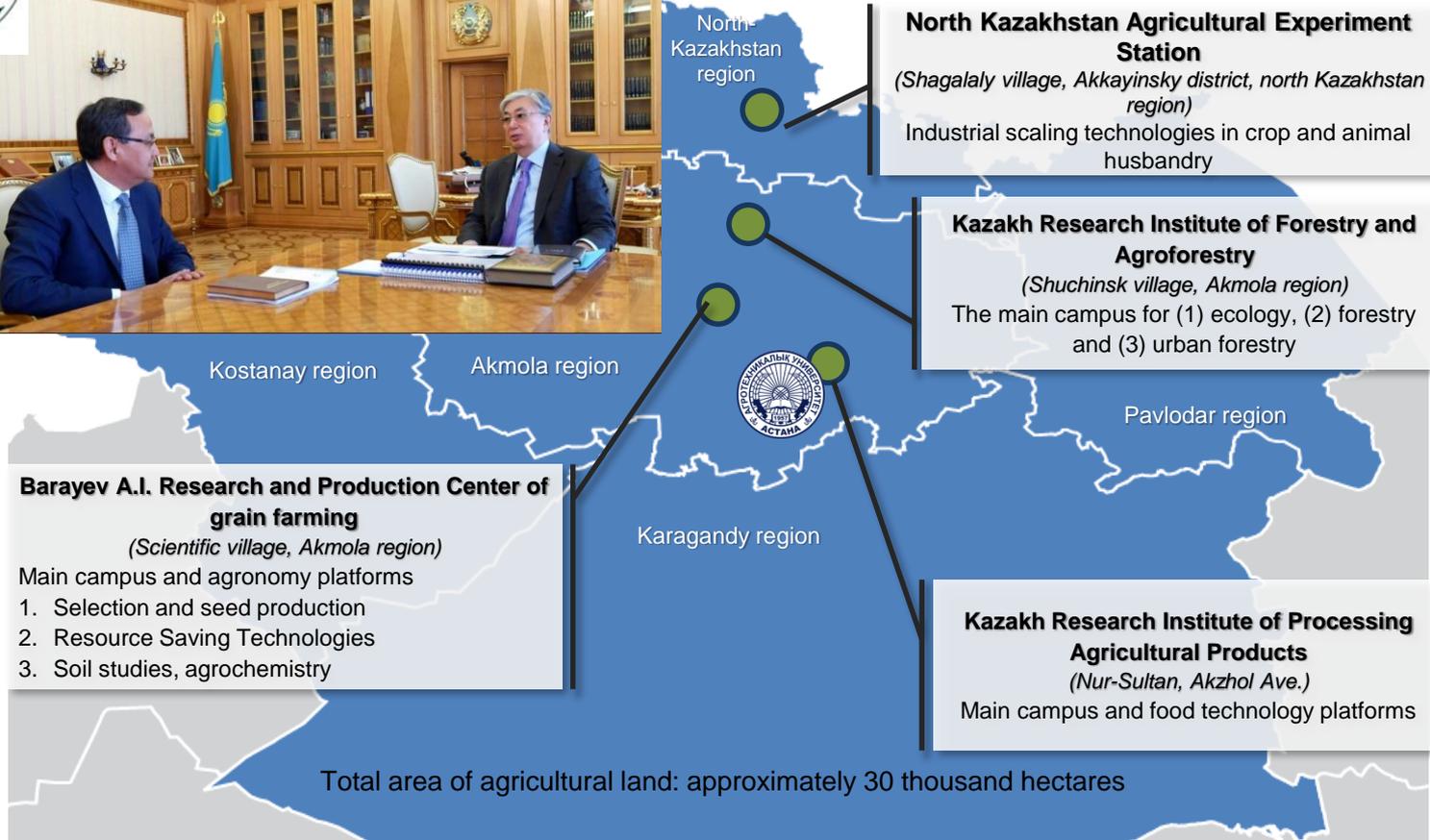
Joint Project: Capacity Building in the Field  
of Higher Education ERASMUS+ 2018

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





# STRUCTURE OF THE RESEARCH UNIVERSITY: S. SEIFULLIN KATU



Total area of agricultural land: approximately 30 thousand hectares



## TEACHING MATERIALS:SCIENCE+EDUCATION

1. During the preparation and implementation of NICOPA project “Precision Agriculture” has transferred to the new level - Smart agriculture.
2. Thanks to the NCOPA project, our research has moved from the level of Precision Agriculture in particular, to the level of Sustainable Land Use Development in general.
3. **We are very grateful to our EU colleagues for the knowledge, instruments, equipment and methodology received during the implementation of the NICOPA project.**





# Work Plan of the University



Co-funded by the  
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МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА РЕСПУБЛИКИ КАЗАХСТАН  
КАЗАХСКИЙ АГРОТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ ИМ. С.СЕЙФУЛЛИНА

ЭРАМУС+  
ПОВЫШЕНИЕ ПОТЕНЦИАЛА В ВЫСШЕМ ОБРАЗОВАНИИ

СОГЛАСОВАН:  
Со-координатор и  
академический менеджер проекта  
О.Әліпбеки  
2018 г.



УТВЕРЖДАЮ:  
Координатор проекта  
И.Токбергенов  
2018 г.

**ВНУТРЕННИЙ ПЛАН**  
реализации мероприятий проекта:  
«Новые и инновационные курсы по точному сельскому хозяйству»  
«New Innovation courses of Precision Agriculture» - NICOPA

Астана 2018

## Проектные мероприятия и распределение обязанностей между исполнителями

№	Мероприятия	Исполнители	Начало	Завершение
<b>1. Подготовка</b>				
1.1	Назначение ответственных лиц за реализацию проекта и создание рабочей группы проекта	Куришбаев А.К.	15.11.2018	30.05.2019
1.2	Обзор и анализ текущих учебных программ для бакалавриата / магистра в целевой области в вузе. Разработка перечня текущих уч.модулей/программ, подлежащих модернизации и плана выполнения работ по модернизации	Әліпбеки О.Ә.	15.11.2018	30.05.2019
1.3	Разработка соглашения об учебной стратегии и руководящих принципах для разработки учебных планов бакалавриата / магистратуры, включая использование новых образовательных технологий	Токбергенов И.Т. Китайбекова С.О.	15.11.2018	31.03.2019
1.4	Разработать анкеты для анализа существующих учебных планов / дисциплин: для преподавателей, студентов и работодателей	Әліпбеки О.Ә., Солтан Г.Ж., Китайбекова С.О.	15.11.2018	30.04.2019
1.5	Разработка графика проведения опросов	Әліпбеки О.Ә., Солтан Г.Ж., Китайбекова С.О.	15.11.2018	30.04.2019
1.6	Провести опрос различных целевых групп	Солтан Г.Ж., Китайбекова С.О.	15.11.2018	30.04.2019
1.7	Анализ ответ на анкеты	Әліпбеки О.Ә., Солтан Г.Ж.	15.11.2018	30.04.2019
1.8	Составление аналитического отчета о результатах анализа существующих учебных планов/дисциплин	Әліпбеки О.Ә., Солтан Г.Ж.	15.11.2018	30.05.2019
1.9	Подготовка слайдбуса по каждой модули исходя из внутреннего потенциала университета	Әліпбеки О.Ә., преподаватели	30.04.2019	31.08.2019
1.10	Определить состав преподавателей, которые обязаны вести не менее 20% занятий на английском языке	Куришбаев А.К., Токбергенов И.Т., Әліпбеки О.Ә.	30.04.2019	31.08.2019
<b>2. Разработка</b>				
2.1	Подготовить набор новых основных учебных программ и переводных модулей, включая инновационные средства обучения; разработать учебные планы;	Әліпбеки О.Ә., Солтан Г.Ж., преподаватели	01.12.2018	30.03.2020





# Work plan



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МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА РЕСПУБЛИКИ КАЗАХСТАН  
КАЗАХСКИЙ АГРОТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ ИМ С.СЕЙФУЛЛИНА  
ЭРАЗМУС +  
ПОВЫШЕНИЕ ПОТЕНЦИАЛА В ВЫСШЕМ ОБРАЗОВАНИИ



Утверждаю  
Координатор проекта  
Токбергенов И.Т.  
« 05 » 07 2020 г.

**ВНУТРЕННИЙ ПЛАН ПО ПОДГОТОВКЕ  
УЧЕБНО-МЕТОДИЧЕСКИХ КОМПЛЕКСОВ ДИСЦИПЛИН  
РАЗРАБОТАННЫХ В РАМКАХ ПРОЕКТА**

«Новые и инновационные курсы для точного сельского хозяйства»  
«New Innovation courses of Precision Agriculture» - NICOPA

Нур-Султан, 2020 г.



# Work group

Co-coordinator and Academic manager of NICOPA project  
*[Signature]* Onggarbek ALIPBEKI  
 2018

Coordinator of NICOPA project  
*[Signature]* Ismail TOKBERGNOV  
 2018

Working group of S. Seifullin Kazakh Agrotechnical University

No	Name, Surname, e-mail	Position at the University	Responsible for WP
1	Ismail TOKBERGNOV e-mail: fitssp@mail.ru	Candidate of Physical and Chemical Sciences, Vice-rector – Head of the Center for Science and Innovation Activities	WP1 - 1,1; WP5 - 5.1; 5.2
2	Onggarbek ALIPBEKI e-mail: oalipbeki@mail.ru	Doctor of Biological Sciences, Professor of "Cadastr and Evaluation Department"	WP1 - 1,1; WP2 - 2.1-2,6; WP3 - 3,1; WP4 - 4.1-4,6; WP5 - 5.1,5.2
3	Akhyibek KURISHBAYEV e-mail: agun_rector@gmail.com	Doctor of Agricultural Sciences, Chairman of the Board	WP5 - 5,1;
4	Sara KITAIBEKOVA e-mail: saraorazbek@mail.ru	Head of International Cooperation Department	WP1 - 1,2; WP4 - 4.1, 4,2; WP5 - 5,1;
5	Sulushash KHAMZINA e-mail: sulu60@mail.ru	Head of Budget Planning Department	WP5 - 5,1;
6	Gulzhan SOLTAN e-mail: gsoltan@mail.ru	Candidate of Technical sciences, the Head of the Planning and Organization of Educational Process Department, Center of Academic Affairs, Senior lecturer of "Information System" Department of Computer Science and Professional Education Faculty,	WP1 - 1,1; WP2 - 2,3; WP3 - 3,1;
7	Saykhat NUKESHEV e-mail: snukeshev@mail.ru	Doctor of Technical Sciences, the Dean of Technical Faculty	WP1 - 1,1; WP2 - 2.1,2.4,2,6; WP4 - 4.3-4,6;
8	Farabi YERMEKOV e-mail: fyermekov@gmail.com	MSc, Dean of Land Management, Architecture and Design Faculty, the Head of the Center of GIS-technology	WP1- 1,1; WP2- 2.1, 2.4-2.6; WP4- 4.3-4.5;

9	Gulmira SATYBALDIEVA e-mail: gkalmashevna@mail.ru	Candidate of Biological Sciences, the Head of the "Ecology" Department of Agronomy Faculty	WP1- 1,1; WP2- 2.1-2,6;
10	Kairat YESKHOZHIN e-mail: 5180664.kz@mail.ru	Candidate of Technical Sciences, Associate Professor of Agrarian Engineering and Technology Department	WP1-1,1; WP2- 2,2; 2,4-2,6;
11	Aliya BAITELENOVA e-mail: baitelenova_alya@mail.ru	Candidate of Agricultural Sciences, Senior Lecturer of Agriculture and Plant Growing Department	WP1-1,1; WP2 - 2,5-2,6;
12	Sagatbek SUMBILE e-mail:	MSc, assistant of "Plant Protection and Quarantine" Department of Agronomy Faculty	WP1-1,1; WP2 - 2,5-2,6; WP4 - 4,1- 4,2;
13	Zhanna ALMANOVA e-mail: almanova44@mail.ru	PhD, "Soil Science and Agro Chemistry" Department of Agronomy Faculty	WP1-1,1; WP2 - 2,5-2,6;
14	Saltanat AMANTAY e-mail: saltu_zhan@mail.ru	PhD, assistant of "Technology and Processing of Livestock Production" Department of Veterinary Sciences & Animal Husbandry Faculty	WP1-1,1; WP2 - 2,5-2,6;
15	Dastan ELUYBAYEV e-mail: dastan777kz@mail.ru	MSc, Senior Lecturer of "Computing and Software" Department of Computer Science and Professional Education Faculty	WP1-1,1; WP2 - 2,2; 2,5-2,6; WP4 - 4,1- 4,3;
16	Zhadyra SAKENOVA e-mail: sekenova_01@mail.ru	MSc, Assistant of "Cadastr and Evaluation" Department of Land Management, Architecture and Design Faculty	WP1-1,1; WP2 - 2,5-2,6; WP4 - 4,1- 4,2;
17	Sholpan VALIEVA e-mail: sholpanvaliyeva@gmail.com	Assistant of "Geodesy and Cartography" Department, and Deputy of the Head of the Center of GIS-technology	WP1 - 1,1; WP2 - 2,5-2,6; WP4 - 4,1- 4,2;
18	Bakytkul AINAKANOVA e-mail: bakysia_1983@mail.ru	MSc, Senior lecturer of "Management" Department of Economy Faculty	WP1 - 1,1; WP2 - 2,5-2,6;
19	Denis PLUZHNIK e-mail: pluzhnik.d@bk.ru	the Deputy of the Chairman Agroholding "Akrolia Feniks"	WP2 - 2,5; WP4 - 4,3;
20	Yelaman KENZHEGALIEV e-mail: oalipbeki@mail.ru	First-year Master student (specialized in application of space technologies in Agriculture) of Land Management, Architecture and Design Faculty	WP4 - 4,2



# Work Group

Tokbergenov I. – Coordinator;  
Alipbeki O.- Co-coordinator and Academic manager;  
Kurishbayev A. – Manager;  
Kitaibekova S. – Contact person;  
Nukeshev S. – teacher/researcher;  
Yermekov F. - teacher/researcher;  
Khamzina S.- financial manager;  
Satybaldieva G - teacher/researcher;  
Soltan G.- teacher/researcher;  
Pluzhnik D - teacher/researcher;

Yeskhozhin K. - teacher/trainer;  
Baitelenova A. - teacher/trainer;  
Almanova Zh. - teacher/trainer;  
Sagatbek S. - teacher/trainer;  
Amantay S. - teacher/trainer;  
Sekenova Zh. - teacher/trainer;  
Valiyeva Sh. - teacher/trainer;  
Ainakanova B. - teacher/trainer;  
Elubayev D. – teacher/technical staff;



# 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:***

Precision farming basics (BSc)

Physics and soil chemistry (BSc)

Environmental aspects of precision agriculture (MSc)

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

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

Satellite Navigation Systems (MSc)

Innovative technologies for the production of livestock products (MSc)

Management and decision making in precision agriculture (MSc)



# 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 Satellite Navigation Systems (MSc)

Innovative technologies for the production of livestock products (MSc)

Management and decision making in precision agriculture(MSc)

Environmental aspects of precision agriculture (MSc)

have been accepted at the institutional level and allowed to publish.

- **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

<b>Course 1</b>	Precision farming basics (Bachelor's degree, 4th year, Educational program "Agronomy").	The total amount of the discipline is 4 ECTS. Part of the discipline was modernized in the amount of 1 ECTS	98	50 %, The topics were improved: Technical basis of precision farming, Systems of parallel and automatic driving, Precision farming strategy	Teachers leading this discipline post teaching materials for the course on the internal platform of the university. Students have access to this	The work program (syllabus) of the discipline was approved by the decision of the Faculty Council (Protocol No. 15 of 29.05.2020). Pilot training began in the 1st semester of the 2020-2021 academic year
<b>Course 2</b>	Physics and soil chemistry (Bachelor's degree, 3 course, Educational program "Agrochemistry and soil science")	The total amount of the discipline is 2 ECTS. Part of the discipline was modernized in the amount of 1 ECTS	106	25 %, Topics have been added to the current discipline (LAI leaf surface index, NDVI index. Biological cycle of mineral substances, and its importance in the formation of soil types and soil fertility when using precision	platform, each of them has their own personal username and password. Teachers leading this discipline post teaching materials for the course on the internal platform of the university. Students have access to this platform.	The work program (syllabus) of the discipline was approved by the decision of the Faculty Council (Protocol No. 15 of 29.05.2020). Pilot training began in the 2nd semester of the 2020-2021 academic year

$\Sigma$ (Total number of updated courses) = 2

$\Sigma$ (Total number of ECTS) = 6



# New Courses

<b>Course 1</b>	Satellite Navigation Systems (Master's degree, 2 courses, Educational program "Precision farming")	2	1	Teachers leading this discipline post teaching materials for the course on the internal platform of the university. Students have access to this platform, they have a personal login and password.	The work program (syllabus) of the discipline was approved by the decision of the Academic Council of the University (Protocol No. 15 of 29.05.2020). Pilot training will begin in the 2nd semester of the 2020-2021 academic year
<b>Course 2</b>	Innovative technologies for the production of livestock products	8	3	Teachers leading this discipline post teaching materials for the course on the	The work program (syllabus) of the discipline was approved by the decision of the Academic
	(Master's degree, 1 course, Educational program "Selection and reproduction of animals")			internal platform of the university. Master students have access to this platform, each of them has their own personal username and password.	Council of the University (Protocol No. 15 of 29.05.2020). Pilot training will begin in the 2nd semester of the 2020-2021 academic year
<b>Course 3</b>	Management and decision making in precision agriculture (Master's degree, 1 course, Educational program "Precision farming")	3	1	Teachers leading this discipline post teaching materials for the course on the internal platform of the university. Master students have access to this platform	The work program (syllabus) of the discipline was approved by the decision of the Academic Council of the University (Protocol No. 15 of 29.05.2020). Pilot training will begin in the 2nd semester of the 2020-2021 academic year
<b>Course 4</b>	Environmental aspects of precision agriculture (Master's degree, 1 course, Educational	4	3	Teachers leading this discipline post teaching materials for the course on the internal platform of the university.	The work program (syllabus) of the discipline was approved by the decision of the Academic Council of the University (Protocol No. 15 of

$\Sigma(\text{Total number of new courses}) = 4$

$\Sigma(\text{Total number of ECTS}) = 17$



# QUALITY- WP 3

**ERASMUS PLUS  
HIGHER EDUCATION CAPACITY BUILDING**



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of the European Union



**Erasmus+ Project  
New and Innovative Courses for Precision Agriculture  
(NICOPA)**

**WP3 – Quality Plan**

**Quality Assurance Plan/Strategy**

**ERASMUS PLUS  
HIGHER EDUCATION CAPACITY BUILDING**



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



**Erasmus+ Project  
New and Innovative Curricula in Precision Agriculture  
(NICOPA)**

**WP3 - Quality Control**

Recommendations for quality assessment of implementation  
of new and modernized curricula modules

# Activities completed between November 2019 and May 2020

## WP3 Quality control

1. The courses are accredited in accordance with the current university regulations.
2. Feedback and recommendations were received from universities of the Republic of Kazakhstan and employers: L.N. Gumilyov ENU, Astana IT University, M.Kozybayev NKSU, JSC "NC Kazakhstan Gharysh Sapary", LLP "Zharkyn SK" (SKO), NJSC "State Corporation" Government for Citizens "Nur-Sultan," Department of Survey, Monitoring of Lands and Lab. Research ", LLP" SHP Dulat ", Republican Chamber of Kazakhstan white-headed breed



# Activities completed between November 2019 and May 2020

## **WP3 Quality Control**

3. The study programs are approved in the following order: reviewed by the quality group of the EU Erasmus + NICOPA project; at a meeting of the department; at the Methodological Bureau of the Faculty; on August 26, 2020 it will be approved by the Scientific and Methodological Council of the University.

4. The accreditation process is carried out in accordance with ESG 2015 (Standards and Guidelines for Quality Assurance in the European Higher Education Area) 100%, because universities of Kazakhstan have been studying in the framework of the Bologna Process since March 2010.



# Activities completed between November 2019 and May 2020

## WP3 Quality Control

3. The study programs are approved in the following order: reviewed by the quality group of the EU Erasmus + NICOPA project; at a meeting of the department; at the Methodological Bureau of the Faculty; on August 26, 2020 it will be approved by the Scientific and Methodological Council of the University.

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# Activities completed between November 2019 and May 2020

## **The list of potential experts:**

1. JSC «National Company Garysh Sapary» (Kazakhstan Space Trip);
2. Federal Scientific Agroengineering Center All-Russian Institute of Mechanization (AUIM), Moscow, Russia;
3. LLP “Naidarovskoye”, Asakarovka district, Karaganda region
4. LLP “Agrofirm TNK;
5. “North-Kazakhstan experimental farm station”;
6. National team of experts on higher education reform in Kazakhstan;





# QUALITY ASSURANCE OF THE NEW COURSES

## QUALITY ASSURANCE-Courses

Course #	Course title	Peer reviewers (name, position, organization)
1	Satellite Navigation Systems (Master's degree, 2 courses, Educational program "Precision farming")	Mansurova M.E.- Chairman of the National Team of Higher Education Reform Experts in Kazakhstan, the Head of the Department of Artificial Intelligence and Big Data, Al-Farabi Kazakh National University
2	Innovative technologies for the production of livestock products (Master's degree, 1 course, Educational program "Selection and reproduction of animals")	- Bayazitova K.N.- the Head of Food Safety Department of Agrotechnological Faculty of M. Kozybayev North Kazakhstan University
3	Management and decision making in precision agriculture (Master's degree, 1 course, Educational program "Precision farming")	Pluzhnik D.P.- Deputy Chairman of Agroholding "Akmola-Feniks". - Zvyagin G.A.- the Head of the Department of Surveys, Land Monitoring and Laboratory Research of the branch of NJSC "State Corporation" Government for Citizens;
4	Environmental aspects of precision agriculture (Master's degree, 1 course, Educational program "Agroecology")	Eginbayeva A.E.- Associate Professor of the Department of Physical and Economic Geography, L.N. Guymilev Eurasia National University



# Implementation of the developed courses in the 2020-2021 academic year

## ACCREDITATION OF COURSES

### PROCEDURE FOR ACCREDITATION OF COURSES (DISCIPLINES)

1. Applying for accreditation
2. Formation of an expert commission
3. Providing EMCD (educational methodological complex of disciplines) for examination
4. Examination of EMCD (obtaining expert opinions from external experts, employers and the academic committee)

The courses are accredited in accordance with the current university regulations. Feedback and recommendations were received from universities of the Republic of Kazakhstan and employers: L.N. Gumilyov ENU, Astana IT University, M.Kozybayev NKSU, JSC "NC Kazakhstan Gharysh Sapary", LLP "Zharkyn SK" (SKO), NJSC "State Corporation" Government for Citizens "Nur-Sultan," Department of Survey, Monitoring of Lands and Lab. Research ", LLP" SHP Dulat ", Republican Chamber of Kazakhstan white-headed breed



# Implementation of the developed courses in the 2020-2021 academic year

## PROCEDURE OF APPROVING PROGRAMS

### PROCEDURE FOR ACCREDITATION OF COURSES (DISCIPLINES)

4. Expert's opinion
5. Decision on accreditation (if positive - certification of the discipline and inclusion in the register of accredited disciplines, if negative - return for revision of EMCD based on the results of the examination)

The study programs are approved in the following order: reviewed by the quality group of the EU Erasmus + NICOPA project; at a meeting of the department; at the Methodological Bureau of the Faculty; on August 26, 2020 it will be approved by the Scientific and Methodological Council of the University.

4. The accreditation process is carried out in accordance with ESG 2015 (Standards and Guidelines for Quality Assurance in the European Higher Education Area) 100%, because universities of Kazakhstan have been studying in the framework of the Bologna Process since March 2010.

# Implementation of the developed courses in the 2020-2021 academic year

## EP “Precision farming”, Master’s degree 41 /120 credits

Core Curricula / Proposed module within NICOPA project	Number of credits in ECTS	Academic year, year of study, trimestr (term)	Name of the discipline
Remote Sensing and Application of Earth and Environment related PA/	5	1 year, 1 trimestr	GIS and remote sensing technology in agriculture
Web technologies (AgroSDI, Geo-portals, Geo-services, Geo-analytical systems) Yield sensors for Precision Agriculture Intensive course to leverage acceptance of the new technologies "in-field"	9 (5+4)	1 year, 1,2 trimestr	Technical support of technological processes in the precision farming system

# Implementation of the developed courses in the 2020-2021 academic year

## EP “Precision farming”, Master’s Degree 41/120 credits

Core Curricula / Proposed module within NICOPA project	Number of credits in ECTS	Academic year, year of study, trimestr (term)	Name of the discipline
Using of SENTINEL 1-2-3 imagery for agricultural field monitoring/	5	2 курс, 4 триместр	Digital technologies in crop production
Basic of Precision agriculture – characteristics, technologies, economic efficiency, optimal use of resources Application of Precision Agriculture for crops growing	5	2 year, 4 trimestr 2021-2022 academic year	Cropping systems and crop production

# Implementation of the developed courses in the 2020-2021 academic year

## EP “Precision farming”, Master’s Degree 41 /120 credits

Core Curricula / Proposed module within NICOPA project	Number of credits in ECTS	Academic year, year of study, trimestr (term)	Name of the discipline
Optimizing computer vision algorithms and real-time implementations	4	1 year, 2 trimestr	Digital technologies in crop production
Soil physical properties and its measurement	10	1 year, 1 trimestr	Soil physics and chemistry (5), Agrosoil Science(5)
Management and Decision Making in Precision Agriculture	3	1 year, 2 trimestr	Management and decision making in precision agriculture

# Implementation of the developed courses in the 2020-2021 academic year

## EP “Selection and reproduction of agricultural animals”, Master’s Degree 8 credits

Core Curricula / Proposed module within NICOPA project	Number of credits in ECTS	Academic year, year of study, trimestr (term)	Name of the discipline
Innovative technologies for the production of livestock products	8	1 year, 1,2 trimestr	

## EP “Feed and Feeding”, Master’s Degree 8 credits

Core Curricula / Proposed module within NICOPA project	Number of credits in ECTS	Academic year, year of study, trimestr (term)	Name of the discipline
Innovative technologies for the production of livestock products	8	1 year, 1,2 trimestr	

# Implementation of the developed courses in the 2020-2021 academic year

## EP “ Agrochemistry and Soil Science”, Bachelor Degree, 5 credits

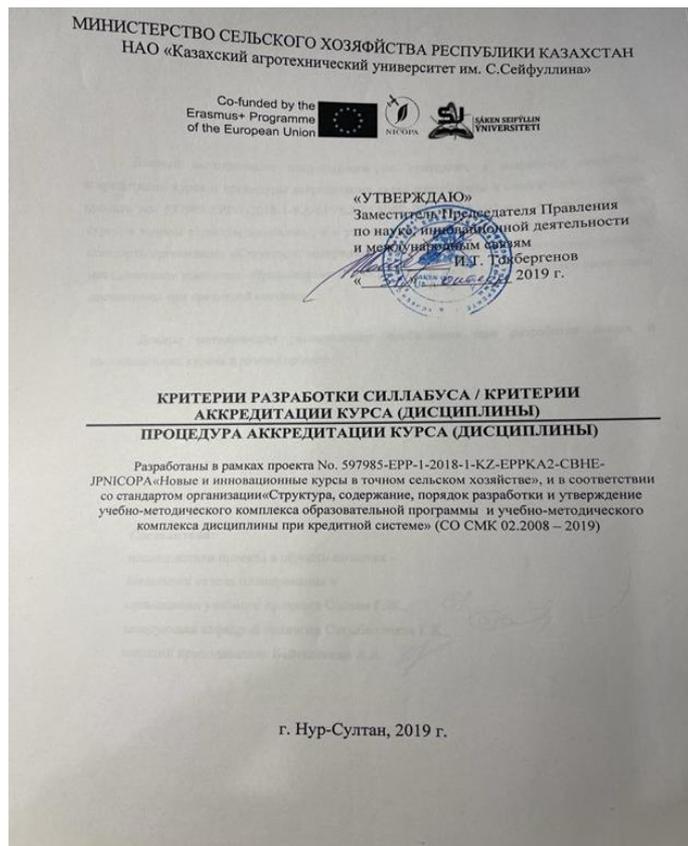
Core Curricula / Proposed module within NICOPA project	Number of credits in ECTS	Academic year, year of study, trimestr (term)	Name of the discipline
Soil physical properties and its measurement	6	3 year, 1 trimestr	

## EP “Agronomy”, Bachelor Degree, 5 credits

Core Curricula / Proposed module within NICOPA project	Number of credits in ECTS	Academic year, year of study, trimestr (term)	Name of the discipline
Feed Production	5	3 year, 1 trimestr	



# CRITERIA IN DEVELOPMENT OF CURRICULA





# 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 KATU to develop the professional activities of graduates that meet the requirements of employers.



# EXAMPLE OF QUESTIONNAIRE



Уровень – Бакалавриат

Уважаемый студент, просим Вас ответить на несколько вопросов:

Укажите Вашу специальность АИТ

1. Какое из приведенных ниже понятий Вам знакомо:

- точное земледелие
- точное сельское хозяйство
- геоинформационные системы
- дистанционное зондирование Земли
- радионавигационные системы

Если Вы не знакомы с приведенными понятиями перейдите к вопросу №4

2. Полезно ли внедрение точного сельского хозяйства в деятельность агроформирования?

ДА  НЕТ

3. Вы заинтересованы в изучении точного сельского хозяйства?

ДА  НЕТ

4. Вы слышали о реализации в КазАТУ им. С.Сейфуллина международного проекта по точному сельскому хозяйству?

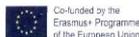
ДА  НЕТ

5. Этот проект образовательный или научно-исследовательский?

ДА  НЕТ

6. Знакома ли Вам аббревиатура международного образовательного проекта NICOPA? Нет

**БЛАГОДАРИМ ВАС ЗА УЧАСТИЕ В ОПРОСЕ!**



Уровень – Магистратура

Уважаемый магистрант, просим Вас ответить на несколько вопросов:

Укажите Вашу специальность Геоинформатика

1. Знаете ли Вы отличия между уравнильным и точным земледелием?

ДА  НЕТ

2. Знаете ли Вы сутью точного земледелия?

ДА  НЕТ

3. Как Вы думаете, понятия «точное сельское хозяйство» и «точное земледелие» это одно и то же?

ДА  НЕТ

4. Отличаете ли Вы виды радионавигационных систем?

ДА  НЕТ

5. Отличаете ли Вы виды дистанционного зондирования Земли?

ДА  НЕТ

6. Можете ли Вы отличить геоинформационную систему от инфраструктуры пространственных данных?

ДА  НЕТ

7. Знакомы ли Вы с понятием инфраструктура пространственных данных?

ДА  НЕТ

8. Можете ли Вы отличить декларативные знания от цифровых?

ДА  НЕТ

9. Вам знакомо понятие пространственные данные?

ДА  НЕТ

10. Хотели бы Вы стать специалистом в области точного сельского хозяйства?

ДА  НЕТ

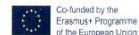
11. Вы слышали о реализации в КазАТУ им. С.Сейфуллина международного проекта по точному сельскому хозяйству?

ДА  НЕТ

12. Знакома ли Вам аббревиатура международного образовательного проекта NICOPA?

ДА  НЕТ

**БЛАГОДАРИМ ВАС ЗА УЧАСТИЕ В ОПРОСЕ!**



Уровень – Преподаватели

Уважаемый преподаватель, просим Вас ответить на несколько вопросов:

Укажите область Ваших научных исследований переводчик сельскохозяйственной информации

1. Как Вы думаете, внедрение цифровых технологий в сельское хозяйство повысит эффективность работы аграриев?

ДА  НЕТ

2. Как Вы думаете, внедрение точного сельского хозяйства имеет практическую ценность для аграриев?

ДА  НЕТ

3. Вы знакомы с основными элементами точного земледелия?

ДА  НЕТ

4. Вы знакомы с ключевыми технологиями точного земледелия?

ДА  НЕТ

5. Вы знакомы с ключевыми технологиями точного сельского хозяйства?

ДА  НЕТ

6. Вы готовы разработать модуль курса по элементам точного земледелия?

ДА  НЕТ

7. Вы готовы разработать и преподавать курс по системе точного земледелия?

ДА  НЕТ

8. Вы готовы разработать и преподавать курс по системе точного сельского хозяйства?

ДА  НЕТ

9. Вы слышали о реализации в КазАТУ им. С.Сейфуллина международного проекта по точному сельскому хозяйству?

ДА  НЕТ

10. Вы хотели бы принять участие в международном образовательном проекте по точному сельскому хозяйству?

ДА  НЕТ

11. Знакома ли Вам аббревиатура международного образовательного проекта NICOPA?

ДА  НЕТ

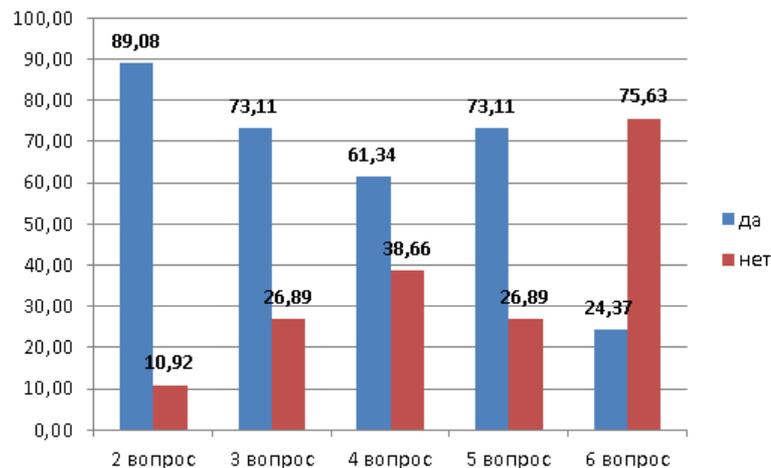
**БЛАГОДАРИМ ВАС ЗА УЧАСТИЕ В ОПРОСЕ!**



# ANALYSIS OF ANSWERS

Общее количество ответов: (119 человек)

	да	нет	да	нет
2 вопрос	106	13	89,08	10,92
3 вопрос	87	32	73,11	26,89
4 вопрос	73	46	61,34	38,66
5 вопрос	87	32	73,11	26,89
6 вопрос	29	90	24,37	75,63



1. Какое из приведенных ниже понятий Вам знакомо:

- точное земледелие
- точное сельское хозяйство
- геоинформационные системы
- дистанционное зондирование Земли
- радионавигационные системы

*Если Вы не знакомы с приведенными понятиями перейдите к вопросу №4*

2. Полезно ли внедрение точного сельского хозяйства в деятельность агроформирования?
3. Вы заинтересованы в изучении точного сельского хозяйства?
4. Вы слышали о реализации в КазАТУ им. С.Сейфуллина международного проекта по точному сельскому хозяйству?
5. Этот проект образовательный и научно-исследовательский?
6. Знакома ли Вам аббревиатура международного образовательного проекта

NICOPA?



# 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	Satellite Navigation Systems	Educational and methodological complex of the discipline	Educational and methodological complex of the discipline includes a description of each module, including published lectures and practical materials. There are also self-test questions and a list of references	September 2021
2	Innovative technologies for the production of livestock product	Educational and methodological complex of the discipline	Educational and methodological complex of the discipline includes a description of each module, including published lectures and practical materials. There are also self-test questions and a list of references	September 2021
3	Management and decision making in precision agriculture	Educational and methodological complex of the discipline	Educational and methodological complex of the discipline includes a description of each module, including published lectures and practical materials. There are also self-test questions and a list of references	September 2021
4	Environmental aspects of precision agriculture	Educational and methodological complex of the discipline	Educational and methodological complex of the discipline includes a description of each module, including published lectures and practical materials. There are also self-test questions and a list of references	September 2021
5	Precision farming basics	<b>Textbook, Educational and methodological complex of the discipline</b>	Educational and methodological complex of the discipline includes a description of each module, including published lectures and practical materials. There are also self-test questions and a list of references. The textbook includes all the basic concepts of precision farming, as well as the results of our own research, the experience of modern companies that are involved in the precision farming system	September 2021



# TEACHING MATERIALS: Agroecological foundations of organizing sustainable agricultural landscapes: monograph, 2023



МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА  
РЕСПУБЛИКИ КАЗАХСТАН  
КАЗАХСКИЙ АГРОТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ  
им. С. СЕЙФУЛЛИНА



«Утверждено»  
Министром сельского хозяйства  
и окружающей среды  
Д.Н. Сарсекова  
06.2021 г.

Сатыбалдиева Гульмира Калмашевна

Учебно-методический комплекс дисциплины «Агроэкология»

дисциплина: Агроэкология  
модульная образовательная программа: Природопользование  
Код и классификация области образования:  
6B05 – «Естественные науки, математика и статистика»  
Код и классификация направлений подготовки:  
6B052 – «Окружающая среда»

Нур-Султан 2021



# TEACHING MATERIALS

## Compiled textbook "Precision Agriculture" in two volumes.

It was published under the stamp of the Ministry of Education and Science of the Republic of Kazakhstan, which is the highest form of recognition of the value of labor in Kazakhstan

Цифровое  
Умное  
Точное  
Управительное  
Традиционное

Seifullina University NISORA Co-funded by the Erasmus+ Programme of the European Union

Элиббеки О.Э., Алиббекова Ч.А.

# ТОЧНОЕ СЕЛЬСКОЕ ХОЗЯЙСТВО

Том I

БАЗА ДАННЫХ

Нур-Султан 2022

Цифровое  
Умное  
Точное  
Управительное  
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Цифровое  
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# ТОЧНОЕ СЕЛЬСКОЕ ХОЗЯЙСТВО

Том II

БАЗА ДАННЫХ

Нур-Султан 2022



**ЭЛИБЕККИ Оңғарбек Әліпбекұлы (ALIPBEKI Onggarbek Alipbekuly)**, ученый агроном: почвовед-агрохимик, доктор биологических наук, профессор биологии, академик МАИН и КазНАЕН РК, член Международного союза радиоэкологов (International Union of Radioecology), Лучший преподаватель ВУЗа, стипендиат Международной программы «Болашақ», сокоординатор и академический менеджер образовательного проекта Европейского союза Erasmus+ - New and Innovative Courses for Precision Agriculture NISORA. Автор более 150 публикаций, включая две монографии, изобретатель, индекс Хирши 3. Благодаря инициативе профессора О.Э. Элиббеки КАЗАТУ им. С.Сейфуллина впервые стал грантодержателем образовательного проекта Европейского союза Erasmus+ - NISORA, а автор руководителем «Научно-исследовательского и образовательного центра точного сельского хозяйства», цель которого продвижение достижений точного сельского хозяйства (ТСХ) в агропромышленный комплекс на научной основе. Также он является пионером Республики Казахстан в области разработки и внедрения системы ТСХ в деятельность аграрных предприятий, на основе интегрированного использования преимуществ традиционных и геоинформационных технологий. При этом, профессор О.Э. Элиббеки ТСХ рассматривает как один из бизнес приложений Национальной инфраструктуры пространственных данных, над которым он работает совместно со своими коллегами из дальнего зарубежья более 20 лет.



**АЛИПБЕКОВА Чаимгуль Абусағатова (ALIPBEKOVA Chaimgul Abusaigatova)** кандидат сельскохозяйственных наук, старший преподаватель, автор более 40 публикаций, индекс Хирши 3. Специалист в области защиты растений и ответственный исполнитель проектов в области разработки системы ТСХ на основе применения достижений генов.





**ӘЛІПБЕКІ Оңғарбек Әліпбекұлы (ALPIBEKI Onggarbek Alpibekuly)**, доктор биологиялық ғылым, профессор биология, академик, вице-Международного союза радиологов (International Union of Radioecology), Лучиний ғанауындағы ВУЗ-ын, стипендиат Республикасының «Болашақ», прошёл стажировку в Кембрикском университете (Великобритания) по специальности «Космический мониторинг и фотограмметрия» и в ведущих научных центрах США и Европейского союза (Германия, Нидерланды, Франция и др.). Автор более 140 публикаций, индекс Хирши 2.

Әліпбекі О.Ә. активный участник создания Национального космического центра и космических технологий Республики Казахстан. Он является пионером Республики Казахстан в области создания и формирования пространственных данных. По его инициативе понятия «пространственные данные» и «инфраструктура пространственных данных» были введены в «Закона о космической деятельности Республики Казахстан».

Әліпбекі О.Ә. организовал первый в стране «Центр геоинформационных технологий» при средней школе аграриев ВУЗ-е (КазахУ), Национальной компании (АО НК КТС Казкосмоса) и школу специалистов при них, а так же выдвинул концепцию: создания национальной инфраструктуры пространственных данных и внедрения системы точного земледелия в Республике Казахстан. Им выполнена система целенаправленных фундаментальных, прикладных НИР, образовательных и бизнес проектов в целях доказательства необходимости создания и формирования пространственных и пространственно-временных данных в стране на научной основе. Все идеи Әліпбекі О.Ә. в области разработки пространственных данных в настоящее время вошли в Программу «Цифровой Казахстан» и находятся на стадии реализации его учениками и последователями.

Әліпбекі О.Ә. с применением радиологических методов и пространственных данных разработана методология снижения уровня радиомутности в бытовом Семипалатинском испытательном ядерном полигоне и передача бизнес структур для их внедрения.

Благодаря инициативе Әліпбекі О.Ә. КазахУ им. С.Сейфуллина впервые стал грантоодержателем образовательного проекта Европейского союза Erasmus+ - NISORA, а автор руководителем «Научно-исследовательского и образовательного центра точного сельского хозяйства, цель которого продвижение достижений в области пространственных и пространственно-временных данных в агропромышленный комплекс страны на научной основе.



**АЛИПБЕКОВА Чингиз Абусғатовна (ALPIBEKOVA Chingiz Abusgatovna)** кандидат сельскохозяйственных наук, старший преподаватель, автор более 40 публикаций, индекс Хирши 2. Она специалист в области защиты растений, работала МНС, ИС (НИИСХ МСХ СССР), СНС и научным секретарем (КазНИИЗР), замещающим сектором НИР, аспирантурой, РИД докторантурой и ВИС (КазНАУ), а так же ВИС в АО НК «Космический Гарнизон Самара-Казкосмос» (по договору). Аліпбеківа Ч.А. ответственный исполнитель и участника серии фундаментальных, прикладных НИР и бизнес проектов в области создания и формирования пространственных и пространственно-временных данных.

**РАЗРАБОТКА ПРОСТРАНСТВЕННЫХ ДАННЫХ: СОЗДАНИЕ И ФОРМИРОВАНИЕ**



**Аліпбекі О.А., Аліпбеківа Ч.А.**



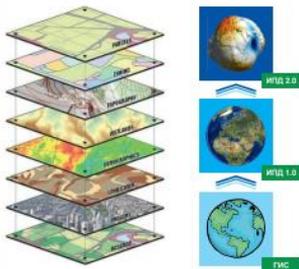
Co-funded by the Erasmus+ Programme of the European Union

МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА РЕСПУБЛИКИ КАЗАХСТАН

КАЗАХСКИЙ АГРОТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ ИМ. С.СЕЙФУЛЛИНА

Аліпбекі О.А., Аліпбеківа Ч.А.

**РАЗРАБОТКА ПРОСТРАНСТВЕННЫХ ДАННЫХ: СОЗДАНИЕ И ФОРМИРОВАНИЕ**



Утверждено Ученым советом университета в качестве монографии

Нур-Султан 2020

The Monograph

**"Development of spatial data: creation and formation"**

was compiled and published.

The release of this monograph has become an important event in the scientific community of Kazakhstan





# TEACHING MATERIALS:SCIENCE+EDUCATION

## Scientific articles published in journals with a high impact factor



Article

### A Spatiotemporal Assessment of Land Use and Land Cover Changes in Peri-Urban Areas: A Case Study of Arshaly District, Kazakhstan

Onggarbek Alipbeki <sup>1,\*</sup>, Chaimgul Alipbekova <sup>2</sup>, Arnold Sterenharz <sup>3</sup>, Zhanat Toleubekov, Meirzhan Aliyev <sup>1</sup>, Nursultan Mineyev <sup>1</sup> and Kaiyrbek Amangaliyev <sup>1</sup>

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Received: 14 January 2020; Accepted: 16 February 2020; Published: 19 February 2020



**Abstract:** In this study, the spatiotemporal dynamics of land use and land cover (LULC) were evaluated in the peri-urban area of the Arshaly district, which borders the capital of the Republic of Kazakhstan. Landsat multispectral images were used to study the changes in LULC. The analysis of LULC dynamics was carried out using supervised classification with a multi-temporal interval (1998, 2008, and 2018). During the study period, noticeable changes occurred in LULC. There was an increase in the area of arable land and forests and a reduction in the pastures. There was a sharp increase in the built-up area; that is, there was an intensification of land use through an increase in the share of arable land as well as the transformation of agricultural land for development. However, in general, the influence of urban sprawl in this peri-urban area has so far been accompanied by only a slight focus on its sustainable development.

**Keywords:** land use and land cover; remote sensing; supervised classification; change detection; driving factors; Arshaly district



Article

### Analysis of Land-Use Change in Shortandy District in Terms of Sustainable Development

Onggarbek Alipbeki <sup>1,\*</sup>, Chaimgul Alipbekova <sup>2</sup>, Arnold Sterenharz <sup>3</sup>, Zhanat Toleubekova <sup>1</sup>, Saule Makenova <sup>1</sup>, Meirzhan Aliyev <sup>1</sup> and Nursultan Mineyev <sup>1</sup>

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\* Correspondence: oalipbeki@mail.ru; Tel.: +77715369615

Received: 18 April 2020; Accepted: 07 May 2020; Published: 12 May 2020

**Abstract:** The suburban territories of large cities are transitional zones where intensive transformations in land use are constantly taking place. Therefore, the presented work is devoted to an integrated assessment of land use changes in the Shortandy district (Kazakhstan) based on an integrated study of the dynamics of land use and sustainable development indicators (SDIs). It was found that the main tendency in the land use of this Peri-urban area (PUA) during 1992–2018 is their intensification, through an increase in arable lands. Kazakhstan only recently started the systematic collection of SDIs according to international standards. Therefore, to assess the sustainable development of the study area, limited amounts of information were available. Nevertheless, the use of SDIs from 2007 to 2017 showed that the growth of economic development in the study area is almost adequately accompanied by an increase in the level of social and environmental development. The methodological approach used can be widely used to assess the sustainable development of specific territories in general and the development of the Shortandy district in Kazakhstan and their PUA, in particular.

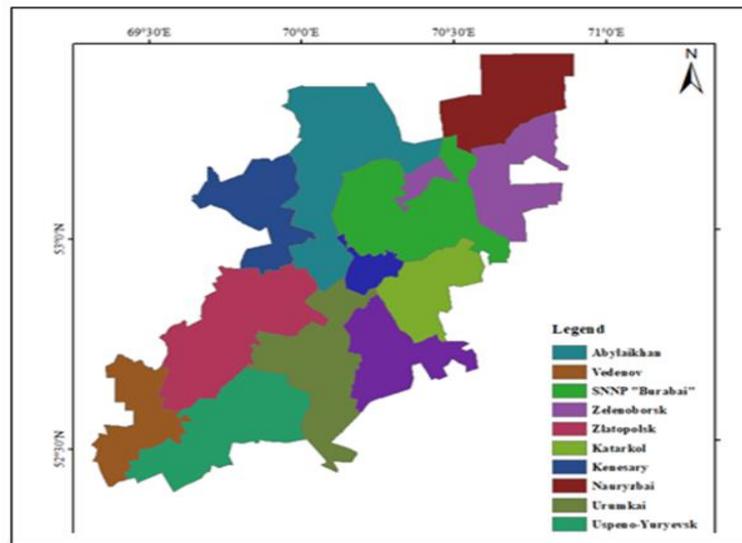
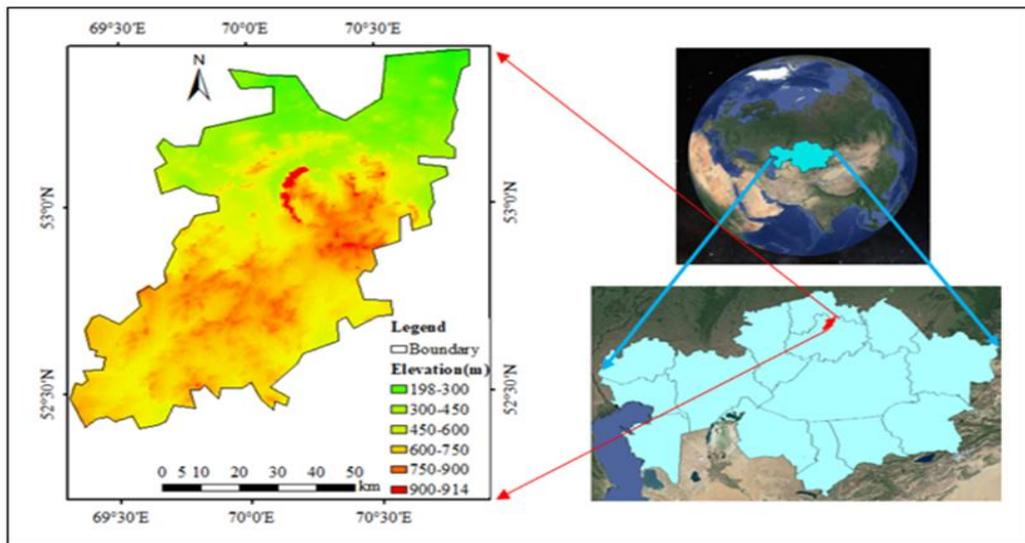
**Keywords:** land use change; analyze; sustainable development; Shortandy



The author, using the knowledge and methodology received during the implementation of NICOPA project from the European colleagues became a winner of the Scientific and Technical Program (STP).

The STP is aimed at developing Policies in the field of State Regulation of food security, social infrastructure, cooperative processes and subsidies.

**The main goal of the NTP** is to develop a methodology for an **Integral assessment of the sustainable development** of individual regions, taking into account **demographic, economic, social, environmental and climatic indicators**.





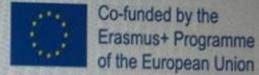
# Sustainability of PASO Offices

## PASO Service Office

№	Name of the activity	
1	Name of the person(s) responsible for PASO operation in your university	Dastan Yelubayev, project member
2	Provide scan of PASO regulations approved at institutional level	Provided
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
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	
6	Number of NICOPA+ agreements signed	NICOPA+ agreements have been signed so far with the following non-academic stakeholders: LLP “Naidorovskoye”, LLP A.I. Barayev Scientific Production Center of Grain production, LLP A.Bukeikhanov Scientific Research Center of Forestry, North Kazakhstan Experimental Plot



# Business Plan of PASO



I

## **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**

**S. Seifullin Kazakh Agrotechnical University**



# 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;*

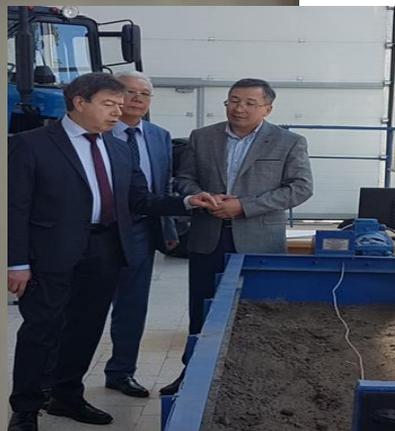
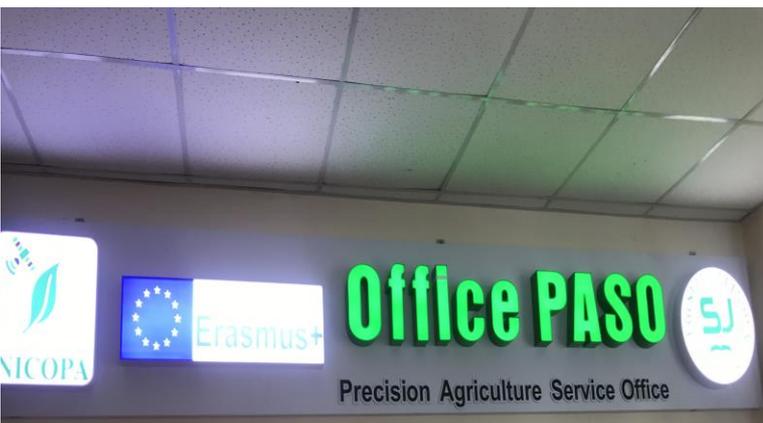
*Smart Board;*

*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





# Completed activities

The project is being implemented in accordance with the work schedule:

1. Partnership Agreement (NICOPA Partnership Agreement)
2. Project quality control plan (QA Plan NICOPA) [www.nicopa.eu3](http://www.nicopa.eu3)
3. NICOPA distribution plan [www.nicopa.eu](http://www.nicopa.eu)
4. Information management package [www.nicopa.eu](http://www.nicopa.eu)
5. Recommendations for assessing the quality of study programs  
[www.nicopa.eu](http://www.nicopa.eu)
6. A plan has been developed for the implementation of activities at partner universities for 2018-2022





# 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>





# Field monitoring of NICOPA project

Field monitoring of NICOPA project, May 16, 2019 S. Seifullin Kazakh Agrotechnical University  
Discussion of the field monitoring results of the NICOPA project by the National Erasmus + Office and discussion of the conclusions and recommendations of the EACEA (Agency) employee - project advisor Piia Heinämäki based on the results of the monitoring.





# 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>





# Training in Germany



Co-funded by the  
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of the European Union





## Dissemination of information after training at Berlin Technical University





# Seminar about the results of training in TU Berlin

December 3 till 30, 2019 it was conducted the first stage of retraining for faculty members for implementation received knowledge into the educational system in the field of precision agriculture: Global Navigation Satellite System, Spatial analysis

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).





# Seminar about the results of training in TU Berlin

18-31.12.2019

Sh. Mazhrenova "Remote sensing"

O. Alipbeki "Precision Agriculture"





# Retrainings: 28.11.-16.12.2019

Факультеты: агрономический; ветеринарии и технологии животноводства, технический; управление земельными ресурсами, архитектуры и дизайна.

Количество с факультета: максимум 6 человек на каждый курс (максимальное кол-о слушателей по одному курсу 24 человек, по желанию – можно записываться на несколько курсов каждому слушателю)

Курсы:

- (1) Точное сельское хозяйство (проф. Әліпбекі О.)
- (2) Глобальные навигационные спутниковые системы (Ермеков Ф.К.)
- (3) Дистанционное зондирование (Мақренова Ш.К.)
- (4) Пространственный анализ (Бекбаева А.М.)

Даты проведения:

- (1) и (4): 03-13 декабря 2019 г.г.
- (2) и (3): 18-30 декабря 2019 г.г.

Время проведения:

- (1) 10:00-13:00 (время будет уточнено, после выхода расписания на 2 часть триместра)
- (2) 10:00-13:00
- (3) 14:00-17:00
- (4) 14:00-17:00

Место проведения:

- (1) к. 4203
- (2) к. 4203
- (3) к. 4203
- (4)

Результаты: теоретические знания, практические навыки, СЕРТИФИКАТ о прохождении курса



Казахский агротехнический университет им. С. Сейфуллина

Утверждаю:  
Директор института повышения квалификации и дистанционного обучения  
Ш.М.Абеуова  
« \_\_\_\_\_ » \_\_\_\_\_ 2019 г.

УЧЕБНАЯ ПРОГРАММА  
семинара-тренинга «Точное сельское хозяйство» (ТСХ)  
для ППС университета

№ п/п	Наименование (модуля или раздела) и их содержание	Кол-во часов			Лектор
		всего	в том числе		
			лекции	ЛПЗ	
1.	Введение в ТСХ	3	3	3	Әліпбекі О.Ә.
2.1	Научные основы ТСХ	3	3	3	Әліпбекі О.Ә.
2.2	Гетерогенность почв и агро-биоразнообразия	3	3	3	Әліпбекі О.Ә.
3	Гетерогенность агро-ландшафтов и животных	3	3	3	Әліпбекі О.Ә.
3.1	Технические основы ТСХ: радионавигационные системы	3	3	3	Әліпбекі О.Ә.
3.2	Геоинформатика: ГИС и векторный анализ	3	3	3	Әліпбекі О.Ә.
3.3	ДЗЗ и растровый анализ	3	3	3	Әліпбекі О.Ә.
4	ВЕБ	3	3	3	Әліпбекі О.Ә.
4	Подходы, стратегии, технологии ТСХ	3	3	3	Әліпбекі О.Ә.
5	Опытное дело ТСХ	3	3	3	Әліпбекі О.Ә.
6	Точное животноводство	3	3	3	Әліпбекі О.Ә.
7	Эколого-экономические основы ТСХ	3	3	3	Әліпбекі О.Ә.
Итоговая аттестация: зачет					
Всего часов:		36	12	24	

Составитель:  
д.б.н., профессор

О.Ә.Әліпбекі

Координатор  
дистанцион



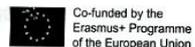
SAKEN SEIFULLIN  
UNIVERSITY

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# Questionnaires after retraining



Уровень – Бакалавриат

Уважаемый студент, просим Вас ответить на несколько вопросов:

Укажите Вашу специальность \_\_\_\_\_

1. Какое из приведенных ниже понятий Вам знакомы:

- точное земледелие
- точное сельское хозяйство
- геоинформационные системы
- дистанционное зондирование Земли
- радионавигационные системы

Если Вы не знакомы с приведенными понятиями перейдите к вопросу №4

2. Полезно ли внедрение точного сельского хозяйства в деятельность агроформирования?

ДА                      НЕТ

3. Вы заинтересованы в изучении точного сельского хозяйства?

ДА                      НЕТ

4. Вы слышали о реализации в КазАТУ им. С.Сейфуллина международного проекта по точному сельскому хозяйству?

ДА                      НЕТ

5. Этот проект образовательный и научно-исследовательский?

ДА                      НЕТ

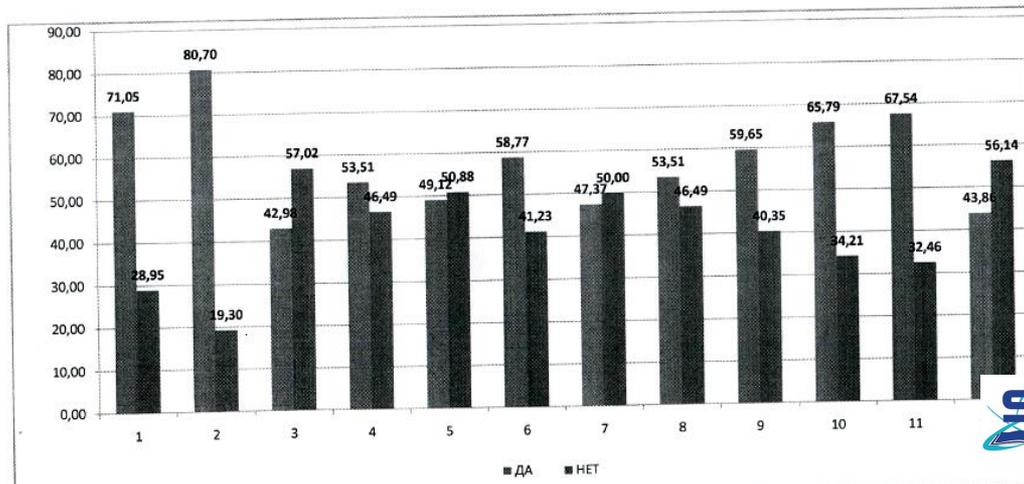
6. Знакома ли Вам аббревиатура международного образовательного проекта NICOPA?

Общее количество ответов: (114 человек)

	114	
	ДА	НЕТ
1	81	33
2	92	22
3	49	65
4	61	53
5	56	58
6	67	47
7	54	57
8	61	53
9	68	46
10	75	39
11	77	37
12	50	64

	114	
	ДА	НЕТ
1	71,05	28,95
2	80,70	19,30
3	42,98	57,02
4	53,51	46,49
5	49,12	50,88
6	58,77	41,23
7	47,37	50,00
8	53,51	46,49
9	59,65	40,35
10	65,79	34,21
11	67,54	32,46
12	43,86	56,14

1. Знаете ли Вы отличия между уравнильным и точным земледелием?
2. Знаете ли Вы сущность точного земледелия?
3. Как Вы думаете, понятия «точное сельское хозяйство» и «точное земледелия» это одно и тоже?
4. Отличаете ли Вы виды радионавигационных систем?
5. Отличаете ли Вы виды дистанционного зондирования Земли?
6. Можете ли Вы отличить геоинформационную систему от инфраструктуры пространственных данных?
7. Знакомы ли Вы с понятием инфраструктура пространственных данных?
8. Можете ли Вы отличить декларативные знания от цифровых?
9. Вам знакомо понятие пространственные данные?
10. Хотели бы Вы стать специалистом в области точного сельского хозяйства?
11. Вы слышали о реализации в КазАТУ им. С.Сейфуллина международного проекта по точному сельскому хозяйству?
12. Знакома ли Вам аббревиатура международного образовательного проекта NICOPA?



БЛАГОДАРИМ ВАС ЗА УЧАСТИЕ В ОПРОСЕ!

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





# Erasmus Plus Information Day

11.10.2019 г. Erasmus Days “Erasmus for All”





# Activities General information and achievements of NICOPA project

Visit of S. Seifullin Kazakh Agrotechnical University by the President of the Republic of Kazakhstan Kasym-Zhomart Tokayev where Nicopa project was presented, 23.12.2019





# Visit of the President of the Republic of Kazakhstan





# International Conference , National Meeting

**October 30, 2019 International Conference “A New Social Dimension in the Mission of Higher Education”, L.N. Guymilev Eurasian National University with participation of P6,P7, P3- EXOLAUNCH**



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







## 29.10. 2019 State Secretary K. Kusherbayev visited S. Seifullin KATU





# Regional coordination meeting

October 29, 2019





# Regional meetings

**12.02.2020 – Skype- meeting with partner universities from Turkmenistan and Germany**  
**25.02.2020 - ZOOM conference with partner universities from Uzbekistan, Kazakhstan and Germany**



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# National meetings in Astana, Petropavlovsk





# 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 specialities, 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



# 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 <i>(Anila Troshani</i> - Head of Sector Erasmus+: Higher Education – International Capacity Building (CBHE), Education <u>Audiovisual</u> 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

With the support of the Erasmus+ Programme of the European Union

Regional Cluster Meeting

Capacity Building in Higher Education

The Status of Erasmus+ Projects in Uzbekistan amid Covid-19 Pandemic

Speaker: Aziza Abdurakhmanova



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





# Summer school in Prague

Through research toward practical application of precision agriculture

25-29 July 2022

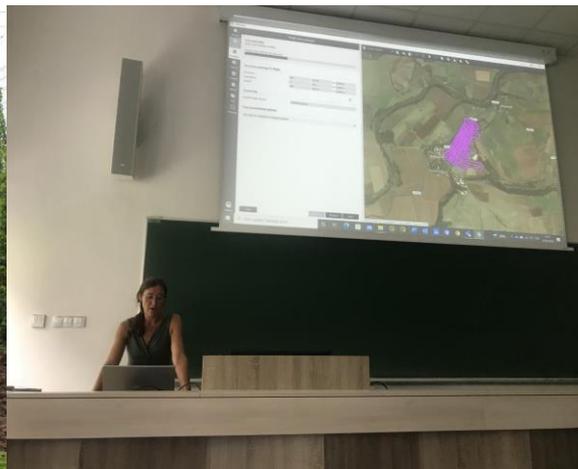
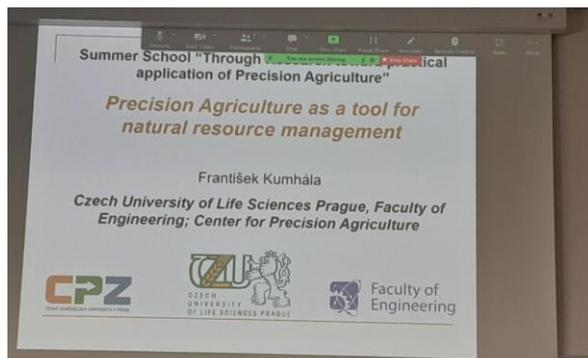
Czech University of Life Sciences Prague

Introductory lectures:

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



# Summer School in Prague, 2022



# Summer School in Prague, 2022





**SEIFULLIN**  
**UNIVERSITY**



**10 – 14**  
**October**  
**2022**

**NICoPA**  
**New and innovative**  
**courses**  
**in precision agriculture**

**October 10-11 AUTUMN SCHOOL**  
**«The importance of the use of the**  
**navigation system in the development of**  
**precision agriculture»**



**October 12-14**  
**FINAL CONFERENCE**

**Saken Seifullin Kazakh Agrotechnical**  
**University, Nur-Sultan, 62, Zhenis Avenue**

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

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



# AUTUMN SCHOOL, October 10-11, 2022



# Final Conference, October 12-14, 2022



# Final Conference, October 12-14, 2022



# Final Conference, October 12-14, 2022



# Autumn School, October 10-11, 2022



# Autumn School, October 10-11, 2022



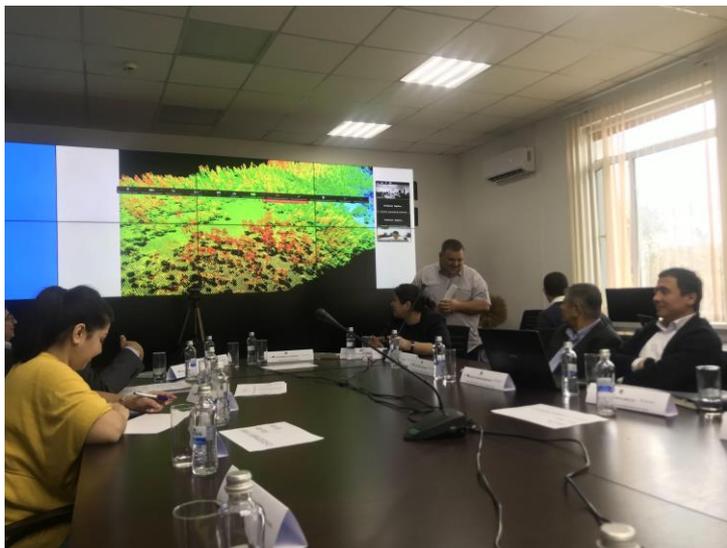
# Final Conference, October 12-14, 2022



# Final Conference, October 12-14, 2022



# Final Conference, October 12-14, 2022



# Final Conference, October 12-14, 2022



# Final Conference, October 12-14, 2022



WEB – SITE NICOPA:  
[www.nicopa.eu](http://www.nicopa.eu)



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## DISSEMINATION

No	Activities	Deadline
1	Development of information booklets, brochures, posters, newsletters, roll-ups	May-December, 2019/completed
2	Regional Seminar "Strategy curriculum design based on European good practice and Bologna principles"	May 2019/ completed
3	Training "GIS, Precision Agriculture, Remote sensing» at Berlin Technical University	August 2019/ completed
4	Information Day Erasmus Days "Erasmus for All"	October 2019/ completed
5	Dissemination of information after training in Berlin	October 2019/ completed
6	Participation at the International Conference "A new social dimension in mission and higher education" L.N. Guymilev ENU	October 2019/completed
7	Re-training for faculty members after training in Berlin	December 2019/completed
8	Zoom, Skype conference with partner universities of Turkmenistan, Uzbekistan, Kazakhstan, EU	February 2020/completed





# DISSEMINATION: Alumni Fair- 08.02.2020





# Dissemination

[www.nicopa.eu](http://www.nicopa.eu).

<http://www.nicopa.eu/index.php/about/promotion>

<http://www.nicopa.eu/index.php/meetings>

<http://www.nicopa.eu/index.php/presenations>

<http://www.nicopa.eu/index.php/documents>

Ссылка на фейсбук: facebook@NicopaErasmus

Ссылка на Google Диск -

<https://drive.google.com/open?id=1U4CdC3AfezW1PGFaZCdlzBL7xiyV1hV>

КАТУ - <http://kazatu.kz/ru/ob-universitete/centr-razvitiya-mejdunarodnogo-sotrudnichestva-i-poliyazichnogo-obrazovaniya/erasmus/>

# WP4 Dissemination (on –line consultations for farmers “Extension-KATU”



## ОНЛАЙН СЕМИНАР ДЛЯ ФЕРМЕРОВ



**Применение ГИС-технологий и дистанционного зондирования Земли в агропромышленном комплексе**

Время	Тема	Лектор
17:00 - 17:30	Применение ГИС-технологий и данных ДЗЗ в АПК.	Ермеков Фараби Керимбаевич – декан факультета Управления земельными ресурсами, архитектуры и дизайна НАО «КАТУ им. С.Сейфуллина»
17:30 - 18:00	ГИС-технологий и точное сельское хозяйство. Применение космических снимков для мониторинга роста и развития посевов	Макренова Шолпан Кайыржановна – магистр географических наук, заведующий НОЦ ГИС-технологий НАО «КАТУ им. С.Сейфуллина»

**Дата - 13 мая 2020 года,**

**Ссылка для входа:**  
<https://global.gotomeeting.com/join/21077259/>

**Начало семинара - 17:00 ч.**

Контакты: [abstalgat@mail.ru](mailto:abstalgat@mail.ru)  
 Талгат Абсаттар : +7 775 000 5773  
 Динара Набиева: +7 701 299 7799







## ОНЛАЙН - СЕМИНАР ДЛЯ ФЕРМЕРОВ



**Применение инновационных технологий на молочных фермах**

Время	Тема	Лектор
11:00 - 11:30	Направленное выращивание телок молочного направления	Бостанова Сауле Куанышбековна – к.с.х.н., ассоциированный профессор НАО «КАТУ им. С.Сейфуллина».
11:30 - 12:00	Система идентификации и удаленного контроля живой массы молодняка молочного направления продуктивности	Мирманов Арман Барлыкович – ассоциированный профессор НАО «КАТУ им. С.Сейфуллина».

в рамках ПЦФ МСХ РК на тему «Трансферт и адаптация инновационных технологий для оптимизации производственных процессов на молочных фермах Северного Казахстана»

**Дата – 22 июля 2020 года**

**Ссылка для входа:**  
<https://global.gotomeeting.com/join/826929357>

**Начало семинара - 11:00 ч.**

Контакты: [abstalgat@mail.ru](mailto:abstalgat@mail.ru)  
 Талгат Абсаттар : +7 775 000 5773  
 Динара Набиева: +7 701 299 7799







## ОНЛАЙН СЕМИНАР ДЛЯ ФЕРМЕРОВ



**Внедрение элементов цифровых технологий в молочном скотоводстве**

Время	Тема	Лектор
11:00 - 11:20	Искусственное осеменение и использование системы «Smacthes» в скотоводстве	Джакупов Истаттай Туусулович – доктор ветеринарных наук, профессор НАО «КАТУ им. С.Сейфуллина»
11:20 - 11:40	«Smacthes» – как возможный инструмент в профилактике заразных и незаразных болезней КРС	Бейсембаев Канатжан Каиргельдинович – доктор PhD, ассоциированный профессор НАО «КАТУ им. С.Сейфуллина»
11:40 - 12:00	Вопросы, обсуждение	

**Дата - 19 мая 2020 года,**

**Ссылка для входа:**  
<https://global.gotomeeting.com/join/160866005>

**Начало семинара - 11:00 ч.**

Контакты: [abstalgat@mail.ru](mailto:abstalgat@mail.ru)  
 Талгат Абсаттар : +7 775 000 5773  
 Динара Набиева: +7 701 299 7799







## ОНЛАЙН - СЕМИНАР ДЛЯ ФЕРМЕРОВ



**Эффективные системы управления молочным стадом**

Время	Тема	Лектор
11:00 - 11:30	Применение цифровых технологий в управлении молочным стадом	Шайкенова Кымбат Хамитовна – к.с.х.н., доцент НАО «КАТУ им. С.Сейфуллина».
11:30 - 12:00	Программный продукт «Управление стадом»	Третьяков Игорь Игоревич – руководитель подгруппы информационных технологий, НАО «КАТУ им. С.Сейфуллина».

в рамках ПЦФ МСХ РК на тему «Трансферт и адаптация инновационных технологий для оптимизации производственных процессов на молочных фермах Северного Казахстана»

**Дата – 29 июля 2020 года**

**Ссылка для входа:**  
<https://global.gotomeeting.com/join/426844197>

**Начало семинара - 11:00 ч.**

Контакты: [abstalgat@mail.ru](mailto:abstalgat@mail.ru)  
 Талгат Абсаттар : +7 775 000 5773  
 Динара Набиева: +7 701 299 7799







**SÄKEN SEIFÝLLIN  
YÑIVERSITETI**



# Dissemination: November 2019 and May 2020

## On-line forum "GIS introduces innovation in all spheres of life"





# http://kazatu.kz/nicopa

Поиск по сайту Eng Қаз Рус


Специальности Факультеты и кафедры

О НАС ОБУЧЕНИЕ НАУКА АБИТУРИЕНТУ ЖИЗНЬ УНИВЕРСИТЕТА БИБЛИОТЕКА ФЕРМЕРУ



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### «Новые и инновационные курсы по точному сельскому хозяйству»

**Цель проекта** - модернизация учебных планов в области точного сельского хозяйства с использованием новых технологий - Географической Информационной Системы/ГИС, больших данных, дистанционного зондирования - путем анализа и обновления существующих учебных планов в соответствии с потребностями в области образования; на разработку новых сертифицированных учебных планов в соответствии с новыми достижениями, требованиями рынка труда и Болонским процессом; на тестирование инновационных учебных программ и распространение результатов.

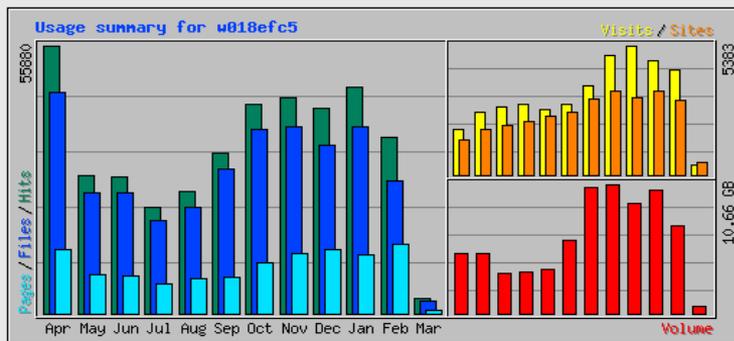
Консорциум NICOPA состоит из 16 партнеров и 4 ассоциированных партнеров с необходимым опытом, образовательными навыками и деловыми связями.



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## Мониторинг посещения www.nicopa.eu



Summary by Month										
Month	Daily Avg				Monthly Totals					
	Hits	Files	Pages	Visits	Sites	Volume	Visits	Pages	Files	Hits
<a href="#">Mar 2020</a>	1062	866	239	137	537	668.14 MB	413	718	2598	3188
<a href="#">Feb 2020</a>	1266	953	493	150	3107	7.25 GB	4376	14325	27655	36737
<a href="#">Jan 2020</a>	1526	1259	394	153	3467	10.21 GB	4755	12218	39044	47321
<a href="#">Dec 2019</a>	1377	1130	434	173	3194	9.13 GB	5383	13477	35046	42703
<a href="#">Nov 2019</a>	1503	1299	415	165	3494	10.66 GB	4962	12479	38971	45119
<a href="#">Oct 2019</a>	1407	1235	342	118	3133	10.40 GB	3681	10628	38308	43630
<a href="#">Sep 2019</a>	1116	1006	254	98	2633	6.00 GB	2948	7626	30187	33491
<a href="#">Aug 2019</a>	821	711	231	88	2457	3.61 GB	2746	7191	22062	25470
<a href="#">Jul 2019</a>	715	624	196	95	2205	3.44 GB	2947	6081	19363	22167
<a href="#">Jun 2019</a>	948	841	262	94	2081	3.27 GB	2821	7871	25237	28447
<a href="#">May 2019</a>	928	810	259	84	1913	4.98 GB	2628	8032	25122	28798
<a href="#">Apr 2019</a>	1862	1534	444	62	1450	4.95 GB	1884	13324	46042	55880
<b>Totals</b>						<b>74.54 GB</b>	<b>39544</b>	<b>113970</b>	<b>349635</b>	<b>412951</b>



# Dissemination

Facebook page for "New & Innovative Courses for Precision Agriculture". The page features a cover photo of a green field and a profile picture with the NICOPA logo. The page name is "New & Innovative Courses for Precision Agriculture" with the handle @nicopa@kaznu.

Website of Seifullin University (Северо-Казахстанский государственный университет имени М. Козыбаева). The page features a navigation menu with categories like "Поступающим", "Обучающимся", "Преподавателям", "Зав. кафедрами", "Деканам", "Электронный ректорат", "Кл", "RU", "EN". The main content area highlights "НОВЫЕ И ИННОВАЦИОННЫЕ ПРОГРАММЫ ПО ТОЧНОМУ ЗЕМЛЕДЕЛИЮ (NICOPA)" and mentions funding by the Erasmus+ Programme of the European Union.

Website of Shalikhano University (Ш.А. ШИХАНОВ АТЫНДАТЫ КӨКШЕТАУ МЕМЛЕКЕТТІК УНИВЕРСИТЕТІ / Ш.А. ШИХАНОВА ШАЛЫХАНОВ КӨКШЕТАУ МЕМЛЕКЕТТІК УНИВЕРСИТЕТІ). The page features a navigation menu and a section for "Erasmus+". A table provides details about the project:

Регистрационный номер	19765-EPY-1-2018-1-KZ-EPYKA1-CBHE-IP
Название заявки	НОВЫЕ И ИННОВАЦИОННЫЕ КУРСЫ ПО ТОЧНОМУ ЗЕМЛЕДЕЛИЮ
Краткое название	NICOPA
Класс	CBHE-IP
Заказчик	КАЗАХСКИЙ АГРОТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ ИМЕНИ САЕНА СЕБЕТБАЙУЛЫ (КЗ)

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## **PERSPECTIVES OF COOPERATION**

- 1. Enhance networking and internationalization, as partners involved develop new training concepts and curriculum. OFFICE PASO NETWORK and INTERNATIONALIZATION**
- 2. Enhancing the attractiveness and competitiveness of EU HEIs is a key goal of the Bologna Process. In an increasingly globalized world and with the expansion of HE provisions in emerging economies, NICOPA helps HEIs from the Consortium to develop a strong brand to ensure they remain competitive.**
- 3. Collaboration of HEIs and enterprises in education and development of new curricula, involvement of professionals from SMEs in teaching precision agriculture. Unfortunately, few HEI laboratories or companies can reasonably claim to be able to respond to the technological challenges in the agriculture. Few universities can afford the necessary infrastructure, agricultural laboratories and experts in all fields of this multidisciplinary science, and few enterprises can afford research activities. Therefore, the project aims at overcoming these boundaries and problems through sharing EU experience and providing opportunity for more HEIs to develop the necessary infrastructure and technology for precision agriculture implementation in the regions.**



## PERSPECTIVES OF COOPERATION

**4. The NICOPA EU collaboration should continue after the end of the project with the open course initiative to build a case of good practice based on the collected experience and based on the positive experience. NICOPA project works towards that the organizational, technical and quality-related issues are addressed in order to share content, and make it easily accessible at European level.**

**It was agreed by the partners to develop ECTS documentation facilitated and quality enhanced by the supporting documents: course catalogue, learning agreement, transcript of records, work placement certificate. ECTS contributes to transparency in other documents such as the Diploma Supplement.**



## Sustainability strategy

**Sustainability strategy** of NICOPA will maintain its activities, services and benefits during its projected lifetime and after the project follow up and the strategy is worked out with the consortium right at the planning stage. To ensure sustainability following factors are included in the worked out strategy: the project fully meets academic, professional and social needs of target countries; active participation of all target groups is guaranteed; high degree of inter-institutional cooperation; intensive involvement of the non-university partners in the project implementation. The representatives of the non-university partner organizations will be involved in the information events and conferences more often and will comprehensively support the project by promoting the project vision both within and outside their institutions.

The cooperation between universities and stakeholders is ensured by “NICOPA university – enterprise agreement”. Universities and enterprises joint their efforts particularly in the field of improvement of training high qualified specialists by offering internships as well as in research activities.

The webpage of the project is online and in full operation: [www.nicopa.eu](http://www.nicopa.eu).



Thank you for you attention!



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